

School Concentration and School Travel

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School Concentration and School Travel

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Preface

During the 1980's and 1990's the Dutch school system was subjected to changes both in its structure and in its spatial distribution. This led to debates on the accessibility of both primary and secondary schools.

The author was involved in research efforts to objectify the arguments used by assessing actual and potential impacts of school closures. The debate led to a certain shift of school concentration policies from school location closures to amalgamation of school institutions. There is a lack of insight into the degree of spatial concentration that took place.

Being nearly 60 years old and looking back at efforts to contribute to transport planning and infrastructure planning, I concluded that it might be appropriate to integrate the results of earlier research projects into a Doctor's thesis.

The Faculty of Civil Engineering and particularly the chairman of the Transport and Planning Department, Professor Ingo Hansen, offered me this opportunity for which I am very grateful. The selection of a subject was not easy though. Very different ones have been covered during nearly 40 years.

The general conflict between transport infrastructure, as demonstrated in debates on airport, highway and railway development had a certain appeal. Social Impact Assessment as developed for the Ministry of Transport and applied to projects like the Province of North-Brabant A4, A16 and A50 studies and to the High-Speed Link South study, might have been a focus.

To my own surprise I concluded that the development of school travel as a result of school closures was a more challenging subject.

My superior, Professor Frank Sanders (Infrastructure planning) allowed me to take this subject. Professor Piet Bovy (Transport planning) accepted me as a Ph.D. student. He proved to be an incredibly dedicated teacher.

The research project was intended to build upon the results of earlier studies with a distinct focus on school travel mode and traffic safety. During the study the focus shifted to school concentration processes, constituting the causal force and demonstrating an unexpected complexity. Nevertheless the studies on school travel proper, as presented in chapters 8 and 9, were called 'genuine contributions'. Berry Blijie and Kees van Goeverden provided important support to these studies respectively, as expressed in common publications.

Jelmer Keijts was of great help in editing this volume and Conchita van der Stelt (TRAIL) guided the publication process in a both adequate and pleasant way.

The creation of a Doctor's thesis is an assault on family life. I am most grateful for my wife's support and patience. I dedicate this volume to my dear Hennie, being a fine mother and grandmother and a lovely wife.

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Chapter 1.

Introduction

1.1 Background

This volume is a comprehensive study of school concentration and school travel developments, both in primary education and in secondary education, with a special focus on The Netherlands.

In this country, but also in neighbouring countries, school concentration and especially the development of larger school organisations has been of much concern since the 1960's. Germany for instance did away with its village 'Volksschule' within a few decades. In Great Britain the village primary school is the subject of endless battles. In Flanders school concentration is currently being considered. Comprehensive studies of the education-geographic developments in school supply and of their travel implications are not available.

The Dutch National Government enhanced school concentration because of the favourable economies of a larger scale and given a gradual decline in the scale of education. Its policies led to large school authorities, large schools and large school locations, which worried different actors for various reasons. These varied from the fear of regional education monopolies, restricting consumer options, to the fear of security problems in large school compounds affecting the teaching climate.

Of course the inevitable increase of school travel distances was regarded to be disadvantageous as well, especially by actors from rural areas.

The implications for school travel were assessed only modestly before active concentration policies were developed.

The present author played an active part in studies that were undertaken in the before situation. In the decade between 1984 and 1994 concentration-related studies were done for the Ministries of Education, of Physical Planning and of Transport, Public Works and Water Management and for some Provinces. These studies were oriented towards travel impact assessment, especially in primary and secondary education. The following report titles bear witness of this. 'A more expensive way to a cheaper school?' (De Boer 1984) and 'Should this school be closed at all?' (De Boer, Lucas and Trimp 1987).

Empirical comparisons of the before and after situations seem to be missing entirely. There seem to be general complaints about the increase in the scale of education, both in terms of control and in terms of location. Both power and pupils are said to be amassed to the detriment of accessibility.

There are very large education authorities, having almost regional monopolies. The originally Roman-Catholic Carmel Foundation (Stichting Carmel) is operating in the eastern part of the country. It controls nowadays 12 school institutions for secondary education with a total of 50 locations, hosting 35,000 pupils. It assures however that it has small, surveyable schools. See the site of one of the institutions (<http://www.carmelemmen.nl/nl/hoofdmenu/organisatie>).

In the past there was a more or less one-to-one relationship between school authority (responsible actor), school institution (licensed education body) and school location. The present situation is quite different, but it is unclear as to what extent the authority-institution-location ratio has changed and consequently what it implies for the density of locations, especially in the countryside, and for pupil travel.

1.2 Purposes

This study aims to provide both a systematic understanding of *school location and school travel developments* that took place and a general empirical description and explanation of these, especially in regions with a considerable degree of competition in supply between public education authorities and particular, mostly religious education authorities. This competition is characteristic of the greater part of The Netherlands, as it is for Belgium and Great Britain.

The quantitative relationship between school authority, school institution and school location is assessed for secondary education and primary education with a focus on rural areas, because these are likely to have suffered the most from school concentration.

For three important behavioural elements, being school choice, school travel distance and modal choice a quantitative explanation is sought. Therefore modelling is undertaken for school choice in primary education and for school travel distance and travel mode, both in primary and secondary education.

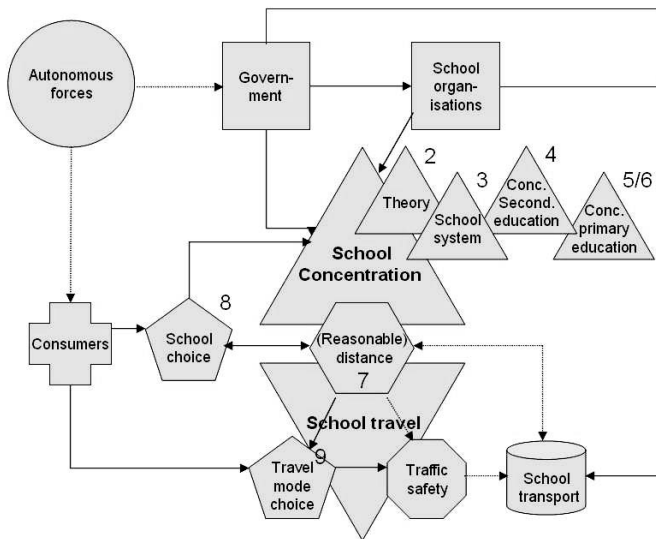


Figure 1.1 Administrative and causal interactions in and between school concentration and school travel developments, indicating the focus of successive chapters of the present volume. Connectors indicate interactions, dotted ones studied less. Numbers indicate the topics of chapters 2–9

1.3 Approach

The causation of school concentration and the partly derived causation of school travel are no doubt complex in character. It requires theorising on concentration processes and their consequences.

The complexity of the processes is demonstrated by figure 1.1.

Central in this figure is the factor distance to school. This distance is the result of school supply (by government and by school organizations) and of education demand (by consumers). Both undergo a degree of influence by autonomous forces like demographic and economic development.

School concentration (chapters 2 to 6) is the result of decisions by responsible authorities. These will take account of demand, being the result of consumer choices, especially in a situation with a certain freedom of choice. This is particularly the case in The Netherlands with a freedom of both school choice and school supply (see chapter 3).

School travel (chapters 7 to 9) has different dimensions, being distance, travel mode and travel safety. Distance affects travel mode choice, which affects traffic (travel) safety, which in turn may incite government to supply school transport.

Only distance and travel mode are studied here, being phenomena directly related to school concentration. School transport might be related as well, especially when it is used to enable concentration. This instrument is not applied in The Netherlands though. The level of school transport is only substantial in special education, which was not subjected to concentration operations.

We have chosen to structure our study by means of formulating *a set of hypotheses* addressing a subset of the relationships of interest indicated in figure 1.1.

A subject of such complexity requires a variety of methodological approaches in addressing these hypotheses. Four of these are prominent, being:

- *literature surveys*, especially to support theorizing, hypothesis generation and general analyses. Important sources are Dodde and Leune (1995) for the school system, Blank and Boef (1990) for 'School and scale' and Van Dam (1995) for changes in scale. Comparable international sources were not available.
- *dedicated quantitative case studies* in specific regions to relate education organizational data (authority and institution) to geographical ones (location);
- *statistical analyses of databases*, partly from earlier research (historical school patterns, national travel surveys of Flanders and The Netherlands) and partly from current sources like those of the National Statistical Office CBS and the Central Finance Institute of the Dutch Ministry of Education.
- *multivariate modelling exercises* for the explanation of school choice (the first published effort ever), school travel distance and school travel mode from which the relative importance of a large set of influencing factors are derived.

1.4 Outline and remarkable results

1.4.1 Content

The study discusses both school concentration and its implications for school travel.

A systematic set of *theoretical considerations* on school concentration are the subject of chapter 2. A series of hypotheses are developed for testing in successive studies.

After that the historical *development of the Dutch school system* is depicted. It has two functions, being firstly a description of the structural dynamics in the system and secondly indicating the quantitative changes caused by concentration (*chapter 3*).

A set of *geographically specific case studies into concentration tendencies* is presented in chapters four to six.

First, secondary education is covered by case studies in three Provinces, focusing on regional school concentration, being relocation tendencies amongst settlements (*chapter 4*). Next, the same type of regional analysis is undertaken for primary education in one of these Provinces, being the Province of Friesland (*chapter 5*).

Finally local school concentration being (re)location tendencies within settlements are investigated in part of the urbanized Province of South-Holland, because school closures of the 1990's in primary education were aiming at a reduction in the number of urban schools. General searches for school clustering, by assigning one location to more than one institution, were added (*chapter 6*).

The thesis is concluded with a set of *travel related studies*, presented in chapter seven to nine. First, the concept of '*reasonable distance*', limiting school concentration and school travel in The Netherlands and other countries, is scrutinized and concluded with a proposal to consider school size minimums, taking account of the summarized travel time of the pupils, and on condition of sufficient travel safety (*chapter 7*).

Then *school choice* in primary education is analysed for one urban Municipality. We utilize the discrete choice modelling technique for discovering the rationale amongst a set of pupil, school and school travel related variables extracted from different general and local sources (*chapter 8*).

Finally, the development of individual *travel behaviour* in the age categories relevant for primary and secondary education is analysed, using data from the national travel surveys of the Netherlands and Flanders (*chapter 9*).

1.4.2 Results

In this subsection the most incisive actions of national government will be indicated first. Then our most relevant hypotheses will be cited, including the results of a confrontation with the collected evidence. Next the general results of our successive school concentration and school travel studies will be presented.

Actions of national government. The Dutch Ministry of Education stimulated school concentration, especially during the 1990's to economise on the cost of education. It did so by different means.

- The amalgamation of school authorities was enhanced by subsidies. Larger authorities were thought to be necessary to enable them to bear budgetary responsibility, replacing an 'open ended' way of financing education.
- The amalgamation of small schools was thought to be necessary to reduce the cost of education per pupil. It was enforced by increasing minimum pupil number thresholds for individual institutions.
- The budget for school building construction was transferred to local government. The closure of school locations was left to education authorities and local government, thus avoiding large investments in the larger school buildings required for amalgamated school institutions.

Central hypotheses discussed. The full list of 21 hypotheses can be found in chapter 2, section 2.8. Three of these are of central importance for the analysis of school concentration and related school travel developments. The numbers of the hypotheses refer to the section of chapter 2 where these are developed. Thus hypothesis 2.6.5 is developed in section 2.6.

2.6.5. *The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.*

2.5.8. *In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.*

2.5.12. *Policies in favour of soft traffic modes cause the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and to be hardly present in the modal split in the journey to secondary schools.*

The nature of these hypotheses and of several other ones is such that both cause and effect are indicated. The causes or motives are made plausible, the effects are assessed quantitatively.

As found in our regional case studies, the motives for amalgamation of school authorities (hypothesis 2.6.5), seem to be different for secondary and primary education.

In secondary education school authorities often used to govern only one school institution. When these were too small to survive in the face of increased minimum pupil number norms, school authorities amalgamated and their school institutions as well in order to preserve school locations.

In primary education we found amalgamations of authorities leading to bodies with a catchment area of an entire Province, which were inspired by the burden of budgetary responsibility. This was found especially for minority denominations in the Provinces studied, such as Liberated Reformed and Roman-Catholic (see chapter 5).

Local government may play an active role in school concentration by (re)assigning a common location to up to four school institutions (hypothesis 2.5.8). This phenomenon was subjected to a nationwide survey. It proved to be a fairly general practice, but certainly not a common one. It seemed to be introduced in Amsterdam during the ‘school construction rage’ of the 1920’s. Rotterdam, the nation’s second city seemed to have distaste for the concept though, since the search yielded only a few specimens (see section 6.4).

School concentration might be expected to incite a change in travel mode choice to the detriment of the slow modes (walking and cycling), caused by longer travel distances (see subsection 9.4.1).

In secondary education such a change proved to be hardly perceivable though during the 1995 to 2006 period. The share of cycling increased to about 73%, to the detriment of walking.

In primary education the 40% share of walking was reduced to about 33%, and use of the car increased from about 15% to 20%. Cycling however increased too, to 43%.

In neighbouring countries (Flanders and the UK) these developments were less favourable in spite of the absence of school concentration policies (see section 9.4.2).

General outcomes. The set of studies into school concentration and school travel yielded the following, often surprising results.

Case studies of the developments in the numbers of school authorities, institutions and locations for *secondary education* were undertaken in relatively rural areas, having a degree of competition between different school denominations, especially Public and Protestant Christian. These show that the number of school locations was reduced least (by less than 50%) and that amalgamation of school authorities followed those of institutions (a reduction by 75%). Evidently, saving a competitive set of locations was the primary goal of the school organizations. Education supply was made locally attractive by exploiting the full potential of local curricular possibilities. Several rural locations of urban schools expanded their curricula with higher level basic training at HAVO and VWO level. This implied that the mean

minimum distances to the first phase of secondary education did not really increase for the countryside.

Our case studies of similar developments in *primary education* yielded rather different results. Here local authorities were usually replaced with regional ones multiplying their numbers of school institutions, which might have been required for bearing budgetary responsibility. It was certainly effectively enhanced by the new opportunity to continue institutions with insufficient pupil numbers in situations with a large mean surplus in school size. Therefore rural institutions hardly suffered from concentration.

Longer term case studies however showed considerable historical shifts in school numbers and school denomination as a consequence of changes in population size and religious orientation.

Anyway, concentration policies were aiming at concentration in urban areas with less severe consequences for school travel distance. Radical increases of minimum pupil number norms reduced the number of institutions especially in middle-sized cities. Here however the locations of the remaining institutions often had insufficient capacity to accommodate the additional children. Therefore many school institutions now have two or even three locations, each with a full curriculum. Of course this is attractive both for the institutions (geographical competitiveness) and for the Municipalities, having to invest less in new school buildings.

Many Dutch Municipalities have also developed the habit of developing common locations for new schools of different denominations, thereby creating longer school travel distances for the considerable market segment of those who are indifferent towards denomination. This habit is stimulated by the recent cry for 'broad schools', supplying a set of child-related facilities, as well as education proper. Clustering school institutions on one location supports the supply of these facilities.

Despite the modest impact of school concentration developments on travel distances to the nearest school, the accessibility of certain types of education is affected, especially for denominations constituting minorities in certain areas. Then it is justifiable to wonder whether education still lies within 'reasonable distance'. We scrutinized the concept and concluded that minimum pupil numbers for a certain school institution should be related more systematically to the summarized travel effort of the pupils likely to visit that school, taking account of travel safety. Governmental and individual sacrifices should be in reasonable balance.

There is no doubt that distance and traffic safety are factors in school choice as shown by our modelling effort for the complete primary school population of the medium-sized city of Zwijndrecht. It is demonstrated by the modelling effort that it makes sense to have a better look at school choice behaviour. Application of the technique of discrete choice modelling shows, that a number of characteristics of a school, of its accessibility and of the population around it, explain the demand for its education. It is a useful instrument for explaining behaviour and for school location planning.

A basic research question for a thesis on school concentration and of course school travel of course is how travel is affected by the creation of longer distances. In fact minimum travel distances have increased only modestly.

Yet the analysis of travel distance developments show considerable increases which cannot be related directly to school concentration. Evidently there is, especially in primary education, a certain tendency to choose less for the closest school than in the past.

Travel mode choice is changing only modestly, but unfavourably. Cycling is as popular as it ever was, but walking has declined remarkably to the 'benefit' of car use.

A comparative analysis of school travel behaviour in Flanders and The Netherlands shows that independent travel (using the individual's means of travel) in these countries is significant, but that it is more developed in The Netherlands, probably because of the higher quality of its infrastructure for the soft modes.

Chapter 2.

School concentration, a conceptual framework

2.1 Introduction

2.1.1 Purpose of this chapter

This thesis on school concentration and school travel was incited by earlier studies of the author that were intended to assess the acceptability and feasibility of school closures with regard to pupil travel. Of course, initiatives to close schools are not intended to increase travel distances, to enhance the use of school buses or to affect traffic safety. This in spite of the fact that the USA school bus manufacturer International Harvester was a 'major promoter of school consolidation in the 1930s' according to White (cited in Bard cum suis p.2).

One may seek to mitigate negative travel impacts of school closures, but in terms of planning it is preferable to analyse the school closure processes and uncover the motives and causes for closure and rearrangement of location patterns. The outcome of this analysis might be that closure is not well motivated and had better be prevented for reasons of travel impacts.

School closure and the broader phenomenon of school concentration may manifest themselves in various ways, as will be shown in chapters four to six, presenting a general exploration of concentration phenomena in secondary education (chapter four) and more detailed studies of some of these phenomena in primary education (chapters five and six on regional and local school concentration respectively).

The causation of these phenomena is no doubt varied as well. It appears to have been studied only little (Van Dam 1995). Therefore a substantial body of theory was not available, not even partial ones. One might take refuge to theories of 'economy of scale' in private business and public service, trying to apply or adapt these to this field. There are two important grounds to avoid this approach:

- the education sector, and especially primary and secondary education, is subjected only modestly to competition on a market where quality and cost are decisive for survival. Especially primary and secondary schools may have a near monopoly for a more or less geographically limited public,
- education production has to be organized in relatively small units in order to be effective. Advantages of scale can be achieved predominantly by centralizing supporting services for different schools.

An additional reason for avoiding the application of economic theory is the fact that during the nineteen eighties and nineties the debate on the desirability of an active Dutch school concentration policy led to extensive studies by the Dutch Institute for Social Research (SCP) and by the national 'Education Council' (Onderwijsraad). These will provide important elements for elementary theorizing. The foremost one is 'School and scale' (Blank, Boef ...1990), highlighted in Roes 2001 as one of the finest specimen of a combination of efficiency and effectiveness studies (Roes ed. 2001, p. 5).

This chapter then is intended to develop a conceptual framework as a step towards a more coherent theory. The most important factors held responsible for school concentration will be identified. Hypotheses regarding their influence will be postulated. On the basis of these a systematic and consistent view on causal chains determining spatial and travel impacts of school concentration, the subjects of following chapters, will sought to be developed.

2.1.2 Set-up of this chapter

The term ‘school’ may be a source of confusion, since it may indicate such different realities as ‘a way of thinking’ and ‘a building used for teaching’. First, the possible definitions of the concept of ‘school’ will be presented (section 2.2). One of these, that is the institution, is chosen as the standard one for our analyses.

Then school concentration phenomena are presented (section 2.3). The reduction of the number of school locations is the most interesting one from a transport perspective.

‘Virtual’ concentration phenomena, amalgamation of school institutions and authorities, which might enhance school closures, are introduced in section 2.4. *Basic hypotheses* concerning the relationships between physical and virtual concentration phenomena will be postulated.

Two other types of factors, namely general stimuli (exogenous factors) and authorities’ motives for school concentration are discussed in a sequence of sections. After an introduction distinguishing the most important categories (section 2.5.1), these are elaborated (2.5.2) and partly translated into *specific hypotheses* on impacts from developments in society (section 2.5.3).

The roles, interactions and actions of the three relevant categories of actors, being government, school organizations and consumers, are the subject of section 2.6. De degree of ‘freedom of education’ is of central importance for their mutual relationships (2.6.2). The role of government and the division of labour between different layers of government are presented in sub-section 2.6.3, those of school organizations (administrations and institutions) in sub-section 2.6.4 and that of consumers in 2.6.5.

The result of these elaborations is a conceptual framework, including a set of concepts, a number of notions about driving forces and a series of hypotheses about their relative strengths, which is intended to make the complex of developments on school concentration more transparent.

The hypotheses are included in the subsection that inspires these. The full list is included in the final section.

In the next chapter, the development of the Dutch school system in primary and secondary education will be described with regard to general concentration tendencies and their causes, as these are so far identified in literature. In chapter 4 the range of physical concentration tendencies, which appear remarkably obscure in the literature, and their relationships with non-physical ones will be explored for secondary education. Thereafter important physical concentration tendencies will be subjected to quantitative analysis for primary education (chapters 5 and 6).

2.2 Defining the concepts of ‘school’ and ‘location’

The term ‘school’ has different meanings, from very abstract to quite concrete. None of the sources used in this and the next chapter seem to distinguish these meanings. The most relevant meanings are the following ones:

- A school as a **standard way of thinking or working**, of teaching even. In this sense the *pedagogical approach* of Maria Montessori might be called a school.
- A school as a **curriculum**, a specific supply of education, a standard set of knowledge, insights and skills taught to the students, like the classical Gymnasium. These curricula may vary in the level of development they require from beginning pupils and the degree of specialisation in content. A usual distinction between different levels is primary, secondary and tertiary education. The fundamental distinction within the sets of secondary and tertiary curricula is that between general or theoretical education and vocational or practical training.
- A school as a **formal institution**, a legal person, be it public or private, providing a curriculum to those in need of it. One institution may provide more than one curriculum.
- A school as a **facility**, an edifice or building dedicated to teaching a curriculum. One institution may have more than one building at different locations. An institution may have temporary buildings, supplying only part of a curriculum. These will be disregarded in the sequel.

We may characterise the **school system** as a *set of institutions organizing and providing one or more curricula, maybe applying different schools of teaching and doing so in one or more facilities at one or more locations*.

All these notions except the first one, the ‘school of teaching’, are subject of and will be used in the thesis. Since it is dedicated to transport aspects of school concentration, *the focus is on the physical character of schools, being locations where a curriculum is provided*. These locations may house more than one school in the other senses mentioned though! Where the term school might cause confusion it will be specified as an edifice, a location, a curriculum or an institution.

The school location is defined as follows, taking account of the aspects of travel and traffic safety:

- A **school location** is a coherent area where at least one curriculum is offered and which is uninterrupted by non-related functions.

Since travel and traffic safety are of special concern in this study, roads not subjected to traffic calming (30km/h max.) will be regarded as a non-related function.

A school institution may occupy more than one location. In that case one of these may be the official main location (Dutch: *vestiging*) and the other a **satellite**, being an *additional location*. This satellite may have a formal status, including additional government funding and/or a periodical assessment by the government Education Inspection or just an informal one, indicated as a dislocation.

2.3 Defining the concept of ‘school concentration’

2.3.1 Concentration or contraction?

Generally, *concentration* is regarded as a spatial process which may refer to three types of phenomena taking place in a given area, e.g. a country:

- a. a reduction of the number of locations in a certain area, where certain activities take place.
- b. a reduction of the physical size (surface) of locations, without a corresponding reduction in the intensity of their use.
- c. a relative increase of the use of locations for more institutions and/or curricula, without a corresponding increase of their size.

So, *the term concentration refers to a change rather than to a status*. Concentration then refers to a decreasing number of locations or an increasing intensity of use at given locations.

The monumental German dictionary of the Akademie für Raumforschung und Landesplanung gives a static content to the concept: a 'Konzentration' being the product of the 'Kontraktion' process at most. (Akademie 1970, pp. 1606/07)

There is a substantial literature on 'concentration' of facilities and 'enlargement of scale' of the remaining locations, which is implicit in this concentration. It analyses these related processes, especially with regard to the decline of facilities in the countryside.

The foremost British author is Moseley, whom the present author consulted at the University of Norwich during his nineteen-eighties studies (Moseley, 1979). Important Dutch authors are Huigen and Van Dam, doing research at the University of Utrecht during the 1985 – 1995 decade (Huigen 1986, Van Dam 1995).

In these studies strategies for controlling or compensating 'scale enlargement' were developed. One of those is the '*concentration strategy*' of clustering facilities of different kinds in regional centres to keep these both attractive and within spatial reach of the rural population. Contraction is in fact the result of a radical process or strategy, wiping out the facilities at lowest level of a hierarchy of settlements. Huigen used the contraction concept in this sense (Huigen, 1986, pp. 225 etc.).

In the Dutch Fourth Paper on Physical Planning the (public) 'transport strategy' was chosen because a concentration strategy was thought to be infeasible. It was elaborated by the present author (see De Boer, 1990, *The transport option for the countryside*). A contraction strategy has never been discussed for Dutch primary and secondary education although efforts were made to increase the minimum size of schools radically, as will be shown in the next chapter.

In the following texts the term concentration will be used primarily for the process. The result may be a conglomerate, to be called 'a concentration'. We will call this a 'cluster' mostly, to avoid misunderstanding. In chapter 6, on local school concentration in primary education the term '*school island*' will be used for *clusters of identical curricula*.

2.3.2 School concentration as concentration of and on locations

Our description of concentration phenomena shows that three key variables are involved, namely the number of locations serving an area, the size of these service locations, and the variety of services provided respectively.

The *result* of the spatial phenomena identified in our description of *school concentration may be expressed as a certain (increased) density*, being a status concept. Distinguished are

- a. reduction of the number of locations as such or for certain curricula implying a decreasing density in a given area;
- b. reduction of the physical size of locations, also implying a decreasing density;
- c. increase of use of a location in terms of curricula or students: an increasing service density.

The concentration phenomena mentioned may coincide or rather be interrelated. The reduction of the number of locations may lead to a more intensive use of the remaining ones in terms of the number of curricula. The size of locations, in terms of land use (square metres), may be reduced by creating buildings with a higher capacity.

In textbox 2.1 the case of the Zwijsendrecht LOC is presented. It shows all spatial phenomena that were distinguished. Only the first and the third one will be studied here, because only these are relevant in terms of distance and travel.

Given the different notions of ‘school’, school concentration may have different, corresponding meanings. In line with the focus on school locations, the concept of **school concentration** will be reserved for *the change in the spatial distribution of locations and of curricula among locations*. It will be elaborated in this section.

The resulting *spatial redistribution* may be structural in the sense that *both urbanisation and suburbanization processes* may occur. Rural settlements and small towns may lose locations and/or curricula to the benefit of their regional centres (urbanization) and suburbs (suburbanization). These phenomena will be explored in chapters 4 and 5.

The change in the geographical pattern of organisations (institutions and authorities) will be called **geographical concentration of control**. This concept will be elaborated in section 2.4.

The case of the city of Zwijndrecht ‘Local Education Centre’ (LOC = Locaal OnderwijsCentrum) is illustrative for the interconnectedness of physical concentration processes in education.

Zwijndrecht (45.000 inhabitants) houses two institutions for secondary education, namely the Public ‘Walburg College’, and the Protestant-Christian ‘Develstein College’. Until the school year 2007/2008 these provided each a number of curricula on different locations of their own, four of these being situated in neighbouring cities, being Barendrecht and Hendrik-Ido-Ambacht (HIA) respectively. Some of these curricula were identical but other ones were not. Especially in vocational training there were large differences. Develstein supplied different types of technical education at the location of the former Zwijndrecht ‘Technical School’. Walburg supplied economic and care education especially at HIA locations.

The Municipality of HIA (35.000 inhabitants) lost its interest in maintaining its secondary school locations, probably for financial reasons, municipal government being responsible for structural maintenance and renewal of the buildings. The Zwijndrecht colleges decided to concentrate their vocational curricula at one location, being the Technical School site. By doing so it would be possible to widen the range of curricula provided.

The existing buildings from about 1960 were technically and pedagogically obsolete and the numbers of pupils to be accommodated increased from a 370 to an estimated 850. Moreover, the students of courses of a third school institution, the ‘Da Vinci College’ for secondary vocational training, had to be accommodated.

The cost of a new precinct was difficult to bear for the Municipality of Zwijndrecht, in spite of a contribution of HIA. Therefore less than 50% of the original site was used for the construction of the school, which has a courtyard on its roof. The remaining part was redeveloped for housing (De Boer 2006, local newspapers and interviews).

In this case we see both a reduction of the number of school locations and a reduction of the number of locations for certain curricula (the ones identical for the two institutions). Both participating colleges provide their own basic vocational training, which is an introduction of parallel curricula as well. The reduction of the size of the Technical School site was spectacular given the increasing number of students.

Textbox 2.1. Three types of school concentration occurring in one single case, the Zwijndrecht LOC.

School concentration as a process concerning school locations, may assume different forms, following the distinction presented before.

Ad a. *A reduction of the number of school locations* in a given area, where certain educational activities take place, by either

- a reduction of the number of school locations, or
- a reduction of the number of locations where specific curricula are provided

This will lead to an increase of the number of pupils on the remaining locations, and an increase of travel distances, everything else being equal.

Ad c. *A relative increase of the use of locations* without a corresponding change of their geographical characteristics. This may be:

- an increase of the number of curricula provided at specific locations
- an increase of the number of parallel curricula at certain locations in a given area.

When these curricula are newly founded (thus not relocated from elsewhere) both are cases of de-concentration at a higher geographical level, because more is served in the same area.

In the case of founding additional curricula a reduction of travel distances is likely, but in the case of relocation an increase of travel distances may be expected. In the Zwijndrecht LOC case, introducing more and parallel curricula at one location, distances are likely to have been reduced for some curricula, because pupils from the larger city of Zwijndrecht no longer had to visit a location in the smaller city, but the less numerous ones from HIA had to travel instead.

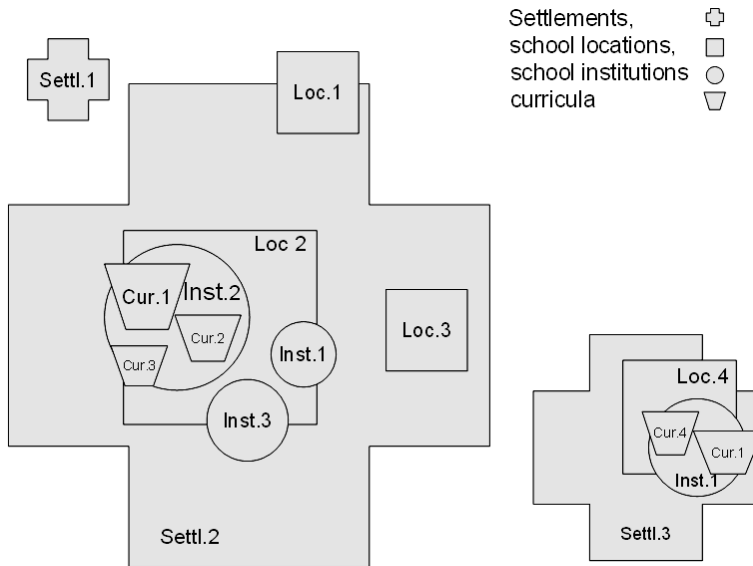


Figure 2.1 Sample of possible spatial and organizational configurations of settlements, locations, institutions and curricula.

The variety of school concentration/density and geographical control possibilities is indicated in figure 2.1. *Settlement 1* is without any school location. *Settlement 2* has three school locations. For location 2 the number of institutions represented and the number of curricula provided by institution 2 are indicated. *Settlement 3* has only one school location used by a single institution, providing two curricula, one of which is identical to one supplied in settlement 2.

Since this thesis finds its origins in assessments of travel impacts of potential school closures, *the focus is on the reduction of the number of locations and of the number of curricula supplied at part of the remaining ones (a)*, which of course may create travel problems for the locations receiving additional students. The possible counter tendency indicated under (c) does require attention for this additional phenomenon.

For our purpose **school concentration** is thus defined as **follows**: *a decline of the number of school locations in a certain area (region, city) or a reduction of the number of curricula supplied at the remaining locations in that area, or both*. It does not necessarily mean centralisation.

For individual cases the concept of **school closure** will be used. That is *termination of the use of a school location for supplying one or more curricula, maybe all*.

The term ***school foundation*** will be used as a concept for the *introduction of a curriculum at a new school location or of an additional curriculum at an existing school location.*

2.4 Geographical concentration of control, a related phenomenon with explanatory value?

2.4.1 Concepts

The school as an institution was introduced in section 2.2. Institutions, facilitating one or more school locations, may grow in numbers of provided locations and students served. This is clearly not a case of physical concentration, but rather a matter of a concentration of power, of a geographical span of control, which may have implications for school locations though.

Three different organizational levels of control, each with their own typical body, can be distinguished in the school system (see figure 2.2), being

- the level of the *individual school institution*, public or private, controlling one or more school locations, and supplying one or more curricula,
- the level of the *school administration or school authority*, controlling one or more school institutions,
- the level of *general government administration*, controlling the conditions for school administrations, institutions and locations.

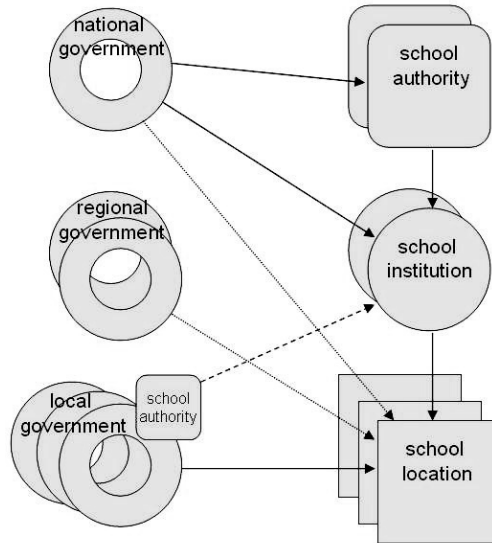
The organizations active at these levels are all actors in the school system, each having their own policies and instruments.

In the thesis the term ***school authority*** will be used for the *school administration* and the term ***government*** (*local, regional and national*) will be used for the *general administration*.

The degree of control at each level is a matter of

- *the number of units controlled*, which is the sheer size of the organization in numbers of institutions, locations and pupils,
- *the distribution of competences* between the different organizational levels and actors, being their degree of independence in terms of curricula, quality of education, budget for education and for locations,
- *competition from other, similar organizations* (authorities and institutions).

Figure 2.2 shows the distinct levels of public administration and school organization and their important general influencing relationships with regard to education as these exist in the Netherlands.



Legend. black arrow = important influence; striped arrow = incidental influence; grey arrow = weak influence.

Figure 2.2 Governments, school authorities and school institutions as actors related to school locations, with an indication of power relationships.

National government controls the education system in general, but especially the authorities and the institutions. It does so by

- acknowledging these,
- allowing the supply of certain curricula, given a minimum number of students
- developing programmes for those,
- providing budget for education, administration and exploitation of buildings to school authorities and institutions,
- inspecting the quality of the complex of activities.

Regional government has hardly a function, in fact only an advisory one for proposed new locations in secondary education, which might be supported by its authority for regional development plans.

Local government (the Municipality) may act as a school authority for public schools. It anyhow has the power to continue or even found a Public school if it is the only one within 10 km over-the-road if it is convinced of the need for it, This in according to the Law on Primary Education section 75, subsection 2 (http://www.st-ab.nl/wetten/0725_Wet_op_het_primair_onderwijs_WPO.htm).

In the past it had the power to operate at least one Public school. Amalgamation of Municipalities reduced that potential. The number of Dutch Municipalities was about 1280 in 1818, after the foundation of the Dutch Kingdom, when the seigniorial units of the Republic were restored. By 2007 the number had been reduced to about 420 (Wolters-Noordhoff, 2007, p.66). The local effect of this development will be demonstrated for the Municipality of Zwijndrecht. In this thesis the historical effect on the number of Public schools is not studied.

Local government designates locations for schools in its physical planning and it provides the buildings for primary and secondary schools. It therefore has a vital role in local school concentration. It even may frustrate foundation and growth of schools by providing capacity at locations at a distance from demand. This is illustrated by the following complaint.

Nico van Kessel, a school development expert of the ITS research institute of Nijmegen University complained in Trouw newspaper about locations assigned to starting Muslim schools: 'A number of the schools having difficulties (in acquiring a sufficient number of pupils) are located in the wrong neighbourhood.' (Trouw, 20-03-06, p.1).

The *School institution* has a budget for daily maintenance of its school buildings. Once a building is assigned to it, the Municipality can reclaim it or assign a different one only by mutual agreement.

The ***geographical concentration of school control*** is defined as the *concentration of regional supply and power in the hands of fewer authorities and institutions*.

The *interaction between concentration at the level of institutions and that of authorities* is shown by the *US literature* on 'school consolidation'. See Bard, Gardener and Wieland 2002 for a general analysis.

In the USA Public primary schools, being financed by the state government, are controlled by the 'school district', led by a superintendant. Recently the State of Mississippi sought to economize on the cost of education by consolidating school districts, saving the salaries of a number of superintendents. The effort failed because of massive resistance from citizens of these districts who expected school consolidation and location closure to be the logical next steps (Peters and Freeman 2007). The authors cited Williams, stating that 'School district size is the most important factor in determining school size, with consolidation/reorganization plans generally resulting in larger schools' (P&F, p.4).

Consolidation (USA) or amalgamation (UK) or fusion (Dutch: fusie) are terms for an integration of two or more educational organizations, either school authorities or school institutions, which does not necessarily imply closure of one or more locations. We will use the concept of amalgamation.

This *British approach* is explained on the UK government 'Teachernet' site: 'Amalgamation is the formation of a new school site to replace two or more existing schools. This may or may not involve the closure of school sites'. (www.teachernet.gov.uk/fallingschoolrolls/joiningup/amalgamation, retrieved 17-7-2007).

The site comprises a number of case studies in amalgamation with varied consequences for school locations. In one case the school locations were reduced to one, in another case the four school locations involved were preserved all. In a third and rather unusual case the locations of the 'voluntary aided first schools' in the Wiltshire villages involved (Kilminster and Zeals) were preserved, but the new 'two-tier' curriculum divided between those: 'Reception and Key Stage 1' in Kilminster, 'Key Stage 2' in Zeals, at a distance of four miles. It might be called a fair distribution of travel disadvantage.

Most surprising is the following line '... the new school is effectively funded by the local authority as two schools'. The meaning of the term 'school' is not particularly clear in this case.

A recent *Dutch case* may serve as an illustration of the complex interrelationships between the levels of authority, institution and location (textbox 2.2). In this case the school authority constituted an intolerable problem for national government, sweeping along three school institutions in its downfall.

In Dutch subsidised education, national government finances school authorities and school institutions, as mentioned in subsection 2.4.1. An independent inspection supervises the quality of education by the respective institutions. When this is found to be insufficient the inspection may demand adaptations. If deficiencies are continued nevertheless, the Minister of Education may decide to withdraw the licence of the school and even that of the school authority, and terminate subsidies. It is quite exceptional to take that kind of decision.

July 2007 Under-Minister ('Staatssecretaris') Dijksma decided to withdraw the licence of the so-called Siba authority and of its three Islamic schools at Amsterdam. The authority was in serious financial trouble for mismanagement, which made it impossible to continue, and the schools were in need of investments to improve the quality of education. One of the schools had to be closed anyhow because of insufficient pupil numbers. The other ones could not be taken over by other authorities because the schools' participatory bodies refused integration into a non-Islamic authority.

All parents applied for placing their children at the one remaining Amsterdam Islamic school, Al Siddiq, under a separate authority, which was considered to be too weak to take over responsibility for additional institutions. The capacity of its school building being quite insufficient, the pupils were likely to be housed in the buildings of their former schools.

Source: Trouw newspaper 4th, 5th and 6th July 2007

In the end the two schools with sufficient pupil numbers went on as dislocations of the Al Siddiq school (dislocation = location at a different spot than the official one). A request was made for the status of a formal satellite, yielding additional funding from the Ministry of Education (information Municipality of Amsterdam 14th November 2007).

Textbox 2.2. The downfall of the Dutch Siba school authority and its school institutions

2.4.2 Hypotheses

In each section of this chapter hypotheses are presented. The hypotheses are numbered according to the section these are presented in. In this case the numbers 2.4.1 and 2.4.2. indicate their birth in section 2.4. In following chapters the hypotheses developed will be confronted with evidence concerning their plausibility. The numbers are helpful in tracing their origins.

A basic question for our research is whether a geographical concentration of school control will lead to a reduction of the number of school locations. One might just as well argue that the concentration of control may be intended to protect the existing pattern of locations.

The Dutch school system (chapter 3) is characterized by the 'freedom of education'. Therefore it is essentially a competitive system. Traditionally this is sooner an ideological or rather religious competition than a pedagogical or a geographical one. Secularization of the population may increase the importance of education quality and school travel arguments in school choice. In areas where one religion or religious faction like Roman Catholicism is dominant in school supply, a school concentration policy is unlikely to affect its competitiveness when education quality is improved.

In regions with more geographical competition between Public and religiously oriented supply school authorities will be more reluctant to concentrate curricula on fewer locations.

These considerations will lead to different hypotheses, depending on the degree of competition.

Hypothesis 2.4.1. A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.

Hypothesis 2.4.2. A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better

opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive.

The typical Dutch situation is one of competition. Only in two of the twelve of the nation's Provinces there is a traditional near monopoly of one religious faction, being Roman-Catholicism.

Our studies were undertaken dominantly in regions with a situation of competition between Public and Protestant-Christian education. Therefore hypothesis 2.4.2 is more likely to be confirmed.

The external factors or stimuli enhancing school concentration and the motives mentioned in these hypotheses as employed by national government are the subjects of the next section.

2.5 Specific motives and driving forces in school concentration

2.5.1 Introduction

In Dutch society processes of school concentration can be observed since about 1975, first as simple school closures (institution or location exit), caused by declining demand for certain curricula and by an increase of norms for minimum school size. Later on more complex and more radical school concentration occurred, stimulated by national politics.

One specific and rather peculiar form of school location concentration, clustering two or more primary school institutions on one location, will prove to be an additional factor in increasing distances in primary education. It found its origins half a century before in the city of Amsterdam as will be shown in chapter five.

These developments are described and partly announced in a ministerial 'discussion note' on school planning in secondary education, 'Less pupils and yet ...' (Ministerie van Onderwijs en Wetenschappen, 1981).

An 'orientation note' of the Province of South-Holland, titled 'Under construction', is one of the efforts to translate the ideas into regional school planning. It mentions economizing as an ongoing development '... leading to concentration into larger units' (Gedeputeerde Staten van Zuid-Holland, 1984, p. 10).

A publication of the Netherlands Institute for Social Research (SCP) marks the beginning of structural efforts towards school concentration: 'Towards a policy to increase the scale of education?' It presents a range of potential strategies for instance (Netherlands Institute ... 1989, pp 10, 11).

Several forces are likely to contribute to these developments, namely autonomous forces such as population development on the one hand and dedicated decisions by various actors involved on the other hand, like the decision to economize on education. No doubt these are based at least in part on the impacts of autonomous forces like economic decline.

In this section the various factors are identified (subsection 2.5.3), but first the central motives for concentration policies, being the desire to increase the quality of education while controlling its cost will be presented (subsection 2.5.2). The following six categories of 'autonomous forces' considered relevant are discussed, namely technological development, democratization, secularisation, population development, economic development (with its impact on government finance) and transport developments. The latter type, unlike the other ones, is regarded to enable school concentration, rather than causing it (2.5.3).

The transport systems as such, both those for road and rail, were fully developed before the period considered in this study. Mass motorization was developing still, but this is regarded to

be a factor in consumer behaviour, car ownership and car use in particular. This is the subject of the chapters on school choice and school travel (chapters 8 and 9). In these chapters car use will be shown to be quite modest still in Dutch education travel.

School transport can be used to facilitate school closure, but this instrument was and is not used in The Netherlands, unlike countries like Germany and the USA (see de Boer 2009 for a concise analysis of developments in Germany).

2.5.2 Central motives for school concentration: improving quality and reducing cost

2.5.2.1 Introduction

The central motives for changing the school system, including the scale of its facilities, are no doubt quality and cost: *improving the quality of education and reducing the cost of education for government* (See Blank, Boef -Van der Meulen etc, 1990, *School and Scale*), Doeber (2001) and Dutch Education Council (2001)).

Either one of these motives may dominate as a result of pressure from society or from the state of government finance.

In subsection 2.5.2.2 the arguments as such are presented and illustrated with similarly driven concentration operations in Western Germany and the USA.

The motives for school concentration in the Netherlands are discussed in subsection 2.5.2.3.

General forces stimulating school concentration policies are presented in subsection 2.5.2.4.

The policies themselves are discussed in chapter 3, including data concerning pupil numbers and school numbers in primary and secondary education.

2.5.2.2 School concentration practices and motives in Germany and the USA

In both Western Germany and the USA rural primary schools and with them their locations were closed more or less systematically after World War II.

In *Germany* the small village schools, 'Volksschulen' (Folk schools) where the children could fulfil their entire school duty, were replaced in little more than a decade, from about 1965 to 1975, with large four year 'Grundschulen' (Basic schools, age of six to nine) in central villages and 'Hauptschulen' (High schools, from the age of 10) in regional centres, with the honest intention to provide *better education* for the new post war society (Kramer, 2002).

The concentration process is depicted for the Municipality of Ihlow in figure 2.3 (De Boer 2009). First the Volksschulen were amalgamated into 'center schools' (Mittelpunktschulen) and then those of 10 years and older were sent to the central Hauptschule in Ihlow. In exchange for this it had to cede its Mittelpunktschule (now Grundschule) to Simonswolde, a settlement of about the same size (information Mr. Pedersen, former director of the Weene school).

We calculated for one county, Aurich (Bundesland or State of Niedersachsen), closure of 70% of the schools/locations in the countryside (De Boer and Van Goeverden 2007).

The locals could be convinced to give up their school, but only by compensation in the shape of free school transport on distances as short as 2 km for the Grundschule and 3.5 km to the Hauptschule.

It was shaped as public transport, being the only provision of that kind for many small settlements. This advantage for the locals is a disadvantage for the pupils, because public transport vehicles are allowed to transport passengers standing. This may have implications for safety and security. It was reason for the German Motorists Association (ADAC) to issue a manual for the 'Schulbus' (see Gliewe 1985).

Population decline in large parts of Germany was reason for a recent study into further school concentration in three regions (Gutsche and Ruemenapp, 2009). For the Dithmarschen region in the Land of Schleswig-Holstein a decline of the primary school population by 29% was calculated for the 2008 – 2020 period. At present there are 69 Grundschulen with 75 locations.

Three alternative strategies were studied

- continuing all locations,
- closing all locations with less than 80 pupils (29 of those) and
- reducing the number of institutions to 51, having 72 locations were

The costs of these strategies were calculated, including the cost of school transport. The general savings of the second option would be about 10%, that of the third one about 5% (Gutsche and Ruemenapp, 2009, p.104).

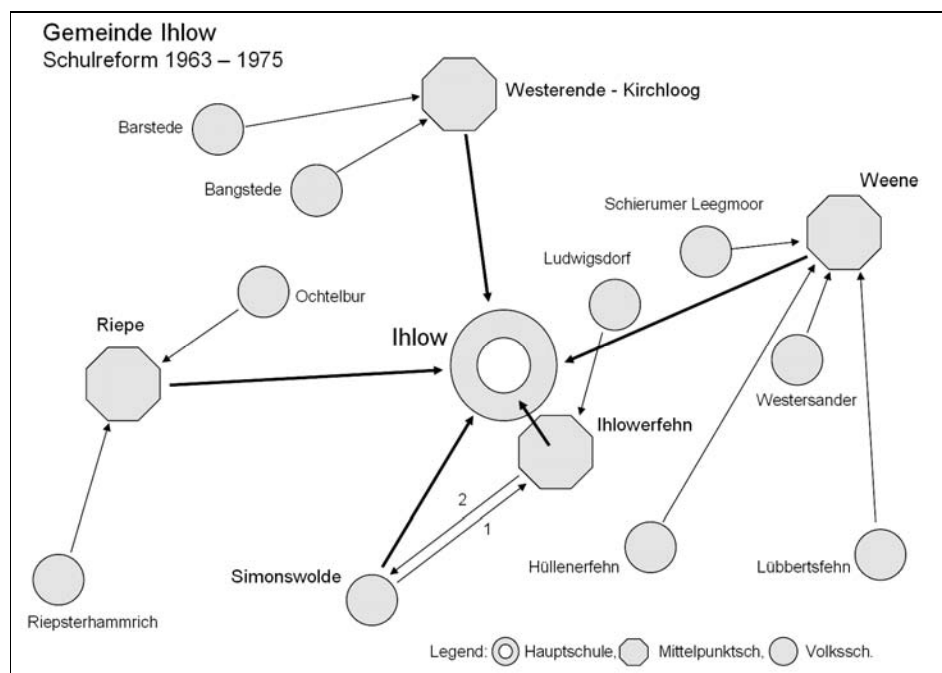


Figure 2.3 School concentration in the German Municipality (Gemeinde) of Ihlow (Landkreis Aurich). Source: De Boer 2009.

The thin arrows indicate the Mittelpunktschule where pupils of successively closed schools were sent to. The thick arrows indicate the Hauptschule where the older children were sent to later on, leaving the younger ones at the Grundschule. The Simonswolde Volksschule was closed (1) but replaced later on by the Grundschule (2).

In the *USA* the ‘consolidation’ (amalgamation) of small rural primary schools is an ongoing process with a more *explicit financial background*, although it is argued that larger schools can be equipped better.

Peters and Freeman (2007) reported recent financially driven school consolidation efforts in the State of Mississippi, which were rejected by the state’s House of Representatives. A general analysis of rural school consolidation can be found in Bard, Gardener and Wieland 2005. They mention closure of over 300 schools in West-Virginia since 1990, being 20% of the total number. An important conclusion of their analysis was: ‘Size does not guarantee success.’ (of a school, Bard et al. p. 13).

Here too transport is made available. The school bus may be regarded to be an icon of the American school system, if not of American society. Its peculiar design is inspired by safety considerations and it is distinctly forbidden to carry passengers standing. The ADAC recommended a number of its safety features for application in Germany.

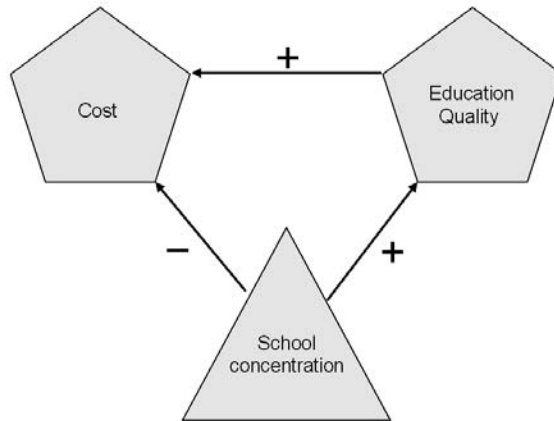
2.5.2.3 School concentration motives in The Netherlands

In the Netherlands policies for reducing the number of rural primary and secondary schools and school locations were developed during the nineteen-eighties and nineties. The national House of Representatives (Dutch: Tweede Kamer der Staten-Generaal) urged for such policies in 1988.

'The House ... considering, that the in all education sectors initiated educational renewal, the demographic and technological developments and the financial possibilities in the near future will make a policy of scaling up (schaalvergroting) in education necessary ... invites government to promote ... the development of a general plan for the reconstruction ('herschikking' in Dutch, perhaps sooner 'economising' EdB) and to use the benefits for improvement of the quality of education (cited in Netherlands Institute ... 1989, p.4).

The House demanded in other words *larger and better schools for the same budget*.

The argument is depicted in Figure 2.4. Larger schools are supposed to be cheaper per pupil because the numbers of pupils in the same age category are larger and therefore the groups to be taught in different grades as well. The teacher/pupil ratio is lower. This will open opportunities for both differentiation in content and level of education. These are beneficial for the career opportunities of the pupils.



Legend: - = decrease, + = increase

Figure 2.4 School concentration supposedly improving quality without increasing cost.

These concentration policies were developed with only moderate success as will be demonstrated in chapters 3 to 6. The development of the numbers of school institutions is discussed in chapter 3. The relationship between this development and that of the number of authorities and locations are discussed in more detail in the chapters 4 to 6.

An earlier study of Stoel (1985) had warned against high expectations from larger schools. The author concluded that cost advantages were quite uncertain, given the results of extensive US studies. On the basis of Dutch data he concluded that the same was true for quality aspects.

Stoel stated ... larger schools as a rule have a lower cost per pupil. This implies by no means that closure or amalgamation will guarantee savings. Dependent on the local situation, the cost of pupil transport, the capacity of receiving buildings, the market value of left buildings, the need for (re)construction and the changing distribution of pupils about surrounding schools, the financial consequences might be positive or, to the contrary, negative (Stoel, 1985, p. 31).

National government had the National Institute for Social Research (SCP) perform a study into 'School and scale' (Blank, Boef a.o, 1990). In this study the SCP concluded that there

certainly might be achieved economies of scale in education, because of the fact that there is a negative relationship between the number of pupils and the cost per pupil. It however concluded too that there was no clear relation between scale and quality of schools (Blank, Boef, p. 231). See subsection 3.6.2 for more detail.

School travel received only little attention in 'School and scale'. Bonnerman and Huigen studied distance impacts of alternative higher pupil number norms for individual school institutions. These will be discussed in chapter 5.

Blank calculated travel cost of school closure options. He concluded that the cost would have to be born for the greater part by individual families, suggesting compensating measures (Blank 1993, pp 219, 220).

2.5.3 Different types of forces active during recent decades

2.5.3.1 Introduction. Autonomous forces and government policies

Theorizing on school concentration as conceived in this study is rare. The pressure for school concentration in the Netherlands incited some general studies though.

The National Parliament 1988 vote, cited in the previous section, mentioned demographic and technological development, apart from cost and quality arguments (cited in Netherlands Institute ... 1989, p.4).

The Netherlands Institute for Social Research (SCP) was given a number of assignments to study the matter. In successive studies it analysed developments 'relevant for the scale of education', in fact the size of school institutions (at the time more or less identical to locations) and of school authorities (Netherlands Institute for Social Research 1989, 1990).

In its 1989 exploratory study *the SCP identified a series of developments* in education without ranking these. These were elaborated in the 1990 main report but again without indicating the relative importance of individual developments. The developments mentioned were

- demographic developments
- developments in participation in different types of education
- developments in structure and finance of the education system
- developments in supply, such as numbers and required sizes of schools,
- political and administrative developments, such as enhancing school autonomy
- cost developments
- developments in consumer preferences in choosing between available schools of the same level.

(Netherlands Institute 1989, summarized on page 39, 40).

Some of these developments may be considered to be conditional for the scale of existing schools (pupil numbers) or for the future of small schools (minimum size for instance). Other ones may be considered stimuli for the creation of larger schools (school autonomy).

Some developments are autonomous, other ones are the result of dedicated actions, especially of national government with its responsibility for financing education, which is the normal situation in centralized states like the Netherlands. The first category is discussed in subsection 2.5.3, the second one in section 2.6.

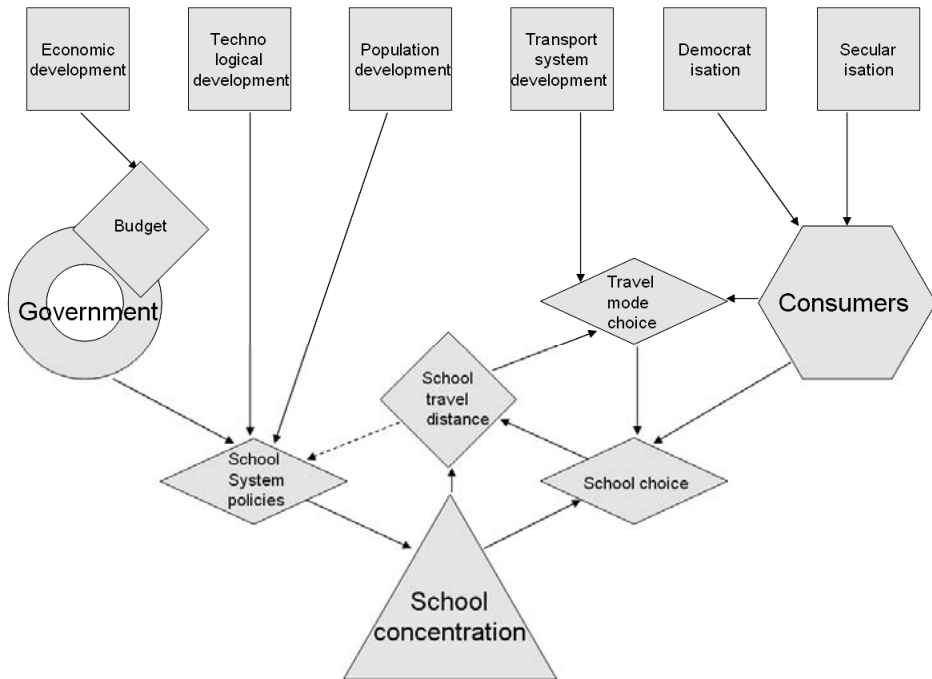


Figure 2.5 School concentration by government policies as a response to a set of developments and consumer choices, disregarding the contributions of school organisations.

We will distinguish six types of autonomous forces, each having a potential impact on changes in the scale of education.

The 'autonomous forces' are presented in an order of a supposed influence on school institution closures in primary and secondary education, that is from background variable to factors of acute importance.

- *technological development*, a background variable requiring longer and more specialised education. Basic vocational education may suffer, because of the lesser need for manual labour,
- *democratization*, enlarging participation in more advanced education, to the detriment of less advanced ones, which are not unlikely to perish locally,
- *secularisation*, reducing the role of religion in the organization of education, and thereby reducing the number of religiously oriented schools,
- *population development*, especially local and regional out-migration and declining birth rates, affecting directly the local market for schools. This is a factor of acute importance,
- *economic developments*, affecting directly the affordability of education and schools, both for government and citizens. This is an equally acute factor,
- *the transport system*, both infrastructure and vehicle ownership, enabling consumers to bridge larger distances and enabling other actors to enact active school concentration.

Only those forces which are likely to have a measurable impact on school locations and to be testable with the available empirical evidence will be the subject of hypotheses. These are of a 'ceteris paribus' character as a rule: 'everything else being equal'. Only in case studies more complex relationships will be shown.

2.5.3.2 Technological developments

Technological developments, like automation and computerization, may be regarded as factors demanding a longer duration of general education and a concentrated supply of curricula the latter only for advanced vocational training. In active terms it can be termed as 'increasing competitiveness'.

In the Netherlands basic general education was extended from the original six year curriculum of the 'lagere school' (lower school) both backwardly (integration of the two year toddler school) and forwardly by the introduction of 'basic education', that is non specialized education) at the secondary school. See below and for more detail chapter 3.

One finds this argument for instance in the US literature on primary school closures (Bard c.s. p.2). It was a background motive for the German rural school closures mentioned in section 2.5.2. The Dutch policies for creating networks of national 'Higher Burgher Schools' (Rijks HBS, a secondary school type) throughout the country in the 19th century, and agricultural secondary schools in the early twentieth century are other examples of a techno-economic drive.

In primary education it is evident though that technology proper is relatively unimportant, except for basic ICT. The first phase of secondary education in the Netherlands (up to 14 years of age) supplies only basic (preparatory) vocational training without substantial technical specialization and corresponding expensive facilities and expert staff. The subsequent secondary vocational training (MBO) was subjected to large scale concentration, especially at the institutional level, but it is not a subject of this study.

In a 1994 study of the modestly urbanized south-eastern part of the Province of Gelderland we found that a national concentration operation of 'Secondary Vocational Education' (MBO), formally not belonging to secondary education (!), resulted in school amalgamation but not (yet) in closure of school locations (Nederveen and De Boer 1994). A later review showed continued use of nearly all locations. It may not be concluded that this is the general pattern. It just confirms that amalgamation of institutions does not imply automatically closure of all locations but one.

This force does yield only one hypothesis, to be verified on the basis of the available historical data.

Hypothesis 2.5.1. Technological developments in agriculture, especially mechanisation, have caused a strong decline of employment at farms. This has caused a reduction of demand for basic agricultural education and, through that, a strong school concentration, being a reduction of the number of locations for this type of education.

This type of education is selected because it is most outspoken in its development. 'Technical schools' used to present curricula for a range of professions like painter/decorator, mechanic and carpenter, that were less subjected to mechanization, and these could be adapted therefore to modern times.

One might hypothesize of course that a development like this is reinforced by a consequent reduction of demand, because this type of education is available at a larger distance than other types. Data concerning this secondary effect were not available..

Hypothesis 2.5.1 will be addressed in the chapter on long term developments in the Dutch school system (chapter 3) and for regional geographic development during recent decades in the Dutch Province of Groningen (chapter 4).

The reduction of the number of agricultural school institutions will prove to be spectacular indeed.

2.5.3.3 Democratization

The general ambition and tendencies towards *equal and equitable access to opportunities* led in general to prolonged education, facilitated by free or very low cost education for the customer and enforced by a school duty age extension to the age of sixteen or even older (see www.leerplicht.net). Access was extended for children who were disadvantaged from a socio-economic or ability perspective by providing these with additional facilities, ranging from special education to enforcing ethnic integration at schools. The education motto of the US Bush administration ‘no child left behind’ was symbolic for this movement (No Child Left Behind Act, 2001, www.ed.gov/legislation/ESEA02 retrieved 31-08-07).

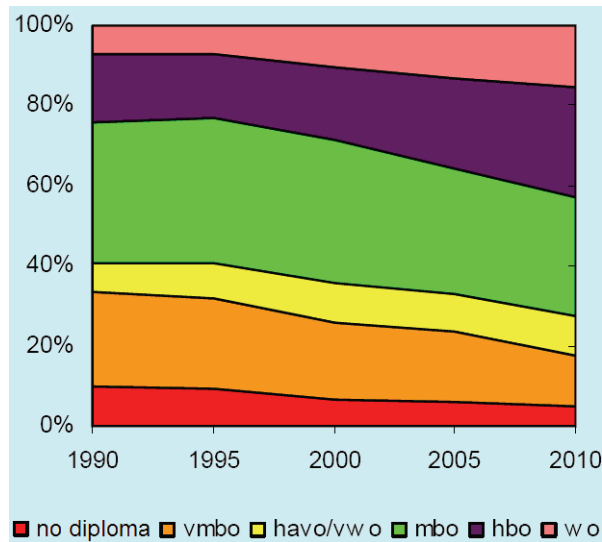


Figure 2.6 Development of the highest level of education being enjoyed by the 30 – 35 year old from 1990 to 2010 (Source: Dutch Ministry of Education, Reference estimates education participation 2007, http://www.minocw.nl/documenten/rr_2007_2.pdf).

Of course this force, supported by dedicated government actions, led to an increase in participation, causing secondary schools to grow in terms of institutions and pupil numbers, even in a stable demographic situation (See chapter 3).

The effect of democratization of education is *emancipation, removing or overcoming socio-economic, gender and ethnic barriers*.

This implies various changes in participation, such as:

- *increased participation in more advanced types of secondary education*, like ‘higher general education’ (HAVO), to the detriment of ‘secondary general education’ (MAVO) and vocational training in general (VMBO). This development is ongoing, see figure 2.5 for the orange and the yellow band.
- *increased participation of female students in hitherto male types of education* like engineering, even at a university level, to the detriment of typical female ones. In secondary education this is hardly perceivable though in the data of the Ministry. In the VMBO the technology learning path attracts hardly any girls (about 5% of those choosing it) and the ‘care’ path hardly any boys: less than 10% (Dutch Ministry ... 2006, p. 19). In HAVO/VWO the ‘nature and technology profile’ is hardly chosen by girls. The ‘nature and health profile’

scores much better (Dutch Ministry ... 2006, p. 18). Figure 2.6 shows the remarkable difference between boys and girls for VWO.

- *relative 'blackening' of hitherto white types of education*, a combination of both developments, since the large foreign minorities were created largely by attracting unskilled workers with a male dominated cultural background. The percentage of HAVO/VWO advices of primary schools for allochtonous pupils, which are more or less binding for secondary schools, increased from 13.5 % (1994) to 17.9% (2004) for those of Moroccan descent and from 10.6% (1994) to 16.1% (2004) for pupils of Turkish descent (second generation, source: Dutch Ministry ...2006, p. 17).

This type of emancipation may imply as well utilisation of the possibilities to create exclusive schools by ethno-religious minorities though. This opportunity will be discussed under 'consumer actions' (2.5.6).

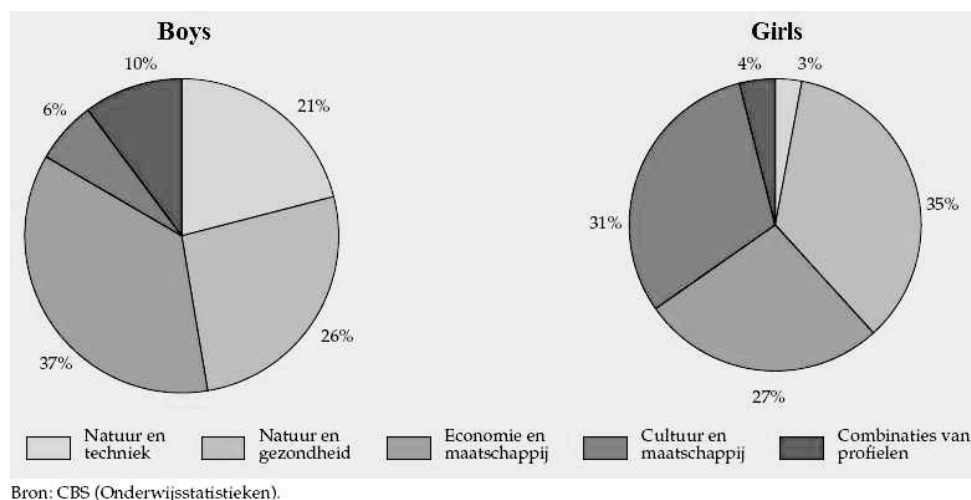


Figure 2.7 The students of VWO who passed their exams after the year 2007/2008 according to sex and the profile chosen. Mark the difference between the sexes with regard to 'nature and technology' (natuur en techniek) and 'culture and society' (cultuur en maatschappij). Source: CBS, Jaarboek onderwijs in cijfers, p.39, retrieved from CBS.nl.

Challenging hypotheses on this topic thus are:

2.5.2. The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied (selective school de-concentration).

The logical matching hypothesis is *hypothesis 2.5.3. The decreasing participation in less advanced secondary education causes a decrease of the number of locations where these are supplied and even a reduction of the number of school locations (selective school concentration).*

A synthesis is found in *hypothesis 2.5.4. School locations with less advanced secondary education curricula like MAVO will survive by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).*

These hypotheses will be addressed in chapter 4, using the Province of Groningen case study with support of evidence from the Province of Friesland and from an in-depth study of a region in the Province of South-Holland (the regional centre of Gorinchem).

2.5.3.4 *Secularisation*

Secularisation can be defined as the reduction of the role of religion in social organisation and daily life. This development is typical for western societies. It might be regarded as a type of emancipation, relieving the people from the reign of the church about society and daily life. The Dutch nineteenth century and the early decades of the twentieth century however were characterised by both a religious and a social emancipation, the result of a struggle against spiritual and economic liberalism. Typical of this movement is the name of a former Protestant-Christian party, the 'Anti-Revolutionary Party', a name referring to the spirit of The French Revolution.

Secularisation may imply two developments in education, namely a relative increase in the demand for education on a non-religious basis and a corresponding increase in the supply of this type of education. For religious participation see Becker and De Hart 2006, especially chapter 3). A famous Dutch study of the origins of secularisation is J.P. Kruijt (1933), *The secularisation of the Netherlands (De onkerkelijkheid in Nederland, in Dutch)*.

The French Revolution (and the US one) led to a radical secularisation of education. Schools outside the cities used to be church schools. These were made public schools under local government control. In European countries the Restoration after the French era led to different approaches. The Netherlands for instance did not return the primary school to the church. A religious reaction during the 19th century led to a dual system of Public and '*particular*' (in Dutch: *bijzonder*) schools. See chapter 3 for the general development.

The participation in formal religion decreased rapidly in the second half of the twentieth century. The logical consequence would be a loss of demand for religious oriented education and a consequent reduction of its supply. This leads to the following hypothesis:

Hypothesis 2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.

Emancipation of non-Christian ethnic minority religions, with their own social organisations may however have an adverse impact giving rise to the following hypothesis:

Hypothesis 2.5.6. Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.

These hypotheses will be investigated in chapters 3 and 5, especially in the Province of Friesland case study and the in-depth long range historical study of the rural Municipalities of East- and West-Dongeradeel (geographical patterns).

The analyses will show that concentration tendencies are remarkably modest as in fact are non Christian de-concentration tendencies. The so-called 'denominational segregation' of society (in Dutch *verzuiling*, literally 'pillarisation') shows a remarkable degree of continuity as compared with other sectors of society.

2.5.3.5 *Population developments*

Population development and especially reproduction (birth rate) is an important factor in the causation of school concentration because it affects the volume of the population demanding education.

This factor is mentioned in several sources. Bard mentions population decline in *rural America during the 1970's* as a result of economic decline as an important factor in closing schools (Lasley cited in Bard c.s. 2005, p.3). The German 'neue Bundesländer' are suffering from a combination of a low birth rate and out migration of the fertile younger generation, leading to a systematic reduction of the number of schools. The Land Mecklenburg-Vorpommern is suffering most from this development. The site of its Ministry of Education (Kultusministerium) mentions a spectacular reduction in the number of pupils entering secondary education by about 65% from 1996 to 2005 (www.kultus-mv.de , Fragen zur Schulentwicklungsplanung, retrieved 27-08-07).

In the Netherlands declining birth rates and increasing numbers of schools during the 1980's and 1990's were at that time motives for efforts to reduce or at least stabilize the number of schools. This in order to control the cost per pupil (Netherlands Institute ... 1989, p. 14). See our chapter 3.

For past developments the following hypothesis is developed.

Hypothesis 2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration.

This hypothesis will be discussed in chapter 3. Data concerning population development are presented in the present subsection.

In the 21st century there is a certain tendency towards decline of the Dutch population, but only a very modest one. The 'Shrink and space' study of the National Physical Planning Agency (Ruimtelijk Planbureau) predicted a considerable decline only for some peripheral areas, a number of Municipalities in the extreme northeast, southeast and southwest (Van Dam etc. 2006, pp. 7 - 9). These areas have populations with larger cohorts in the categories above 50 years than in those under 20, due to a historic out-migration of youngsters. See figure 2.7.

The authors stated explicitly, that *these developments as such '... have only a modest impact on the set of local facilities. ...The composition of this set is affected predominantly by consumer behaviour and exploitative considerations* (Van Dam etc. 2006, p.10).

Two specific developments are of relevance though, deserving attention both separately and in combination, namely differential birth rates and selective migration, child mortality being very low in western societies.

The **birth rate**, to be defined as the number of living births per 1000 inhabitants, is the result of the share of the fertile age category in the population pyramid and of the number of children per female. This number may vary between population categories on the basis of tradition and religion. Both native orthodox Protestant Christian and allochtonous (foreign born) Islamic people may have large families.

The first to introduce systematic birth control in the Netherlands, in the sense of reducing the number of children, were the 'gentleman-farmers' of the marine clay polders in the northern Province of Groningen.

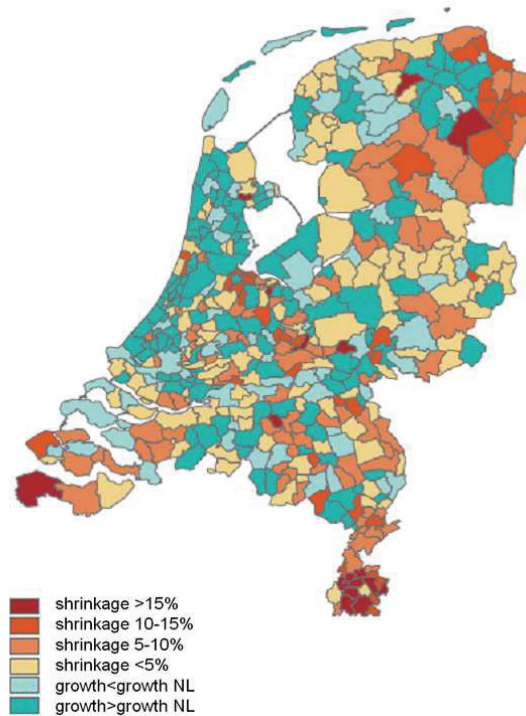


Figure 2.8 Forecast of Dutch population development 2005 – 2025 per Municipality. Growth NL 3.86% (Source: Van Dam etc. 2006, p. 51).

These farmers did so from about 1900 with the explicit purpose to protect their heritage from dividing between numerous descendants. The regional middle class and after that the lower class copied their behaviour. This behaviour, which the rural sociologist professor Hofstee called one of the manifestations of a ‘modern-dynamic culture pattern’ spread gradually over the entire country (Hofstee 1962).

Figure 2.8 shows the general development of the Total Fertility Rate (the total number of children per woman) of year cohorts of women born from 1935 onwards with estimates and alternative scenario’s for those born after about 1970. For these women the TFR is not fully known because they are fertile still. An ongoing steep downward trend marks the women born before 1950. At present the TFR is more or less stable at 1.75, being considerably below the replacement rate. It implies a future population decline. This is studied extensively in Van Dam ... 2007.

Selective migration of these categories may cause shifts in the birth rates in regions or even in town quarters. There are two supplementary types of shifts, namely a movement of native people to suburbia and a concentration of allochtonous people to older town quarters. These developments are analysed in several demographic studies. See Dagevos etc. (2003), De Vries etc. (2006), Van Dam etc. (2006) and Uunk (2002).

Suburbanisation of the 'white population' is largely a 'natural' process of people with higher incomes seeking new and more spacious homes, being constructed at the outskirts of the cities or in settlements at a distance from those. In new town quarters, like the 'VINEX-areas' created according to the Fourth Report on Physical Planning (see Needham and Dekker, 1988), there is an influx of young families causing a rapidly increasing demand for education in these quarters, which is reduced considerably after 10 to 15 years. For the city of The Hague new town quarters of Ypenburg and Leidschenveen for instance, a peak period of 8 years was predicted for primary schools. '... it is most likely that between 2005 and 2013 (*peak phase*) more classrooms will be needed than is being planned for.' (City of The Hague 2002, p.25).

This and the uncertainty about the distribution of demand about different denominations may inspire city governments to reduce the number of schools to those needed in the end and to create concentrations of schools of different denominations at certain locations. This will shown to be the case indeed in chapter 5.

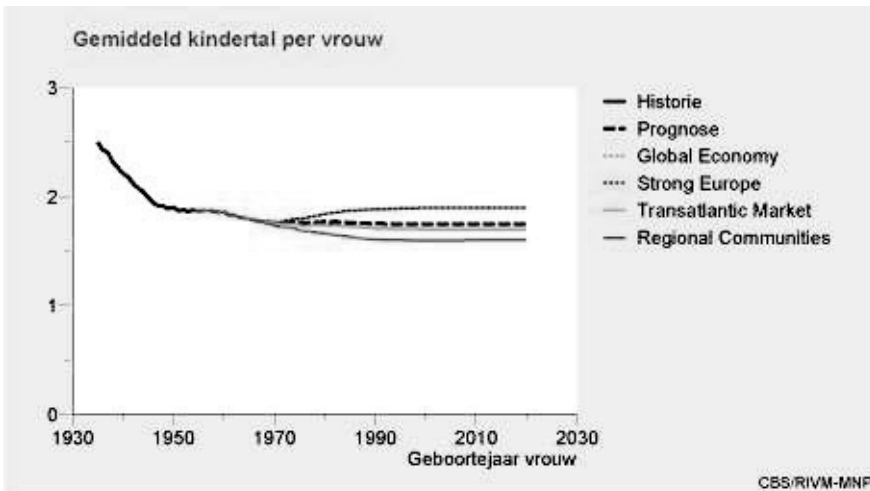


Figure 2.9 Total Fertility Rate (TFR) for Dutch women born after 1930: historical development and alternative European futures. Source: CBS/RIVM-MNP. (retrieved from www.mnp.nl/dossiers/bevolking/content/DemografieGeboorte.html, 21-11-07).

A regional differentiation of birth rates will be caused by differences in the share of the fertile part of the population and in the ethnical composition of this population, assuming that cultural differences between regions have disappeared.

The category of the 0 – 14 years old is represented relatively strongly in settlements with up to 20.000 inhabitants (about 20% of their populations). For settlements with more than 100.000 inhabitants this is only 17 %.

People with a foreign passport, originating from outside the EU, constitute only 1 % of the populations of settlements with less than 10.000 inhabitants and around 2 % of those with more than 200.000 inhabitants (Vliegen and Van Leeuwen, 2005, pp. 16, 17).

This is an indication of a concentration of people of allochtonous descent in the large cities.

Hypothesis 2.5.8. In new town quarters cities try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.

Concentration of ethnic minorities in old town quarters is perhaps a slightly less ‘natural’ process, in the sense that an increasing concentration of minorities in those quarters may be reason for native residents to leave these, as they are not unlikely to do with ‘black schools’.

In a city like Rotterdam about 60% of the pupils is of allochthonous origin. About 50% of the schools count over 70% of those pupils. About 20% of the schools is either ‘too white’ (18 schools) or ‘too black’ (12 schools). Similar figures are found in Amsterdam (Anti discrimination site, citing local studies (<http://www.art.nl> retrieved 3-12-07).

Yet these developments are complex, which makes it difficult to formulate hypotheses that are more than self evident. Segregation of ethnic minorities is an ongoing process, as is demonstrated in Nicolaas (2006). In the four largest cities, Amsterdam, Rotterdam, The Hague and Utrecht, their share in the population has grown from one quarter to one third in the decade from 1995 to 2005 (Nicolaas p. 82). The respective minorities are distributed unevenly about the four cities, the Moroccans being represented relatively strongly in Amsterdam and the Turkish in Rotterdam. It is the result of both the different job history of these minorities and the attraction of concentrations of compatriots.

Historical and future oriented perspectives make developments even more complex.

In the 20th century town centres have been largely depopulated, partly by expansion of commercial activities and partly by reconstruction of derelict housing estates, followed sometimes by a ‘gentrification’ in monumental districts like the Stokstraat Quarter of the city of Maastricht.

In the 21st century post war housing estates have developed into concentrations of poor people with deviant behaviour of different kinds, largely people of foreign origin. Several cities developed policies to radically reconstruct these estates to spread these people about surrounding areas (if possible) and to attract more well-to-do inhabitants. The city of Schiedam for instance does so with its Nieuwland quarter.

In old town quarters depopulation reduced the number of schools in the past.

2.5.3.6 Economic developments and public finance

Acute problems for education are caused by a combination of previous factors and an economic slump. In the case of Mecklenburg-Vorpommern, mentioned in subsection 2.5.3.5, economic perspectives are far from positive. This has an impact on government finance, which makes a growing inefficiency of education (fewer children educated in a stable or even growing number of schools) quite problematic.

Such is the present situation in Mecklenburg as highlighted by Gutsche and Ruemenapp in their case study of the ‘mecklenburgische Seenplatte (G&R 2009, pp. 129-253).

Such was the situation in the Netherlands during the 1980’s. In 1980 and 1981 it suffered from an economic crisis. The general development of budgetary problems during the nineteen-seventies and -eighties is described on a site of the ‘parliamentary documentation centre’ (Parlementair documentatiecentrum, www.parlement.com – parlement en politiek – historisch overzicht cijfers kabinetten).

The Dutch Institute for Social Research, SCP, studied the development of the relationship between government spending and demographic developments on assignment of the Minister of Education and Sciences in 1984 (Goudriaan a.o.). It concluded that the cost of education would decline steadily towards 2030. Yet continuing problems in government finance incited further studies, especially Blank and Boef (1990), School and scale. These will be discussed in chapter 3.

Hypothesis 2.5.9. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become acute problems and is therefore a most important factor in school (re)concentration.

This hypothesis can be confronted with the general analysis of school concentration in the Province of Friesland (chapter 5). The Dongeradeel Municipality case study will prove to be of special value, because systematic school closures for reasons of (local) government finance can be identified for the 1880's and 1930's.

The city of Zwijndrecht case study, presented in the same chapter, will show the impact of a radical school (institution) concentration with a focus on the 1990's.

2.5.3.7 Transport developments

Transport systems (facilities, services and vehicles) and their expansion have shown a rapid development during the twentieth century. The introduction of regional tramway networks around 1900 supported the participation in advanced secondary education as mentioned in chapter 3. At that time the bicycle and its own road network were hardly developed. The major transport mode was walking and school provision was based on that fact. See Knippenberg en de Pater 1988.

This study is focusing on school concentration during the previous decades, especially the period after 1980. Transport systems in the Netherlands, both in terms of facilities and services, were fully developed by that time.

There was a railway network which still served the larger settlements. Hardly any city with over 30.000 inhabitants was disserved. Relatively new cities like Drachten and Uden are amongst the few, served by a tramway and by a line built for international traffic respectively. For both cities new services are being considered in fact in order to relieve the congested road connections with the regional capitals of Groningen and 's-Hertogenbosch respectively.

The road system was basically full grown in 1980 with networks for national, regional and local transport. Unpaved roads were to be found only in agricultural land and in natural areas. Just about every settlement with more than a few hundred inhabitants was served by a more or less standardized public road transport with a far more elaborated network than the tramways had before. Within built up areas practically all streets were provided with sidewalks.

It implied that children could walk to school on better roads than ever before, mostly separated from motorized traffic. Cycling to school had become attractive as well, because of the general bicycle ownership and the development of lighter and faster bikes.

The most conspicuous development since is the spectacular continuance of the growth in car ownership and car use. Especially the general introduction of a second household car made it possible to bring children to school by car. This leads to hypothesis 2.5.10.

We found no evidence that the increased quality of transport was used as an argument for school closures.

Hypothesis 2.5.10. The development of the road system and the parallel development of car ownership make transport to school so easy that proximity to school is hardly an argument for school choice anymore. This hypothesis is not directly related to school concentration. It will be discussed in the chapter on school choice (chapter 8).

There is a continuing reason for concern about school travel though because the increase in car traffic and the related decrease of traffic safety and the perhaps not unrelated decrease of security. These may constitute additional arguments for car use and for the use of public transport for longer distances in secondary education.

Hypothesis 2.5.11. The increase in car traffic has made cycling to schools in secondary education more dangerous and has therefore changed the modal split radically in favour of public transport. Like the previous hypothesis this one is not directly related to school concentration. It will be discussed in the chapter on school travel behaviour (chapter 9).

There are however compensating developments in the road system. The concern about 'traffic livability' of urban areas and about traffic safety of cycling inside and outside these areas, led to the following initiatives:

- studies into the '*limitation of car use*' (Ruitenberg 1976, for the Dutch Institute ..),
- the development of the famous '*woonerf*'-concept, to be translated as 'living yard' (Interdepartmental working party ... 1974). Donald Appleyard portrayed the City of Delft origins of the principle in his 'Liveable streets' (1981).
- large scale plans for *bicycle facilities* along main streets and roads. Initiatives in cities started in the nineteen-seventies, in the Dutch Residency of The Hague in 1976 (Gemeente Den Haag 1984). The Transport Academy Bachelor's thesis of Nederveen (1987) demonstrates the policy development of the regional government of Groningen.

These considerations make a hypothesis contrasting with the previous two ones challenging. These alternative hypotheses will be investigated in the chapter on school travel (chapter 9).

Hypothesis 2.5.12. Policies in favour of soft traffic modes cause the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and to be hardly present in the modal split in the journey to secondary schools.

2.6 Three types of actors and their options

2.6.1 Introduction

Three types of actors are relevant for the process of school concentration, namely governments, school organizations and consumers.

The relationships between different levels of government and school organizations and locations have been described in section 2.4 and depicted in figure 2.2.

Government regulates just about everything in the school system from curricula via administration to locations and facilities.

In the Netherlands this is a role especially of national government. It regulates consumer behaviour as well, in the sense that it prescribes legally a learning duty and even a school duty, to be defined as the duty to go to school during a certain period of life and certain periods of the year, the week and the day.

Local government has an important role in both the provision of school locations and the supervision of the school duty in primary and secondary education, the sectors studied in this thesis.

Government finances the full education system, making it available (almost) for free in primary education and secondary education. This does not imply automatically that central government bears full responsibility, nor that government is responsible for the daily organization and management of education. There is a specific division of competences and responsibilities between national, regional and local governments (see 2.6.3).

School organizations, being the formal authorities of school institutions (maybe local government) and these institutions themselves, are responsible for general management of the supply of curricula and the facilities needed for that, like staff and buildings. They may have possibilities in affecting the scale and location of these facilities (see 2.6.4).

The *consumer* or those representing him may have a certain influence, either politically (like through formal participation bodies), or simply by moving to a different location, or even by founding a new school (see 2.6.5).

Central in the relationships between these categories of actors is the degree of '*freedom of education*', essentially a liberal attitude towards education except for a learning duty. In the

USA there is no school duty. Parents may teach their own children, but their progress has to be tested regularly, which requires a set of goals concerning abilities. In the Netherlands however there is a school duty. Private schools may be founded though without government subsidy and alternative teaching methods may be applied anywhere as long as the children show sufficient progress. If not, they are regarded not to fulfil their learning duty.

For our purpose, the study of school concentration and school travel, the *freedom of education* includes *the freedom of citizens to found schools according to their own taste and, for the consumer, the freedom to choose between schools irrespective of formal catchment areas*.

The specific character of the educational freedom in the Dutch school system is of paramount importance for understanding its properties, including its spatial and travel properties. This is reason why the freedom of education will be given special attention in the next subsection (2.6.2).

In chapter 8, on school choice, the influence of teaching methods on school choice is studied.

2.6.2 The freedom of education as a central factor

The freedom within the school system may exist in several respects. The largest freedom is present where different school administrations offer curricula locally with government subsidy, and where the children or rather their parents may choose between different schools, even between those of the same brands, for instance Roman-Catholic. Both types of freedom will lead to school concentration for the interested publics and therefore to a general school concentration for the respective school networks. The individual school will need a larger catchment area to attract a sufficient number of pupils. The individual pupil will have to travel further to reach its favoured school.

Free supply is not unusual in Western European countries. In an exploratory study we found it in the UK, in the Netherlands, in Belgium and, to a lesser degree, in the German Bundesland of Niedersachsen (De Boer and van Goeverden, 2007). Independent, usually religious schools are subsidised in all countries, in the Netherlands completely, in the UK and Flanders with modest restrictions. In the UK the governing body of a 'voluntary aided school' (mostly Church of England or Roman-Catholic) '...must usually pay at least 10% of capital work' (retrieved from www.teachernet.gov.uk). In Niedersachsen, where public schools are formally religious in character ('allgemeinchristlich', general Christian), there is a restriction, which is prohibitive in fact. Those wishing to found a Muslim school for instance, will have to pay the first three years of education themselves.

In the Landkreis (county) of Aurich, subject of a general case study by the author, there were only government schools until 2006. Since then the 'Freie Waldorfschule Ost-Friesland' is starting up at Moordorf. This is a 'anthroposophic' school, sometimes called 'Steiner school' after the founder of the movement. One finds the largest numbers in Germany (208), in the USA (133, united in the AWSNA) and in the Netherlands respectively (94). www.waldorfschule.info/waldorfpaedagogik/schulen, ... retrieved 30-07-07).

This type of school is called a Free school ('Vrije school') in the Netherlands, which indicates an independent school in Flanders! The class of independent schools is called a particular ('bijzonder') in the Netherlands, which indicates the class of special schools in Flanders, called 'Sonderschulen' in Germany.

In the *Netherlands* the freedom of education was guaranteed in the Constitution of 1848, the learning/school duty was introduced in 1900 and equal financial treatment was achieved in 1919, when the Liberals could reign no longer without support from religious parties.

Free choice for consumers is more or less a consequence of a free school supply, because parents wanting their child to visit a certain school of one network may threaten to send it to a

school of a second network in case of refusal. As a consequence only one of the countries studied, Niedersachsen, uses school districts, fixed school catchment areas. In a second Bundesland, Nordrhein-Westfalen, with more competition from Roman-Catholic schools, free school choice was introduced in 2007.

Of course the school district restricts school travel distances, but it may enhance school travel safety too, by using main roads as catchment borders, as practised in the city of Aurich (information county office Landkreis Aurich).

Freedom is usually restricted, in the sense that religious (or rather non-public) schools may deny access to children without the correct religious background. This is most likely to happen where these schools are popular, because of their supposed quality, as is the case with the secondary schools of the Church of England. In the Netherlands too school choice is based sooner on 'school climate' than on the (non)religious colour of a school, especially with regard to the dominant Public, general Protestant and Roman-Catholic school networks (de Boer and Blijie 2006).

In England school districts were explicitly abolished to stimulate competition and thereby quality. To support this process, school quality reports are published, like in the Netherlands. The consumers' search for quality is perhaps more developed in the former country, with the risk of a division between thriving schools for the well-to-do and dwindling schools for the poor. Therefore the process of school choice is formalised to give the poor and the less popular schools better chances. There is a tendency in both Flanders and the Netherlands to develop similar procedures in order to create 'equal opportunities'. This motive is the driving force after efforts to actively distribute disadvantaged children of ethnic minorities about 'white' schools.

Hypothesis 2.6.1. The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.

This impact is no doubt reinforced by the freedom of school choice, which makes it impossible to use school districts since not all customers will choose for the nearest school of the preferred kind. Roman-Catholic schools for instance have to recruit pupils from a larger area, because of competition from Public schools. Competition from other Roman-Catholic schools demands an even larger catchment area.

This hypothesis can be tested only convincingly by comparison of areas with and without freedom of education. Moreover this factor might be compensated for by a reduced school size (*ceteris paribus* criterion difficult to satisfy). One would have to compare regions with a similar settlement pattern and a different diversity in supply. The Frisian case studies (chapter 5) and the Zwijndrecht case study in chapter 6 will be scrutinised for evidence. The primary school choice model developed for Zwijndrecht in chapter 8 will show that not all children choose for the closest school of the chosen denomination.

2.6.3 Government control, shifting from central directives to local responsibilities

Government is the most important category of actors in education, because it may control all essential characteristics of the education system, such as school duty, content of curricula, location planning and finance.

Theoretically all aspects may be in direct control of central government, prescribing activities in detail, making the means of education (staff, curriculum texts and edifices) directly available and guarding quality and participation with possibilities for immediate interference.

Demands on locations, especially those on the size of sporting facilities, are mentioned as a major cause of school relocation (sprawl) in the USA (Beaumont and Pianca, 2000). There is a tendency though to relax central control while being both ineffective and inefficient, and to delegate authority as much as possible to local government and to independent school authorities and to the schools (institutions) themselves: *the autonomous school* (Great Britain), 'eigenverantwortliche Schule' (Germany). See Doeber (2001), Dutch Education Council (2001) and Whitty (2005) for Germany, The Netherlands and Britain respectively.

In the Netherlands, central government tends to condition behaviour more than prescribe it in detail.

In the *past*, school administrations and individual schools were subjected to detailed control. Local government was in fact the school administration for public education, while having a role in the supervision of the school duty, in school location policies (through physical planning), and in the financing of material means for education. Of course this created tensions with the local authorities of religion based schools.

At present, national government is financing the *cost of educating and daily maintenance of school buildings per school (institution)* on a lump sum basis in relation to the number of pupils. It may close a school (institution) on the basis of insufficient pupil numbers or insufficient education quality. National government enhanced the creation of school authorities with a larger geographic span of control, having more schools, more locations and more pupils. This is required for the quality and efficiency of management. One special and probably quite effective measure is allowing continuation of schools with insufficient pupil numbers when the average school size is considerably higher than the minimum norm.

Local government is to provide *school locations and buildings and it is responsible for structural maintenance*. It receives the means for this task as a standard fee from the national 'Municipal Fund' (Gemeentefonds), without being obliged to spend it entirely for school locations; thus a general fee instead of a dedicated fee. It is not unlikely to try to minimize the use of these funds by reducing the number of locations, especially when the buildings are relatively old and in need of substantial improvement. Local government may even try to agglomerate several institutions and curricula serving roughly the same area at one location and within one complex, reducing cost as much as possible. It may find an argument in the functioning of the 'freedom of education' for presenting the available opportunities at an equal distance.

Relocation of a school requires common agreement between Municipality and school though and therefore the school must be convinced by the improvement of quality.

Given the above discussions, the following hypotheses seem plausible.

Hypothesis 2.6.2. In a school system with strong central government control, school concentration by reducing the number of school locations is an attractive instrument for reducing cost, but it is vulnerable to collective action causing parliamentary rejection even if access is guaranteed by school transport.

Hypothesis 2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economising on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.

Hypothesis 2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.

The first and second of these hypotheses will be confronted with evidence from school closure operations in the Netherlands. These operations will show to have been failures when school locations came under direct fire and to be successful later on when the impact on locations was largely indirect (chapters 3 to 6). Unlike other countries school transport was not used as an instrument to make closure acceptable (chapter 5).

The third and most important hypothesis will be tested thoroughly, predominantly by the quantitative case study into the 'school islands', school locations accommodating parallel curricula of more than one institution, which will prove to have a long standing tradition in the Netherlands (chapter 6).

2.6.4 School organisations

In the field of education one may find a range of organizations. We are interested only in those who have a formal relationship with school locations. These are the school authorities, formally responsible for education and the school institutions, licensed to supply one or more curricula. Therefore unions of staff and unions of authorities will be disregarded. These rather have a political function.

Traditionally *school authorities in public education* were the Municipalities. Until about 1970, many of these were so small that these controlled only one school and perhaps no one at all. Massive amalgamations of these rural Municipalities automatically created larger school authorities. The double role of the Municipalities in the control of education and the introduction of budgetary autonomy led to public school administrations covering several Municipalities as will be shown in the Frisian case studies (see chapter 5).

Non public education had an even more modest geographical span of control, just one village school or just a few schools in a town quarter. The Dongeradeel case study in chapter 5 will demonstrate this. In urban areas a gradual amalgamation of authorities took place, probably for reasons of a coordinated policy in the competition with Public education and the confrontation with local government. Now the non-public school authorities may cover an entire Province as is the case with two of these in the Province of Friesland, namely the Roman-Catholic one and the protestant Liberated-Reformed one.

A question is how these changes are to be evaluated.

The University of Oldenburg (Bundesland Niedersachsen) organised a seminar (Fachtagung) on the 'eigenverantwortliche Schule' in June 2006. German schools being under direct government control are dreaming of this autonomy. A German speaker, prof. Zymek (Uni Münster) explained that central commands were largely ignored in daily education practice. The author was invited to give a presentation on the disadvantages of school autonomy as shown in the more advanced Dutch situation. The complexity of organisation and management and the financial risks of autonomous administration demand the creation of large regional administrative bodies for self-government. These have to reduce the autonomy of the individual schools for reasons of cost and reducing risk. Distant bureaucratic control is not unlikely to be replaced with direct interactive interference.

One might hypothesize that larger school administrations tend to create larger schools and school locations for reasons of efficiency, because these operate at a distance from the local school. This is however unlikely, on the one hand because they were created in rural areas in order to save school locations (see chapter 5) and on the other hand because they are suffering from competition by other authorities in urban areas. Even the agglomeration of schools on school islands (chapter 6) is not self evident, because an individual and relatively isolated

location may attract a larger share of demand from its direct environment. Therefore there may be a certain reluctance to participate in common locations.

The individual *school institutions* might wish to house their pupils at one location only. This may imply that they tend to give up isolated locations (former institutions without their own budget) if there is no competition from a school with a different signature.

These considerations inspire the following hypotheses.

Hypothesis 2.6.5. The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.

Hypothesis 2.6.6. Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.

These hypotheses will be tested with the evidence of school closures in the Frisian case studies (chapter 5).

2.6.5 Consumer behaviour to be studied separately

In the preceding sections, a series of hypotheses concerning consumer behaviour were developed; nine altogether. These regard especially *school choice and travel mode choice*. Both are the *subject of separate chapters*, giving consumer behaviour appropriate attention (chapters eight and nine). The complexity of these types of behaviour will be done justice by analyses and modelling efforts using several explanatory factors. Certain factors of relevance for school concentration will be difficult to include though. This will be explained briefly.

The customer of a school has reasons for choosing for that school. Maybe it is simply the closest one, minimum quality being guaranteed. Maybe it is the village school, an essential element in rural life. Maybe the character and quality of education were motives for choice.

A choice on the latter type of basis is potentially detrimental for the local school.

One may hypothesize that school locations are closed because locals are choosing for a more distant school. Customers may even accelerate decline by expecting closure and changing to a different one.

One may hypothesize too that schools can be founded or be maintained by citizens' initiatives recruiting pupils for the school. One may find recruitment especially in the case of urban schools suffering from 'white flight' and in the case of non-western religious school foundations. In the latter cases it seems to be often insufficiently effective, in the former case it might be insufficiently sustainable because of cultural differences.

The literature on school closures gives hardly any clues for testing hypotheses like these. The author's case studies yielded only sporadic evidence of consumer actions, because few local actors were interviewed.

Local amalgamations of schools of different signature (found in case studies) resulting in an 'all village school' constitute an indication.

Hypothesis 2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination.

This hypothesis will be confronted with data from the Frisian case study (chapter 5).

2.7 The result of this conceptual exercise

2.7.1 Concepts

In this chapter we have defined and elaborated the concepts which are essential for analysing and explaining school concentration.

The **concept of school** has been clarified by identifying the different meanings and indicating those which are relevant for spatial developments: institution, curriculum and location.

The **concept of concentration** has been clarified too, and different types of concentration have been identified, being those which have travel implications (locations and curricula) and those which may control the spatial distribution of locations and curricula (school authorities and school institutions). The latter type is called 'geographical concentration of control'.

The **different shapes concentration may assume** have been identified. These may range from a reduction of the number of settlements with a school location to an increase of the number of identical curricula at certain locations.

The **motives for school concentration** as a distinct policy were defined to be both cost reduction and quality improvement, maybe resulting in more quality for the same money.

Autonomous forces may enhance school concentration. Six different potential forces have been identified and some of these have been quantified. Transport is bound to have an important enabling function, which will be quantified in later chapters.

School concentration is not an autonomous process. **It is the result of actions of different actors, given their freedom of action.** These relevant actors were identified and so was the relative freedom of education.

2.7.2 Applying the conceptual framework and testing hypotheses

In this chapter a set of 23 hypotheses were developed. For each hypothesis it was indicated in which chapter(s) it will be tested. In some cases this will extend to more than one chapter. This implies that the set of hypotheses is not dictating the structure of the thesis.

The full list is added to this subsection as table 2.1. The individual hypotheses are numbered following the order of development in successive sections.

An understanding of the school system and its development is required for an adequate analysis of school concentration. The range of curricula may be increased or, to the contrary, reduced, following a perceived need for specialized education, versus a need for a general, more flexible education. A solution for this dilemma in education may be clustering of curricula within school institutions or even locations to ease the change of a pupil from one curriculum to another one.

Chapter 3 is dedicated to *the historical development of the Dutch school system*. It discusses the changes in curricula (education proper) and in supply as a result of the (religious) freedom of education, of population development and of efforts to economise. These efforts may take different shapes: from transferring budgetary responsibilities, via stimulating larger school organisations to raising minimum pupil standards for the provision of curricula.

This chapter is focused on the general organizational school concentration, concerning especially school institutions.

Chapters 4 to 6 are more oriented towards *geographical school concentration*.

Chapter 4, on *secondary education*, presents graphically the different types of physical concentration. In a number of case studies the incidence of these will be assessed for two relatively rural Provinces (Groningen and Friesland) and for a more urbanized region in the Province of South Holland, the environment of the city of Gorinchem. These cases will show that a mixture of concentration and de-concentration tendencies can be found, especially in the Gorinchem region.

Chapter 5, on *regional school concentration in primary education*, presents more extensive case studies, both in terms of the number of schools involved and the period studied. Chapter 6, discusses *local school concentration in primary education, focusing on the South-Holland Drechsteden region*. For one of the most remarkable concentration phenomena, clustering identical curricula at one location, a national study was done.

The *outcomes of the concentration studies* in terms of distance will be discussed in the *chapter on reasonable distance (chapter 7)*.

Table 2.1 Hypotheses concerning school concentration to be discussed in chapters three to six. The numbers refer to the sections where the respective hypotheses originate from.

2.4.1. A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.
2.4.2. A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive.
2.5.1. Technological developments in agriculture, especially mechanisation, have caused a strong decline of employment at farms. This has caused a reduction of demand for basic agricultural education and, through that, a strong school concentration, being a reduction of the number of locations for this type of education.
2.5.2. The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied (selective school de-concentration).
2.5.3. The decreasing participation in less advanced secondary education causes a decrease of the number of locations where these are supplied and even a reduction of the number of school locations (selective school concentration).
2.5.4. School locations with less advanced secondary education curricula like MAVO will survive by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.
2.5.6. Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.
2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration.
2.5.8. In new town quarters cities try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.
2.5.9. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become acute problems and is therefore a most important factor in school (re)concentration.
2.5.10. The development of the road system and the parallel development of car ownership make transport to school so easy that proximity to school is hardly an argument for school choice anymore.
2.5.11. The increase in car traffic has made cycling to schools in secondary education more dangerous and has therefore changed the modal split radically in favour of public transport.
2.5.12. Policies in favour of soft traffic modes cause the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and to be hardly present in the modal split in the journey to secondary schools.
2.6.1. The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.
2.6.2. In a school system with strong central government control, school concentration by reducing the number of school locations is an attractive instrument for reducing cost, but it is vulnerable to collective action causing parliamentary rejection even if access is guaranteed by school transport.
2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economising on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.

<i>2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.</i>
<i>2.6.5. The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i>
<i>2.6.6. Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.</i>
<i>2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination.</i>

Chapter 3.

Historical development of the Dutch school system and school concentration

3.1 Introduction

3.1.1 Purpose of this chapter

In order to understand the changes in the spatial distribution of education, one must have a basic insight into the past developments of the school system. These developments are likely to be a response to tendencies in society (the education required) and in school choice (the education in demand). Structural changes in curricula, especially integration of hitherto separate ones may induce physical school concentration developments or even active policies. We will focus on the structure of the school system and on its organisation, in terms of founding and financing schools.

In this chapter the non-physical school concentration, that is *the development of the relative number of authorities and of school institutions will be related to school system changes and the change in government control*, which may show a degree of concentration as well. In the chapters four to six the indirect relationship with physical school concentration will be studied.

3.1.2 Approach

The content is mainly a dedicated summary of relevant literature, complemented by statistical information.

The most important sources utilised are Dodde (1991) and Dodde and Leune (1995). Where no specific references are given especially Dodde's history of education in the City of Rotterdam is used.

Since the historical analysis given in these sources is rather general in character, a range of other sources are used as well, especially to cover the history of particular and agricultural education.

Our *analysis* is concentrated on primary and secondary education because these are the dominant subjects of school concentration and school travel studies to be presented in the following chapters. Cases in the Province of Friesland are often used for the illustration of developments, because this area is well suited for our purposes.

Our analysis will partly be guided by three of the hypotheses introduced in the preceding chapter, see table 3.1. The general hypothesis number 2.5.2, postulating the decline of religiously oriented schools is discussed only shortly in this chapter, and in more detail in the succession of chapters on school concentration in primary and secondary education.

The *general system tendencies* can be described as the moulding of a school system that is both more coherent and more diversified, and a public taste that tends to prefer general education above vocational training.

The *general discussions* are about the religious foundations of education, about strengthening vocational education and about the integration of deviant children in mainstream education.

The *result of the analysis* will be a rather surprising picture of a school landscape with a large degree of *continuity in primary education* and with a deeply rooted system of government-financed competing public and religious schools of ever larger diversity, resulting in a high school density.

In *secondary education* the school landscape is developing surprisingly differently.

Here one finds *discontinuity* in school type, in authority, in location patterns, in diversity and in competition.

Table 3.1 Hypotheses discussed per section of the chapter on the Dutch school system. The numbers of the hypotheses refer to sections of chapter 2, where these were developed (2.5.1 = section 2.5).

Hypotheses	Sections
Hyp. 2.5.1. Technological developments in agriculture, especially mechanisation leading to a strong decline of employment at farms, have caused a reduction of demand for basic agricultural education and, through that, a strong school concentration being a reduction of the number of locations for this type of education	3.4.2.
Hyp. 2.5.5. Secularization causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.	3.8
Hyp. 2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration	3.5.1

The consequent *effects of these developments on physical school concentration are bound to be contrasting*, namely a continuing high spatial density in primary education and a much reduced density in secondary education. Both may be compensated by location policies though, for better and for worse, as will be demonstrated for secondary education in chapter 4 and analysed in more detail for primary education in chapter 6.

There is considerable confusion about school numbers, perhaps because of these location policies. Recent counts of the most important research institutes, being the national statistical office CBS and the national institute for social research SCP show differences of about 10% (see subsections 3.6.4 and 3.6.5). It is one of the reasons to do our empirical studies.

The consequent *impacts on school travel are dependent not only on physical school concentration but on the development of the transport system and vehicle ownership as well*. General comments on school travel will be added to all conclusions on school concentration in this chapter. The historical development tends to be one from walking only, via biking to motorised transport as well, be it private, dedicated or public. Yet this trend developed much less in the Netherlands than in other countries as will be shown in chapters 7 (reasonable distance) and 9, on school travel behaviour.

3.1.3 Outline

The historical development of the school system is described in a chronological order.

In relatively short sections the education in the Middle Ages, dominated by the church, and under the Republic of the Seven United Netherlands, with a prominent role of city government, are presented (sections 3.2 and 3.3).

The period from the French occupation (1795 to 1813) to the German occupation (1940 - 1945) witnessed the development of a national system of diversified education with a primary school and a range of secondary school types, both oriented to general education and vocational training. The freedom of education was introduced in 1848 and it was fully developed by 1919 (section 3.4).

The post war era (from 1945 until 2008) is divided into two periods, discussing reforms before and after 1990. Reforms before 1990 were especially aiming at achieving a more productive and efficient general education (3.5). Reforms after 1990 were aiming more at 'generalising' basic vocational training, integrating this in one system for 'basic education' (3.6). General conclusions are presented in section 3.7. Change will not stop after the first decade of the third millennium of course (3.8).

3.2 School education in the Middle Ages

Institutionalized education in The Netherlands after the Roman age (until about 300 AD) was initiated by the Christian Church. First it created its vocational training by *cathedral schools and monastery schools*. The earliest proof one finds is that of the school of the Abbey of Egmont (10th century), most likely because of its regional fame.

Both types of schools taught religion and the Latin language extensively. Cathedral schools were to train priests, but conventual schools were to train both for religious activities and for agricultural expedience in a wide sense, including diking and drainage.

Christianisation of the common people proved to be difficult. To promote the Christian religion, *parish schools* were introduced widely in the 13th century. These were to teach religion and Latin to children of 7 to 10 years old, delivering choristers for instance. Although connected to the church, control over these schools was secular, i.e. in the hands of the landowner, in the case of the County of Holland, the count himself.

Count William the 3rd bestows the Rotterdam parochial school in 1328 on Pieter Marre for his lifetime as a source of income, the school-fees. This is corrected in the same year with the statement that such a favour can be withdrawn at any time. Indeed it is withdrawn in 1337. Until that moment he was 'scholaster', owner of the parish school (Dodde, 1991, pp. 29, 30).

The *cities* disliked the commercial character of the schools, desiring good quality of education, which was not guaranteed under this system. By 1400 they had bought just about all the parochial schools within their limits, changing private religious education in public religious education, The Rotterdam school was bought in 1351 (Dodde p. 30).

These city schools developed into *Latin schools*, still very much oriented towards religious education (the central subject being singing), although these prepared for or even overlapped with university education in head classes, the *secunda* and *prima*.

The best singers amongst the students were selected to be choristers, a tradition still found in Oxford and Cambridge with their range of schools, called colleges.

In the Netherlands the first university was founded as late as 1425 at the city of Leuven (now Belgium).

In the old city one finds a series of old college buildings, usually having belonged to monasteries.

The *secunda* and *prima* were found only in a few Dutch towns, amongst which Leeuwarden, the capital of the Province of Friesland (Dodde, p. 40).

The development of the towns, especially during the 14th century, and the inherent division of labour led to a differentiation in education.

The foundation was general Christian education still. For the youngest of 8 and 9 years old reading and writing in Dutch was taught at the *Dutch school* followed by the *Latin school*.

Well-to-do parents disliked the Latin school because of its church orientation and the large classes. They wanted a more intellectual training and founded private '*by-schools*', still teaching Latin but more classical in orientation and with little attention for (church) singing.

Everywhere city governments sought to close these schools, except those for small children (singing, reading religious texts). By-schools for the older children affected the position of the official ones, yielding fewer fees. The fees were a necessary supplement at the modest allowance of the rector. The cities failed to terminate the movement though (Dodde, p.53). Private schools became nearly extinct only at the end of the nineteenth century, when all schools and not only the subsidized ones had to meet higher demands and the cost rose considerably as a consequence.

The revolution in school building is demonstrated by a comparison of school buildings constructed before 1878 with those built afterwards. The former Public school of the village of Foudgum (Municipality of Dongeradeel, Province of Friesland) for instance looks like a modest dwelling. The school was closed in 1882 because the cost of constructing a new building conform recent demands were thought to be too high. The former Public school of Nes, in the same Municipality, was constructed in 1883. It got large windows and high ceilings, to create a better climate in the two classrooms. The school was closed in 1983, because it had too few pupils to transform this lower school into a basic school. See chapter 5 for school development in the area. A picture of the Foudgum school and a drawing for the type built in Nes and elsewhere can be found in Tolsma (2007). See for the general development of school architecture Boersma and Verstegen, 1997

Textbox 3.1. Village schools like modest dwellings

The increasing division of labour caused a demand for vocational training. Two types were developed, that is the *French school* for trade and *Guild practical training* for the crafts.

The French school was a trading school, teaching the dominant trading language. Therefore it was tolerated or even stimulated by city government. It seems to have been regarded as a modern counterpart of the Latin school and therefore it was often subsidised.

There was no school duty. Nevertheless a considerable part of the population went to school. Dodde estimates that, around 1550, at least 15% of the Rotterdam youth visited the Latin school.

The structure of the system is indicated in figure 3.1.

Vocational education for different crafts was in the hands of *guilds*, associations of craftsman - entrepreneurs. Starting at an age of at least 12 and requiring previous general education, the apprentice was to become a bachelor and at last a master, after delivering a 'masterpiece'. The number of masters was often restricted though, in order to protect the trade. The system was not particularly effective, since quite a few apprentices were failing the probations or could not pay the fees.

Around 1600 a 40% of women and a 60% of men in the Dutch population were able to write. Around 1800 these figures were 60% and 80% respectively. During these centuries the Netherlands were the most literate country of the world (Dodde, 1995, p.87).

What about school density and school travel? In the developed part of the Netherlands, the marine clay districts and the western moorlands, with a high density of parishes, the density of *primary schools* was about the same. It was most likely higher than nowadays, except for those parts that were urbanised later on. This will be confirmed by the Frisian case studies in chapter 5. It implies that the travel distance to school must have been hardly ever longer than 4 km, being one hour's walking.

Secondary education was probably entirely limited to the cities of the time. The Province of Friesland had the relatively large number of 11 official cities. All these and two important other settlements had a Latin school, sooner or later (Jensma 1998, p. 193, 194). Rural visitors of those schools must have been rare, given the poor travel conditions. This implies that the pupils hardly ever travelled more than 500 m.

Nowadays five of the ancient cities have no secondary school left, but 23 other settlements do have at least a location with a curriculum. This represents a remarkable long term de-concentration. A counter development started some decades ago though.

Age				
17	header classes Latin school			
16				
15				
14	senior Latin school	senior French school	By-school	
13				
12				
11				
10				
9	junior Latin school	junior French school		
8	Dutch school	Dutch school		
7	small children's' school / by-school			
6				
5				

Figure 3.1 The Dutch school system as it existed from about 1400 to about 1600, with an indication of their pupils' age. Source: Dodde, 1991, p. 41

Summarizing. In the Middle Ages there was a well developed, de-concentrated school system with a primary school in all settlements of substance and secondary education in the cities, which administered their own schools.

3.3 School education under the Republic of the Seven United Netherlands

The insurrection against the Habsburg dynasty, or rather against king Philip II of Spain as 'Lord of the 17 Netherlands', ended with the peace treaty of Muenster in 1648 after a war period of 80 years. It brought a quasi state Protestant church and *a parliamentary regime based on the parliaments of the seven Netherlands* that liberated themselves.

The school system did not change fundamentally, apart from religious education, which changed from Roman-Catholic to Protestant in the version of the Dutch Reformed Church. As in the past only few children received secondary education. A step into the direction of Universities was the 'illustrious school'. This was literally the case for the city of Amsterdam. It got an 'Atheneum illustre' in 1632, transformed into a University in 1876. Universities were founded during the Republic in five of the Seven Provinces, including Friesland. The University of Franeker in that Province was closed by Napoleon Bonaparte in 1811, but like the University of Harderwijk (Province of Gelderland) it was reopened as a National (Rijks) Atheneum after the expulsion of French government (De Nijs and Beukers, p. 587).

The structure of the system is indicated in figure 3.2. (Dodde, p. 90, in Dodde and Leune, 1995).

The religious change was enforced by the individual Provinces through prescribing a new content of religion education. The directors of the official city schools had to subscribe the confession of the Reformed church. As a reaction quite a few by-schools of other churches were founded, especially Roman-Catholic ones. At least the City of Rotterdam undertook no action (Dodde, p. 87).

Age							
21	High school/ university						
20							
19							
18							
17	High/illustrious School						
16							
15	Latin school	French school/ by-school	vocational training				
14							
13							
12							
11							
10							
9	By-school				French school/ by-school	by-school	Pauper school
8							
7							
6							
5	small children's school / by-school						
4							

Figure 3.2 The Dutch school system from about 1600 to 1850. Source: Dodde, p. 90 in Dodde and Leune, 1995.

The increasing value put on common education is shown by the ‘*pauper school*’ connected directly to religious congregations. Poor children of families belonging to these received basic education. In fact those supported by the city and parochial relief boards were forced to send their children to the church by-school, which is the first sign of a school duty! In Rotterdam the French Protestant Church (Eglise Walonne) started this approach. The pauper schools were partly subsidized by the City.

The Da Costa poem included in textbox 3.1 demonstrates that the Jewish communities had their own pauper schools.

Brave wakk're hovenieren
Strooien hier het zaad der deugd,
't Zaad van kennis en beschaving,
In het hart der schaamle jeugd!
Moog Gods oog dat zaad doen rijpen,
Als een koesterende zon!
Moog zijn heilgenâ volmaken,
Wat hun liefdezorg begon!

Honest, spry gardeners
Spreading here the seed of virtue
Seed of knowledge and civilisation
In the heart of miserable youth!
May God's eye make that seed ripen
Like a warming sun!
May his holy mercy consummate
What their loving care began!

Isaac da Costa
At the public exam of the Dutch Portuguese-Israelite Pauper School (fragment)
May 17th 1820 (Da Costa, 1861, p. 287).

Da Costa was an emancipated Jew who was Christianised about 1820. He was to become one of the leaders of the Orthodox Protestant Réveil (awakening) striving for their own schools besides the liberal Protestant Public schools. These were forbidden formally until 1857. Jewish schools were allowed and could be government subsidized whilst being uncontroversial.

Textbox 3.2. Singing the praises of a Jewish pauper school.

In the course of the 18th century the *French school* changed from a trading school into one for general education, because the need for a trading school was felt less. The *Latin school* dwindled, in spite of the fact that a number of Dutch universities had been founded since the insurrection (Franeke, Groningen, Harderwijk, Leiden and Utrecht). A French Imperial

Committee of 1810 counted only 1501 students on the 57 Latin schools of the nation (cited by de Groot, 1979, p. 398). In 1836 the 68 Latin schools counted even fewer students; only 1,260 (De Groot, loc. cit.).

Only at the end of the 18th century a number of *vocational schools* were founded by cities or private persons, such as drawing schools (architecture and mathematics), navigation schools and sewing schools (for girls). These were usually evening schools and a school fee had to be paid. *Special education* took a start with the deaf in 1790.

The *Enlightenment* led to a belief in common education as a source of general progress. The 'Maatschappij tot Nut van 't Algemeen' (Society for Common Benefit, abbreviated to 'het Nut') of 1748 propagated the idea, and had teaching methods developed (Mijnhardt and Wichers, 1984).

Summarizing. Only at the end of the Republic (1795) there was a movement towards standardized modern education, by associations of enlightened citizens but without interference from central government and with little consequences for the spatial distribution of schools.

And what about (school) travel conditions? Transport conditions had improved by the general introduction of street pavement in the cities. Outside the cities this will have been rare though. In the entire Dutch North, the Provinces of Groningen and Friesland, there was not even one 'street road' (straatweg).

Passenger services on towing canals had been developed, in a slightly remote Province like Friesland as well. It is however unlikely that these were used for school travel. The tow paths must have presented a better opportunity for walking though. The Frisian City of Dokkum for instance, had towing facilities on her shipways to the provincial capital of Leeuwarden (along the Dokkumer Ee) and to Stroobosch at the border of the Province of Groningen (Trekvaart Dokkum – Stroobosch), connecting to the City of Groningen from 1665 (Postma, 1998, p. 123). The alignment of the 'Trekvaart' avoided existing settlements.

The oldest Dutch tow canal from Amsterdam to Haarlem (1632) had a tow path and a parallel sandy road. A tow path was constructed along the 'Vliet' between the University town of Leiden and the centre of the national administration, The Hague. It created a through connection to the city Delft (1638). For both tow paths use by pedestrians is mentioned. See Van der Ham, 1989, p. 36 and Van der Wielen - De Goede, 2006, p. 95.

The sandy road along the Haarlemmer Trekvaart was paved with bricks only in 1767, being the first one in the nation (Van der Ham, p. 40).

3.4 Evolution of the school system from the French Era until after the German Age

3.4.1 Primary education from roughly the age of six to twelve

3.4.1.1 The introduction of the 'common Christian' municipal school, replacing 'dogmatic' ones

Only a centralized state could create a common school for all providing general education. The French occupation from 1795 to 1813 brought the French Revolution to The Netherlands with support from a great part of the bourgeoisie. It implied the abolishment of the guilds and therefore the termination of an institutionalised education for the crafts. It implied too that the influence of the church on public life, including education, was reduced.

The French centralized the administration and changed the geographical borders of regional and local government, the 'departements' and 'mairies'. The new national government of (roughly) the original 17 Netherlands restored the old borders, but maintained a centralized state under an absolute monarch from the Orange dynasty: a more 'reactionary' government than before 1795! The names for regional and local government became 'Provincie' and 'Gemeente' (Municipality), treating urban and rural administration equally.

The structure of the school system did not change, neither at the Revolution nor at the Restauration, but a degree of formalization (in terms of content and method of education) and centralization was introduced conform the ideas of the 'Nut' (see section 3.3) and a *distinction between public and particular (private) education* was introduced. The latter category was split into first class (religious) and second class (commercial institutions).

Public primary education became a duty of local government, which had to finance it. It was regarded primarily as education for the poor. Dogmatic education, that is education being coloured by the dogmas of a specific Christian church, was no longer allowed and it was definitely not to be subsidized by government anymore. An exception was made for Jewish education as not being Christian Boekholt, Van Crombrugge a.o., 2002, p. 78). It implied that local government had to take over the pauper schools of the churches. Dodde qualifies this as a relief for the religious particular schools, which therefore met with little resistance (Dodde 1991, p. 149). Indeed the Rotterdam City government took over two pauper schools from the poor relief board of the Dutch Reformed Church in 1806.

In the cities the particular schools remained dominant (Dodde, 1991, p. 148), but in the countryside *all village parish schools* seem to have been *taken over by local government*, in the sense that the church no longer dictated religious content, as data presented by Dodde suggest. The education was to be 'common Christian' (algemeen Christelijk) in character, in fact liberal Protestant. Data collected by Tolsma for the Frisian Municipality of East-Dongeradeel indicate that the old financial (church) sources were continued to be used (see chapter 5 for school education in that area). According to Jensma, this was general practice in Friesland during the first half of the 19th century (Jensma 1995, p.181).

Tolsma did research into regional school history in the regional archive of the city of Dokkum. He found lists of payments to local school teachers and of the sources of those payments for the years 1817 and 1818. The teachers proved to have other jobs in the village as a rule, especially those of sexton (koster in Dutch) and/or precentor (voorzanger). The sources for their salary proper were either public (village purse and Municipality) or religious in character (church purse). In 1858 only two out of twelve teachers are paid still partly by the church (Tolsma 2007, pp. 98 - 100).

Van Blom explained about a decade later (1867) that the Frisian village church in many cases had the legal obligation to do so, because it administered funds which were earmarked for the purpose (Van Blom 1867). The author was probably knowledgeable but he was certainly not entirely neutral. He was an education inspector who founded, together with a colleague, the 'Association for the promotion of Folk education and school attendance in the Netherlands' in 1866. It was to defend public education against 'fanatic Christian orthodoxy' (Jensma 1995, p. 187).

Textbox 3.3. Continued church funding for education?

As late as 1855 only 15% of the Rotterdam schools are public in character, whereas the national share is 78% (Dodde, l.c.). Table 3.2 shows the number of schools of the three types for the country as a whole and for the city of Rotterdam in the years 1825 and 1855. It is an excerpt of Dodde's tables 7 and 8 (Dodde, l.c.). Dodde included 1811 too, but the impact of the system change is more outspoken for 1825. Remarkable are the increasing share of Class I schools in Rotterdam and the general decline of Class II commercial schools.

The total number of schools in The Netherlands increased by more than 60%, whereas it decreased in Rotterdam. This is even more remarkable if one takes account of the

disproportional increase of the population in the city. It amounted to 35% as compared with 20% for the country as a whole).

Table 3.2 The relative presence of primary schools of different classes in The Netherlands and in the city of Rotterdam compared for the years 1825 and 1855 in percentages (adapted from Dodde's tables 7 and 8, Dodde o.c).

School type \ Year Area	1825		1855	
	Netherlands %	Rotterdam %	Netherlands %	Rotterdam %
Public	76	8	79	15
Part. Class I	5	19	6	40
Part. Class II	19	73	15	45
Abs. number	2624	52	4337	47

Perhaps the most important step during the 'French Era' was the introduction of a *national inspection* for education, with different branches for public (i.e. government subsidized) education and particular education. The distinction was in fact purely financial in character. *The Christian religion was guiding all education*, although little attention was paid to it after primary school.

Summarizing

The 'French Era' brought a central administration which transferred the full authority for public primary education to local government, which had a great deal of independence (administration and authority) restricted only by a national inspection. This implied a concentration of authority especially in rural areas with large Municipalities, counting several parishes. The name of the ancient Frisian Municipality of Achtkarspelen for instance is to be translated as 'eight parishes'. In terms of institutions a considerable deconcentration took place in subsequent decades, because of the growth of the number of schools, being probably identical to the number of school locations.

And what about school density and school travel? The multiplication of schools until 1855 is likely to have been concentrated in larger settlements. Therefore it will have had a modest favourable travel impact. Travel by foot had become somewhat easier along the paved road network developed by the French. This connected only major settlements though, because it was intended to improve internal (postal) communication and military control in the vast empire. In the Northern Provinces for instance, following a familiar case, the central road connection between the capitals of Leeuwarden and Groningen, was provided with good pavement only from 1820 on, and to be completed only in 1840. A few other long distance connections were constructed from Leeuwarden to the Amsterdam ferry at the port of Lemmer and to the Province of Overijssel capital of Zwolle, serving present school centres like Heerenveen and Sneek (see chapter 4).

A number of Frisian settlements of some substance were served by gravel roads, as the concepts from 1853 to 1856 for the first topographical maps show. The tow road along the Tow canal Dokkum - Stroobosch is marked as a gravel road. The tow path along the Dokkumer Ee to Leeuwarden is indicated to be a 'debris road' (rubble road). See Wolters – Noordhoff 1992, pp. 43, 44.

3.4.1.2 School duty and the freedom of education, reviving the 'dogmatic' school

In chapter 5 the case study of the relatively large Municipalities of East-Dongeradeel and West-Dongeradeel (Province of Friesland), together including 23 parishes, will demonstrate

the change in the distribution of schools during the 19th century as the combined result of quality improvement in education, economising by local government and the religiously based 'school struggle' mentioned hereafter.

Around 1880 we find *the first reference to school closure being acceptable because of the presence of what was called 'a new art road' (kunstweg) to the next village*. It concerned the 1883 closure decision of the Ezumazijl school, referring to the road to nearby Anjum (see chapter 5).

In the last part of the nineteenth century different *new educational systems* were developed: the Montessori system, the Dalton system (propagated by the 'Nut' in 1924), Rudolf Steiner's approach in the Free school a.o. The latter approach became a separate particular school stream, the other approaches could be applied both in public and particular schools, as there were more and more around the turn of the millennium.

In 1900 *learning duty*, in fact school duty, was introduced *for all children from 6 to 12 years old*, but the vast majority did participate in education already (Leerplichtwet 1900, Law on learning duty). The bill was passed with a majority of just one vote, because both religious and socialist parties had objections. The religious parties objected because the full subsidy of public schools would attract additional, often poor pupils to these only. The nobility in Parliament was appeased by granting home education by a school teacher. *Dispensation was granted to those who could not find a school of the desired direction within 4 km, as measured along the shortest for the child reasonably well passable and safe road*. It implied that those children would not be educated in a formal sense (see Sperling, 2005).

In the revision of the Law, the 'Leerplichtwet 1969', the home education article was dropped and the 4 km norm was replaced with 'reasonable distance'. It means that there is in fact no learning duty yet!! This was confirmed by the answer of the Under Minister of Education in 1997, Netelenbosch, on a question from Parliament: '... the child is put outside of the reach of the learning duty and the corresponding control of the Inspection' (Tweede Kamer, 1996-1997, p.1440).

The Law on learning duty of 1969 still knows the category of non government financed schools as institutions where the child may fulfil its learning duty (section 1). This shadowy category received attention from the Education Inspection, because it showed a rapid growth of 'schools' introducing unusual teaching methods. The 'Everyone wise' principle leaves the initiative at the pupil, who may decide what it will be studied at which moment. In 2005 the Inspection assessed 60 private schools to decide whether the children were really fulfilling their learning duty in these institutions. About a third of those were given a negative verdict and most of these were closed by the initiators. According to the 2006 report there were 45 private schools left, including 9 new ones (Education Inspection 2006, Annex 5, pp. 41 – 43.) The number of pupils concerned is unknown, but the Inspection called it 'a very small part of the children' (p. 11).

In January 2008 the CFI site of the Ministry of Education mentions in its registration of schools in the BRIN map 73 non government financed schools. The total number of pupils will hardly exceed 1000. (www.cfi.nl/BRINgegevens/instellingen/iederwijs/bestuur).

Textbox 3.4. Private non government financed schools.

From about 1825 there was a movement for a more confessional education than provided in the Public schools. The Constitution of 1848 guaranteed the '*Freedom of Education*', the freedom to found schools according to one's own taste and on one's own account. The School law of 1857 elaborated the principle and put an end to government subsidies to Jewish schools as a consequence. It was the end of the Jewish pauper school of Amersfoort for instance (Meijer, 2004, p. 37).

Religious particular schools were often still subsidized by local government, but the School law of 1878 put an end to this, because government was to support public education only. This sharpened the conflict with religious factions, both the Orthodox-Protestant and the Roman-Catholic one.

After a long ‘school struggle’ schools based on a confessional principle, either Jewish, Roman-Catholic or Protestant, were granted equal financial rights in 1917: the so-called ‘Pacification’.

The Public school became *non-religious* (called neutral), with an optional course in the religion of the parent’s own taste. Private non-religious schools like those of ‘the Nut’ received equal rights as well.

In 1835 61% of the children from 6 to 12 years went to Public schools, in 1925 43% still and 1935 31% only, because numerous religious schools were founded (see table 3.3). The *Liberal-Protestant inspired schools of ‘het Nut’* flourished especially in the Roman-Catholic south, even during the nineteen-fifties, where liberal intellectuals and northern immigrants rejected the dominant Roman-Catholic schools and disliked the lower class population of the remaining Public schools, which moreover were dominated by Roman-Catholic municipal government (Jan and Annie Romein cited by Helsloot, pp.117, 118).

The authority for these particular schools rested as a rule with *local associations*, like a local ‘department’ of the ‘Nut’, which led to an increase of the number of authorities, probably surpassing 2,500 nationwide, implying an enormous de-concentration of authority.

National Government had gradually taken over financial responsibility for primary education from the Municipalities and it had contributed gradually more to the budget of the non public schools, making demands on the quality of school buildings and the level of teacher salaries. The Pacification of the ‘school struggle’ however had *serious consequences for the budget of the national Ministry of Education, which became acute by the economic crisis of the nineteen thirties*.

Table 3.3 shows the development of the numbers of both Public and particular schools during the decade after the Pacification. The growth in the number of schools since 1855 had been modest in comparison to that in the 1825/1855 period, namely only 38% in more than twice as many years (see table 3.2). Depopulation in traditional agricultural areas started in the 1880’s because farmers had to mechanise labour to be able to compete with the developing imports of corn from the North-American continent. It incited school closures in small villages (see the Frisian case studies in chapter 5).

The distinction between two classes of particular schools had been abolished before 1919. The total number of primary schools increased by 36% in one decade. Even Public schools contributed to this development. The number of pupils increased by only 12%.

Table 3.3 . Development of the numbers of primary schools in the 1919 – 1929 decade and of their pupil numbers, for Dutch Public and particular schools (adapted from De Jager, 1933).

School type		Public		Particular	
Year		1919	1929	1919	1929
School nrs		3473	3610	2510	4452
Pupils (x1000)		570	480	461	737
Mean school size (pupils)		164	133	184	166
School size (in pupil nrs)	1-20		102		10
	21-40		243		73
	Larger		3265		4369

Table 3.3 shows too that Public schools had become smaller than religious ones, as the combined effect of increasing school numbers and decreasing pupil numbers. These had a mean size of only about 133 pupils as compared with 166 for the particular schools. The Minister of Education in a religiously dominated government (the left liberal Mr. Marchant) had to economize and he chose to have small Public schools closed. These grossly

outnumbered those in religious education. Of those under 20 pupils more than 90% were public in character. Most of these will have been drained by new religious schools. The effectiveness of the Marchant efforts is not documented. It is not unlikely to have been large in areas with a dominance of a specific church as was the case in the Dutch Roman-Catholic southern Provinces. It was and still is the formal responsibility of the Municipality to maintain 'a sufficient level of public education', which might be interpreted as 'a school in each settlement', but as 'none at all' just as well.

The most important statesman of the 19th century, Mr. *Thorbecke*, architect of the liberal national constitution of 1848, had made clear in 1870 that the first interpretation was wrong. One of the landmarks in the (anti liberal) school struggle was the sensational loss of the public school in the Frisian village of Wons (Municipality of Wonseradeel). The local public school used a building that was rented from the church. In 1870 the church council wished to establish a religious school, quitted the rent and started the new school in the same building. Municipal government built a new school but 'no child ever visited that school', because the village population was united in its preference for religious education. The matter was discussed in national parliament and Thorbecke's comment was: '*Neither the Constitution nor the Law states that every village shall have a school*' (meant is a Public school, cited by De Vries 2004, p. 42). In fact the Municipality could found or continue at least one Public school on its territory but nowadays a 10 km minimum distance to the next Public school is required (see chapter 5).

Textbox 3.5. A village may do without a Public school

In the Province of Friesland only about half the number of closures demanded by Minister *Marchant* took place (De Jager, 1933). *In fact he did not have the power to enforce closure. Provincial government had the supervision of the Municipalities* as the authorities of the local Public schools. The Municipalities were reluctant to close schools, since they had nothing to gain from closure. Religiously oriented Municipalities were evidently more inclined to comply though than more socialist ones. This is demonstrated by differences in compliance of contrasting areas in the Province of Friesland (see chapter 5). Marchant's promise of full compensation of closure cost, like those of the provision of pupil transport, was evidently insufficient. The Prime Minister at that time, Colijn, being orthodox protestant, urged his sympathisers to stop internal conflicts, which led to wasteful double school foundations in small villages like Frisian Gaastmeer, and to amalgamate these schools. 'De Gastmer' was one of the few to act accordingly (De Jager, p. 30).

As late as 1955 national government accepted responsibility for the *education of young children* at the toddler school (kleuterschool, 4 and 5 year), formalizing and financing this pre-basic education which the 'Nut' had urged for during 150 years.

The religiously oriented municipal administration of Westdongeradeel (Friesland) refused to found a public toddler school at its Ternaard capital. Therefore the local Nut department founded a particular toddler school (information Holwerd village Public school director).

3.4.1.3 Summarizing institutional developments

In the Era after the year 1800 national control of education was introduced, firstly by declaring all church schools to be 'general Christian' in character. Education finance and control was taken over by the Municipality first, and after that gradually by national government. This implied a strong concentration of control.

A religious reaction (Réveil) during the 19th century led to an increasing 'freedom of education' resulting in a decline of public education. The churches gradually regained control on the religious school market. It was completed with the introduction of equal financial conditions in the 20th century. It implied a considerable de-concentration of at least local control, both of authorities and institutions.

3.4.1.4 And what about school density and school travel development

The nation used to have a high school density with schools associated to the parish church. The dissociation of school and church did not change that situation.

The full development of religion based education after the ‘pacification’ created a situation with unparalleled access to the primary school. Public schools however lost locally many pupils. The economic crisis of the 1930’s forced national government to economise, for instance by closing small Public schools. The ‘Marchant closures’ put an end to relatively unrestricted provision of public education.

More or less automatically, the school locations were more de-concentrated too in urban Municipalities, although these started to develop multi-institution locations. See the section on ‘school islands’ in chapter 6.

School travel distances used to be short for those living within settlements. Access had been improved gradually by the spreading of road pavement to main roads in rural areas. The use of the bicycle by children was not yet common though. There were about 2.8 persons per bike in 1934 (Directorate-General for Passenger Transport 1999, pp. 18, 19). Some of the school closures, like the Firdgum one discussed in chapter 5, worsened access to education considerably, because there was only one local school. School transport was provided only for distances of more than 4 km, partly to enforce the school duty. For Firdgum the school-to-school distances to the larger villages of Minnertsga and Tzummarum were less though.

3.4.2 Secondary education. Standardising general education and developing vocational education for youngsters from about 12 to 18

3.4.2.1 General education; the systematic introduction of the Higher Burgher School

Under the new Dutch Kingdom the school system was transformed only slowly.

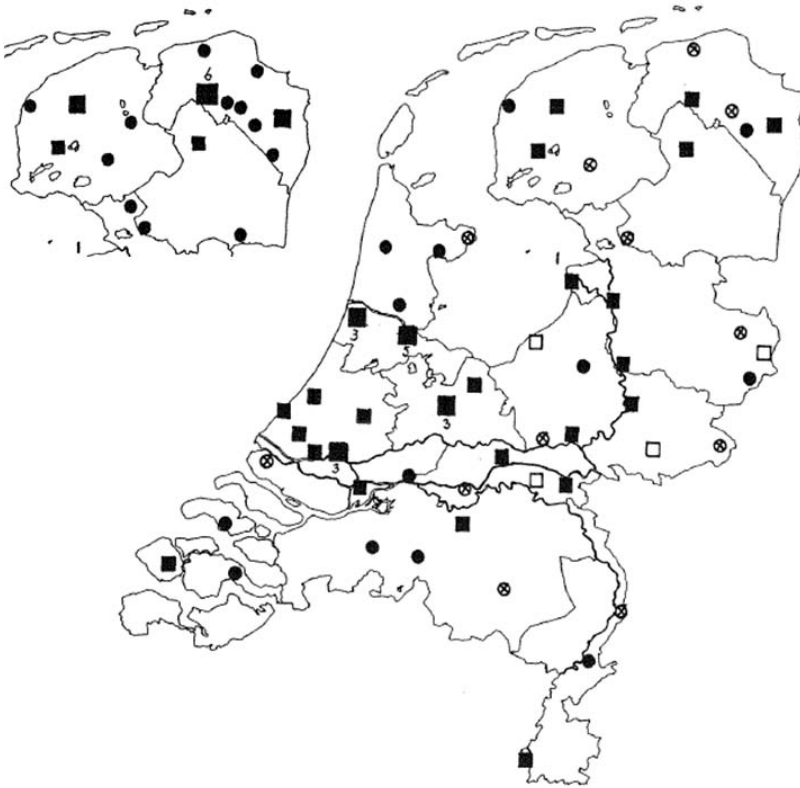
Modernization was thought to be necessary but it was introduced with difficulty. Industrial development required vocational education. The part time (technical) drawing and sewing schools attracted too few students, partly because of the fees.

As late as 1861 *craft-schools* (*ambachtsscholen*), replacing the guild education after roughly 70 years, were founded, usually by local associations of patrons, but in the city of Gorinchem for instance by the local Freemasons (Rietveld – van Wingerden, 2006). By 1900 there were 20 of those day-schools with a total pupil number of about 3000. The 1950 and later extensions of the learning duty led to an impressive growth.

The dwindling *Latin schools* were transformed gradually to *Gymnasiums*, not only teaching Latin and Greek, but in the so-called 2nd department mathematics, modern languages etc. In 1858 the transformation was half way with 31 *Gymnasiums* and 32 Latin schools. The change was regulated as late as 1876 by the Law on Higher Education (Wet op het Hoger onderwijs), confirming the exclusive position of the *Gymnasium* in preparing for University education.

The *French school* was transformed into (M)ULO, (more) extended lower education, by the 4th Law on Lower Education (Schoolwet 1857), with a modest programme, insufficient for entering the University.

The most ambitious modernization was the introduction of the HBS, promoted passionately by Thorbecke as a Minister of Internal Affairs, being responsible for Education.



Legend. ■ 3 Three or more advanced schools, ■ Gymnasium and HBS 5 year course, □ Gymnasium, ● HBS 5 y.c., ⊗ HBS 3 y.c.

Map 3.1. The location pattern of Gymnasium and HBS in The Netherlands 1880 and (above left) in the northern Provinces 1920. Source: Mandemakers 1996, pp. 200, 201.

The *HBS*, translated by the Ten Bruggencate dictionary as ‘(High) Modern School’ and the *MMS*, a ‘secondary girls’ school’, were introduced by the 1863 *Law on secondary education* (Wet op het Middelbaar Onderwijs). These were to fill the gap between the highbrow Gymnasium and the common (M)ULO. The HBS was to educate the children of the local elite for leading positions in government and industry with, after three years, an education more oriented to administration and economics (HBS-A) on the one hand and towards mathematics and natural sciences (HBS-B) on the other hand. It gave access to University only for studies in the same vein. Originally there were HBSes with a three-year course only as shown by map 3.1. By 1920 these had been transformed in full HBSes.

The names of the two new school types can be translated literally as *Higher Burgher School* (*HBS*) contrasting with the Burgher school (a name for the lower school) and the *Middle Maiden School* (*MMS*), sooner a ‘Mistress school’ with its strongly ‘cultural’ education.

National government developed an active or perhaps even aggressive policy in distributing the HBS school type. Cities with more than 10,000 inhabitants could start a HBS, but only with consent of the Ministry of Internal Affairs, in order to create a vital and affordable system.

The Ministry itself started 15 public schools of this type, National or *Rijks HBS*, even in rural areas, in relatively isolated settlements like the villages of Warffum (Province of Groningen, 1868) and Middelharnis (Province of South Holland island of Goeree-Overflakkee). A geographically most extreme later foundation by local authorities is the Ter Apel school of 1921, in the far southeast of the Province of Groningen (see <http://www.rsgterapel.nl/>).

The city of Rotterdam was threatened with the foundation of a *Rijks HBS* in case it would not create one itself. It did so in order to keep control of its school system (Dodde, 1991, p. 253). In the very first school year, 1864/65, eight schools were operational. Three years later their number had increased to a 32 and Steyn Parvee, a former HBS Inspector, lists 88 schools in 64 settlements for 1912 (Steyn Parvee, 1914, p.23).

Cities like Gorinchem (Province of South Holland) took the initiative to create their own HBSes, which often were taken over later on by national government because the rising cost became unbearable. In the case of Gorinchem: City HBS 1871, *Rijks HBS* 1922 (A.J. Busch, Introduction in Klijn a.o. 1997, pp. 8, 9). In the Province of Gelderland small town of Zaltbommel the Gymnasium was transformed in a *Rijks HBS* with a three-year curriculum in 1867, taken over by the city in 1901 to become a 5 year HBS and returned to national government as such in 1916 (De Groot 1979, pp. 402 - 405).

The network of secondary schools had in fact a function for just the local and regional elites. In 1900 only 8% of the children went to a secondary school.

As early as 1910 a state committee had to study the integration ('ineenschakeling') of lower, middle and higher education (Helsloot, 1984, p. 88). It came to nothing.

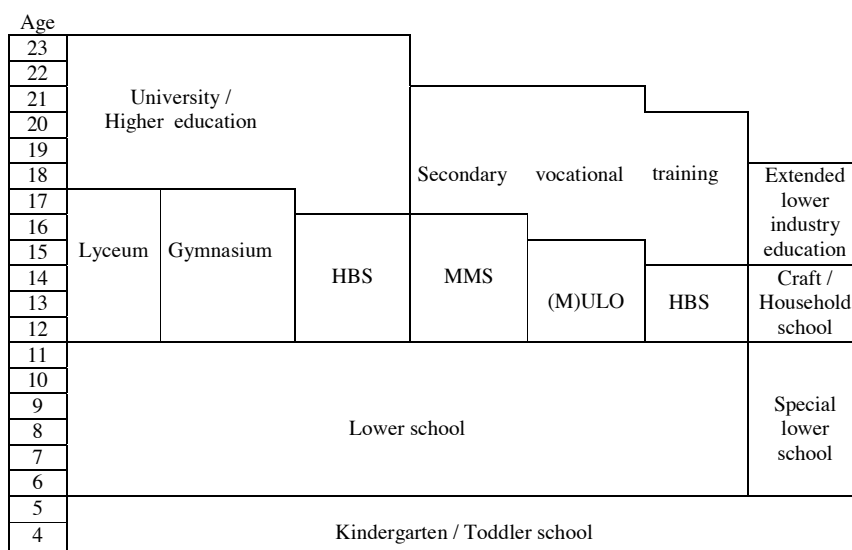


Figure 3.3 The Dutch school system as it evolved from about 1850 to 1950, except for agricultural education. For the HBS three and five year curricula are mentioned. Source: Dodde, 1995, p. 94 in Dodde and Leune. For abbreviations see appendix 1.

Summarizing. The second half of the nineteenth century saw a growth of control by the national administration, introducing a uniform general secondary school system, developing a

de-concentrated network of schools, co-financing it and controlling local initiatives which might affect the viability of the system.

An advanced school within a reasonable travel distance, using the new railway systems and the bus later on.

The pattern of about 1920 was such that more than 90% of the population must have been able to reach a secondary school within one hour by using the dense rail- and tramway networks of the period.

The development of public transport networks, their organisation and operations have been described magnificently by Brouwer and Van Kesteren (2008), but demand is described only in very general terms. Data on the use of the regional tram for school travel are not available. Filarski and Mom found that passenger data were scarce in general (Filarski and Mom, 2008, p. 358). Mom and Filarski (2008) indicate the importance of the tramway for education, citing 'De Ingenieur' journal 41(1898).

'The inhabitants of the (south-western EdB) islands complained repeatedly about the lack of secondary education in the region. The tramway would make existing facilities more accessible and it might make the introduction of new institutions easier'.

Indeed the site of the Pontus Pieter Zeeman school at the small town of Zierikzee on the Schouwen-Duiveland island (city HBS of 1868) mentions the construction of a regional tramway in 1900 as a factor for growth, causing however financial problems for the city, which had to bear the cost. The school became a Rijks HBS in 1907 (retrieved 2007 from www.pieterzeeman.nl/school/geschiedenis).



Legend: OG = Oost-Groningse, EDS = Eerste Drentse Stoomtram-maatschappij, DSM = Drentse Stoomtram-Maatschappij (Source: <http://www.oudterapel.nl/vervoer/stoomtram/collage>)

Map 3.2. Map of the village of Ter Apel about 1930 with a railway line and tramways of three companies surrounding the local HBS. Nearby a MULO.

The Ter Apel school mentioned before was accessible by tramway and by regular rail from four directions. This location at the German border was chosen above the larger settlement of Musselkanaal because of its accessibility by rail, as an article in the 'Veenbode' local journal of 1919 reports (information of the present RSG director). Indeed the distances to the closest HBSes at Coevorden, Veendam and Winschoten were each over 30 km!

On map 3.1 a HBS location at a shorter distance is shown for 1920. It is the 1919 PC HBS of Stadskanaal. Maybe the Ter Apel school was founded as a reaction.

The 'Atlas of tramways in the Netherlands' (Uitgevers Wyt, 1973) shows both tramways and railway lines at the summit of their networks. It demonstrates that all the settlements with a HBS mentioned before were served by rail transport. Zaltbommel was and is lying on a main line. Gorinchem and Warffum were and are lying on regional lines. Middelharnis and Zierikzee used to be the base of tramways serving their respective islands in full length.

The network of tramways for regional passenger transport collapsed largely before World War II through competition from the bus. This improved travel conditions in fact, because of higher travel speeds made possible by the improved road network. Bus transport was regulated from the mid nineteen-twenties to ensure sustainable services. A system of licensing was introduced in 1926 but the 'wild buses' could be effectively fought against only in 1940, at the introduction of the 'Law on passenger transport by car' (Wet Autovervoer Personen). See www.techniekin nederland.nl for 'De concurrentie van autobus en spoor tussen de twee wereldoorlogen'.

Textbox 3.6. The tramway supporting rural participation in HBS education

3.4.2.2 Re-introduction of formal vocational training

In 1880 the *Household and Industry School* (later LHNO) came and at last, in 1920, the extended lower education in the *MULO. Lower Agricultural and Horticultural School* was formalised into secondary education. It confirmed the separation of vocational education into three levels: lower and middle (both part of secondary education) and higher. The Delft Polytechnical School for instance was part of secondary education in 1862 (as Royal Academy for engineers), but became part of higher education in the early twentieth century, whilst being part of the University system nowadays. The MULO brought general secondary education to local centres in the deep countryside.

The dense secondary school pattern of the Province of Groningen before the closures of the 1990's was to be explained by rural LHNO's and MAVO's. Fifteen school settlements lost their schools, being almost exclusively of those types (Section 4.2, Map 4.4).

The structure of the system is indicated in figure 3.3. (Dodde, 1995, p. 95 in Dodde and Leune). The Kindergarten was called originally 'bewaarschool', 'storage school' intended to take (day) care of the children of lower class working women

Secondary agricultural education may serve to show the development of vocational education. The law of 1863 arranged for agricultural schools, but these did not develop on the lowest, practical level. The international agricultural crisis of 1880 brought change, but only slowly. The first '*Landbouwwinterscholen*' of around 1900 (agricultural winter schools) sooner belonged to the second phase of secondary education though (Goudswaard, 1985, pp. 167-172).

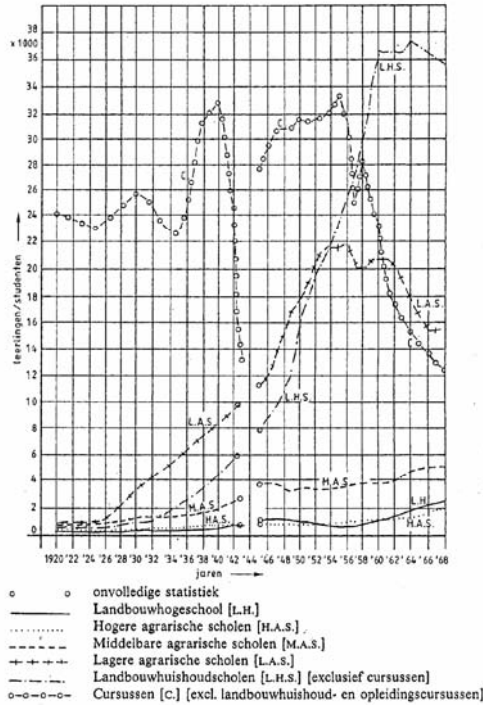
'*Landbouwhuishoudscholen*' *LHS* (agricultural household schools) were to educate farmers' wives and farmers' female workers from 1909 onward. These were the counterpart of the urban LHNO: Lower Household and Industry School. The *lower agricultural day school LAS* started only in 1921 and only part time. Until 1945 it hardly had a function as a feeder for secondary agricultural education. The number of students of the LHS was 6000 in 1942, and that of the LAS 10.000. After the Second World War these expanded to peak in 1956 (LAS, 22.000) and in 1964 (LHS, 37.000). See figure 3.4 (Goudswaard, 1985, p. 219).

In the figure the year 1944 constitutes a breach, but only because no data were collected. The French occupation might be regarded to have been a liberation, introducing desirable change. The German occupation was just suppressive. It brought no change in the school system, except for the near extinction of Jewish schools. Only two primary schools (Cheider and Rosj Pina) and one secondary school (Maimonides) are left in 2006. See www.jsjg.maimonides

The number of LAS expanded rapidly and shrunk equally fast: 127 in 1946, 226 in 1960, and 164 in 1968. The same happened in a lesser degree to the lower horticultural school: 1300

students in 1946 (18 schools), 5900 students in 1964 (62 schools) and 4600 students in 1968 (52 schools).

In the Province of Groningen case study (chapter 4) will be shown how this type of education lost even more schools/locations after 1984.



L.H. = University, H.A.S. = Higher education, M.A.S. = Second phase Secondary education, L.A.S., L.H.S. = Lower education. Source: Goudswaard, 1985, p. 219, using CBS 1933, 1949, 1966 data.

Figure 3.4 Evolution of pupil/student numbers in agricultural education 1920 – 1968 at different levels.

Implications for hypothesis 2.5.1.

Technological developments in agriculture, especially mechanization, leading to a strong decline of employment at farms have caused a reduction of demand for basic agricultural education and, through that, a strong school concentration, that is a reduction of the number of locations for this type of education.

The hypothesis is **confirmed**.

The role of the national administration in these developments was less active than in the case of general education. In the special case of agricultural education the LHS and LAS were usually founded by regional agricultural associations like the Frisian Society for Agriculture and the Drente Agricultural Society. The national Ministry of Agriculture exercised a degree of control.

Like other technical disciplines the *green* (originally agri- and horticultural education) declined strongly after the 1950's, but, unlike the other ones, it recovered since the 1970's, from a deep of 13.000 students in 1972 to 32.000 students in 1982. The explanation is no doubt the fact that it widened its perspective to curricula of interest for urban pupils. Examples of these are general animal care and flower sales (figure 3.6,

Goudswaard, 1986, p. 319).

In 2010 a list of 'green education' locations counts 109 of these (www.groenonderwijs.nl). The curricula supplied are in great part tuned to gardening and animal care and to the consumer oriented trade connected to these activities. There are only 12 institutions with an explicitly agricultural background, operating at 75 of the locations. The largest institution is the 'Wellantcollege' with 23 locations in three Western Provinces. The remaining 34 locations are found at 'school communities', supplying general education as well.

Textbox 3.7. A stunning revival of 'green' education

3.4.2.3 *An ever longer duration of the school duty*

After World War II the *school duty* period was *extended stepwise to 16 years*, starting at 5 years (Storimans, 2006, p. 15). After that period partial education had to be enjoyed for one or two days per week during two years.

In 1950 the percentage of youngsters in the age from 12 to 18 years old that underwent secondary education was 45%. In 1975, 6 years after the most recent extension of the school duty (1969), it had increased to 76%.

3.4.2.4 *Summarizing. Basic secondary education within reach of urban and rural populations*

General secondary education evolved from a dominance of the Latin school to roughly a three layer system with the Gymnasium as a successor of the 'classical education', the HBS for modern natural science education and the MULO for extended general education. The second school type was introduced in regional centres, often lacking a Gymnasium. The MULO was even present in modest local centres.

Vocational training was abolished by the liberal revolutionaries of the French Era. Industrialisation and the development of technology in general led to a demand for formal vocational training, both in agriculture and in crafts and production industries.

These types of school demonstrated an explosive growth en consequent de-concentration, partly to be followed by an implosive decline, caused by the changes in the character of the technology required.

3.4.2.5 *Increased travel, but over longer distances and increasingly by bike*

Travel distances to agricultural schools are unlikely to have been longer than those to MULO (later MAVO and now VMBO-T). They no doubt were cycled after World War II, when bicycle ownership became common amongst youngsters. The person/bike ratio was less than 1.8 in 1970 (Directorate-General ... 1999, pp. 28, 29). The collapse of agricultural education is likely to have implied a further growth of MULO.

Visiting the craft school (LTO) will have required considerably longer travelling distances but hardly longer than those to HBS. This will be demonstrated in the Province of Groningen case study (chapter 4).

Construction of cycle-paths along roads of the national network was undertaken massively under the Second Road Plan of 1932 having a total length of 1400 km. The construction of these was partly for the sake of the cyclists (safety) and partly for that of the car drivers by liberating them from masses of cyclists blocking 'their' way. The Road Plan had as its primary purpose to expand the national network proper. It was financed from the Road Fund, filled for a considerable part by the bicycle tax. In 1927 the bicycle tax contributed a 50%! The tax was detested by the Dutch people.

The Passenger Transport Department stated in its 1999 report: 'Incidentally, the Germans abolished the tax in 1941.' (Directorate-General... 1999, pp. 16 - 22). It was perhaps not incidental. The German 'Autobahnen' were probably financed in a different way.

3.4.3 Special education

Special education was indicated as BLO, Extraordinary Lower Education (Buitengewoon Lager Onderwijs).

The first *school for retarded children* opened its doors in Rotterdam in 1896. Compulsory education led to schools for children which had difficulty in following normal education, although parents could not be forced to send their children to special schools (Vlietstra in Knijff, 1965, p. 274).

In large centres schools for the feeble-minded came into being. In 1910 the Ministry demanded that the deeply intellectually deficient be educated as well. These imbeciles (IQ under 55) were separated from the backward children (IQ 55 – 80).

In 1923 special education was separated formally from normal education, and normal schools were not allowed to have classes for special education anymore. In the countryside it took quite some time for Municipalities to cooperate in the foundation of special schools for the intellectually deficient. They provided free transport to these schools.

In 1940 there were 15,400 pupils in 159 schools of 6 types, 141 of those for the intellectually deficient, with 89% of the pupils. In 1950 the number of pupils had grown to 32,900 in 273 schools of 12 types, 206 of those for the intellectually deficient with 79% of the pupils. More than 3% of those receiving compulsory education were consigned to special education.

In 1963 the number of schools had increased to 567, with 59,200 pupils of which (only) 25,900 were mentally deficient. The increase of *schools for* and of *pupils with behavioural problems* was spectacular: from 14 to 71 and from 1,000 to 8,300 respectively (Knijff, 1965, pp. 265 – 269).

Of the 567 special schools 153 were public, 235 Roman-Catholic, 125 Protestant-Christian and 54 particular-neutral.

Summarizing. In both primary and secondary education the growth of special education contributed significantly to the de-concentration of supply, but much less than equal treatment of public and particular education had done.

School distances and school travel. The supply of schools for special education of the most common type was provided in regional school centres of a size sufficiently large to have a HBS as well. It implied that their pupils from outside these settlements had to travel distances comparable to those in advanced secondary education types. It could not be expected that these children, and especially those of a primary school age, travelled on their own.

Travel to these schools was taking place mostly by dedicated bus transport. The BLO bus was to become a familiar phenomenon. Nowadays much of this transport is provided by taxi and minibus.

3.4.4 Summary

In this long period from roughly 1800 to 1950 one may note both concentration and de-concentration tendencies in Dutch education supply.

In *primary education* control was *centralized gradually* from about 1800, at first by introducing a national inspection, then by making demands on the content of education and at last by financing it.

The division of labour between different *administrations* showed a *degree of centralization* too *upon the growth of particular education*, which was administered by central government, whereas public education was administered by local government, under surveillance of regional government in matters of school planning (foundation and closure).

The *authority* was *being strongly concentrated in the beginning of this period*, because Municipalities took over from individual parishes, and *strongly de-concentrated by the foundation wave of particular schools* which reached a summit after the Pacification of 1919 (subsection 3.4.1.2).

The *institutions* themselves were *de-concentrated* by the growth of particular education, which was only partly compensated for by closure of Public schools under Minister Marchant in 1933.

Local provision of primary education dwindled only in small settlements, and especially in areas suffering from population decline after about 1880, caused by an expulsion of farm workers. The road system supported travel to primary schools only after the expansion of road pavement to rural areas in the course of the twentieth century. Only after that the bike became a technical and economic option for school travel.

In *secondary education* *national government exercised*, later and stronger than in primary education, *a remarkable degree of national control* by the law of 1863, introducing HBS and MMS, both general education school types. Even more remarkable was its active role in founding HBSes, pressing local government to follow: *national government as school administration and school authority*, the latter *parallel to Municipalities*.

Activities with regard to other types of education, especially vocational training were to start only later and much less inspired by national government. The separate agricultural schools for boys and girls *LAS and LHS* were *founded by local initiatives, which acted as an authority*. It implied an *enormous de-concentration of basic secondary education*, which was reversed from around 1960 though.

Developments may be called revolutionary because *various school types were de-concentrated into the countryside*, starting with the Higher Burgher School.

In *special education* another contribution was made to de-concentration both by an increasing number of schools and by an increasing specialisation of these.

3.5 School Reforms until 1990. Vertical integration of school types and modest school closures

3.5.1 General developments

From the nineteen-sixties on there seems to have been *a continuous urge to remould the school system*, both in content and in structure and in the numbers of institutions.

A steady post-war growth of the population and a gradual increase of the school duty duration led to larger numbers of pupils and a strong growth of participation in secondary education. On top of that, tertiary education became to be generally accepted.

The author's grandfather was a farmer's worker in the Frisian village of Nylân. He sent his son Bauke (born in 1917) to the MULO and then to Teacher Training College in the nearby city of Sneek, because he thought him to be too frail for his father's profession. For Bauke's sons, tertiary education was self-evident upon finishing HBS or its successor, called Atheneum. Two of them went to Training College as well.

Technological and economic developments required and enabled an improved level of education and a diversification in vocational training.

In primary and secondary education two system changes were introduced in order to make the pupils' transfer between successive phases more successful.

The *toddler school* for the 4 and 5 years old was *amalgamated with the primary 'lower school'* into the 'basic school' (basisschool) in 1984, a case of vertical integration of curricula, reducing the numbers of institutions drastically.

The *secondary school system* was *restructured by the 'Mammoth Law' of 1968*. Apart from renaming all curricula, the most important changes were the introduction of:

- a new school type in between the old MULO and HBS types, called HAVO (Higher General Education) and
- the principle of 'school communities' (scholengemeenschappen), combining two or more curricula within one institution, thereby enhancing the exchange between these.

The rising cost of education was reason for government to seek to close small schools, both in primary and secondary education.

Both primary and secondary schools showed reduced pupil numbers as a consequence of a sharp decline in births from 239,000 in 1970 to 170,000 in 1983, followed by a slow incline to 188,000 in 1990. See figure 3.5.

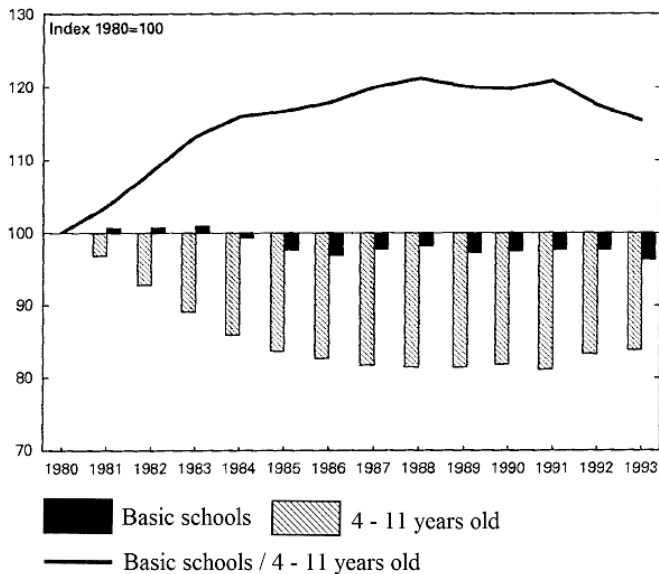


Figure 3.5 Development of the relationship between primary school numbers and pupil numbers in the Netherlands, from 1980 to 1993. Source: Van Dam, 1995, p. 112. (1980 = school year 1980/1981).

This figure shows three developments

- the development of then number of schools, declining slightly after 1983
- the development of the number of pupils, declining strongly after 1980,
- the relationship between the two developments, an increasing school/pupil number ratio until about 1988.

For part of secondary education the decline was even more dramatic because of a changing public taste for education, away from vocational training and towards more advanced general education.

The efforts of the Ministry of Education to reduce the numbers of schools (institutions) were little successful though, as will be shown in the following sections.

Implications for hypothesis 2.5.7.

Hyp.2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil, which is an important motive for school concentration. The hypothesis is **confirmed**.

3.5.2 Primary education: vertical integration of toddler and ‘lower school’ into the ‘basisschool’ and the HOB school closure operations

3.5.2.1 HOB: killing two birds with one stone, or perhaps a few more...

The introduction of the basic school was accompanied with an operation to reduce the number of schools, closing those which did not comply with minimum pupil number norms. This was to be the HOB: Herstructurerings Operatie Basisonderwijs (*Restructuring Operation in Basic Education*). It was a two-step operation. First it was to be decided which lower schools were to be given the opportunity to become a basic school, even those not entirely complying with norms. In a second phase it was to be decided which school did comply in the end, yielding a permanent status as a basic school. Both rounds will be discussed in subsections 3.5.2.3 and 3.5.2.4 respectively.

3.5.2.2 The integration process, an opportunity to economize

The Law on Basic Education of 1985 (Wet op het Basisonderwijs) put an end to centuries of separation between education for the youngest children and older ones, by joining the kindergarten (kleuterschool) and the lower school (lagere school) in the ‘*basisschool*.’

The small-children school for the four and five year old existed already around 1600. The reason to integrate the little ones into the primary school was the pedagogical cleavage between both school types, which made the transition difficult for many children. It was the end of the ‘Nut’-kindergartens which had flourished especially before national government took over the responsibility for this type of education.

In 1980 there were 8,050 toddler schools (for the four and five year old) and 8,727 primary schools (called *lagere or lower schools*; Blank, Boef - van der Meulen, 1990, pp. 13, 14). The latter number was about 8% higher than that of 1929, which Minister Marchant had sought to reduce drastically.

In 1980 the mean primary school size was 153 pupils, in 1929 150, hardly lower. National government had to economize and it was confronted with an ever increasing cost of education. Therefore it sought ways to economize on education.

The Law on Basic Education of 1985 included an integration of toddler school and ‘lower school’ into the new ‘*basic school*’ (basisschool) in order to get a more integrated curriculum. This was in fact the largest school concentration operation ever, reducing the number of pre-secondary schools by almost 50% at one stroke. The operation itself was rather costly because it was obligatory to house the toddlers in the basic school building, under one and the same roof. Schools had to be reconstructed, adapting toilets etc. or even to be expanded, in spite of the fact that many of the toddler schools stood next door and on the same precinct. It was both the first and the last time that such an action was demanded in school integration.

3.5.2.3 Non integration: HOB initial school closures in 1985

School closure had been the subject of the so called *preservation policy* (instandhoudingsbeleid), being decision making on exemption from closure. This policy had been very reluctant towards closure of primary schools in the years before. There were no elaborate standards for minimal school size. A number of 30 pupils were regarded as the minimum for an existing ‘lower school’. Municipalities in their double role of local administration and authority for public education hardly ever took the initiative in closing the

last public school in a settlement. Provinces in their supervising role, including the possibility to give an instruction for closure, were equally reluctant, having no financial interest and being afraid of political confrontation with the countryside in general.

The Ministry of Education as the administration for particular schools followed the Provinces in their preservation policy with the argument of 'equal treatment' (Blank, Boef - van der Meulen, 1990, pp. 45, 46). This policy was enhanced no doubt by the participation of religious parties in all national cabinets of the era.

In the Law on Basic Education (Wet op het Basisonderwijs) of 1985 new preservation/closure criteria were introduced. These criteria ranged from 125 pupils for Municipalities with over 100.000 inhabitants to 50 for Municipalities with less than 25.000 inhabitants. This would have implied a considerable school concentration, with significant transport consequences, especially in Municipalities with a combination of a large central city and several rural settlements (see Table 3.4). The national capital of Amsterdam is one of these, with its scenic 'Waterland' countryside, which had schools in for instance the villages of Ransdorp and Zunderdorp.

In order to avoid bitter conflicts at the introduction of the new school system, more lenient criteria were introduced by the Ministry, called 'Deetman norms' after the Minister. These norms were used for schools at a distance of more than 3 km as the crow flies from a second school of the same denomination. The system of norms is summarised in Table 3.4. It implied that the only school in a settlement at more than 3 km distance from the nearest one with a school could do with only 23 pupils. In exceptionally inaccessible situations even smaller schools might be continued.

Table 3.4 Deetman norms. Minimum pupil number norms for existing primary schools in the Netherlands in 1985, as related to the number of inhabitants of a Municipality and the location of the school (derived from Ministry of Education 1985 and De Boer and Van der Veen 1986).

Inhabitants \ Location	> 100,000	> 50,000	> 25,000	< 25,000
Legal (no location problems)	125	100	75	50
In separate part at > 3km	50	50	50	---
Only school in separate part at > 3km	23	23	23	23
Similar school at > 7.5 km	23	23	23	23
Exceptionally low accessibility	< 23	< 23	< 23	< 23

The implementation process was coordinated by the *HOB mixed committee, a fine specimen of corporate government*, in fact a formalised 'poldering' approach. The HOB committee was composed of representatives of the Ministry and of the organisations of Provinces (IPO) of Municipalities (VNG) and of the Associations in Particular Education (Ministerie, 1986, pp. 1, 2). The lenient Deetman norms were the result of a committee compromise in fact. The goal of the HOB operation was a reduction of the number of 8745 lower/basic schools of January 1983 by 600. In the first round 539 were closed, but 118 new schools were founded. The net result of 421 was a reduction by about 5% to 8324 (Ministerie 1986, p.5). Of the new schools 23 were founded on the basis of regulation 56.5 in the law, allowing for foundation of a school with only 50 pupils if another school of the same denomination lies at a distance of more than 5 km (Ministerie *ibid.*). No doubt a rather lenient norm!

A total number of 33 schools with less than 23 pupils were transformed into a basic school, many of which were closed later on, because pupil number development proved to be disappointing. It is remarkable that 27 of these extremely small schools were public in

character. It shows that Municipalities and Provinces still did put (extra) value on public education.

The case study of physical school concentration in the Province of Friesland in the next chapter will pay attention to a number of Frisian cases (subsection 5.6.5.2). One of those, the Public school at the Nieuwebilddijk near the village of St. Annaparochie, proved to be the smallest of all 33, counting 10 pupils only (Ministerie, 1986, Annex II). The Ministry was in serious doubt whether it was justified to continue a school that small and that expensive in cost per pupil. Wouldn't a dedicated transport provision be preferable? (Ministerie, 1986, p. 20).

3.5.2.4 Conditional integration: a second HOB closure round 1988

Quite a number of schools had insufficient pupil numbers in 1984 but were granted the opportunity to acquire larger numbers during a period of three years.

A HOB committee called '*accessibility project group*' was to elaborate a potential transport option.

Based on earlier assignments from Provinces, the author was invited to study the need and the potential for such a change of direction. For the Province of Friesland we estimated transport cost of secondary school closures. For the Province of Zeeland we developed principles and guidelines for reorganizing school transport, with a subsidy from the Ministry (De Boer, 1984-1, De Boer 1984-2).

The Ministerial Note mentions the results of our exploratory study, to be summarized as 'often problems were spotted before closure, but hardly taken seriously after school closure by those who were concerned about the problems (Ministry 1986, p.17; see De Boer and Van der Veen 1986).

We developed a method to assess the safety of new school routes and to compare infrastructure and transport solutions, which was accepted by the Ministry (De Boer, Lucas and Trimp, 1987). It was not applied in the second HOB round though, because the Ministry disliked the introduction of additional regulations in its policy domain (information Govert Vorstenbosch, Ministry of Education, 2007). Instead it issued a TU made guide for those confronted with school closure (De Boer, Nederveen and Oostlander, 1988).

The HOB committee decided to continue to work with the Deetman norms, most likely because of resistance from several participants to close more schools.

The goal of the second HOB round was a further reduction of the number of schools by roughly 200. Given about 150 foundations, 350 schools would have to be closed. The harvest yielded only 186 closures though.

The 1986 Note stated that the mean school size was declining still, in spite of the HOB operation: from 183 pupils in 1983 (lower and toddler school added up) to 174 in 1986. The need for another round of 'active preservation policy' after some years was mentioned (Ministerie 1986, p. 19).

3.5.2.5 Summarizing

Declining birth rates accelerated the decline of average pupil numbers in primary schools. The dear state of government finance made it necessary to at least stabilize the situation. It seemed not to be illogical to close the smallest and relatively most expensive schools in the countryside. Resistance from this side was however such that to ease the amalgamation of toddler schools and primary schools very lenient minimum pupil number criteria were introduced for smaller settlements and for schools at some distance from the nearest one. The idea of compensation of closures by providing centrally financed pupil transport was rejected, although it was demonstrated to be affordable in many cases.

3.5.2.6 *A puzzling kind of consideration of school travel*

From a transport perspective the approach in the HOB operations might be regarded to be peculiar. Traffic safety was a central argument against school closure, although it seemed to be taken hardly seriously after closure by those concerned. Distance was used as a kind of proxy for safety. This is hardly satisfactory. One should take into account the following considerations, to be verified and weighed in different situations.

Doesn't everyone have car or at least a bike to take or accompany the kids to school? Yes, but shouldn't the (older) child be able to go on its own? The roads in the countryside have been modernised completely, allowing for high, unrestricted speeds! In the city traffic has become really busy, but traffic calming was developed in residential areas. Now all the younger children might be delivered at least at the same address!

3.5.3 Secondary education: the 'Mammoth Law' of 1968 and the creation of 'School communities'

3.5.3.1 *System change with a modest impact on institutions*

In the period until 1990 secondary education underwent a radical transformation to create more coherence and efficiency. The Law of 1963, regulating the change, was called 'Mammoth Law' because it was regarded to be an enormous operation. School types dating from the 19th century were abolished. The Gymnasium, in fact the remoulded Latin school, escaped from termination though.

The principle of 'School communities' was introduced, being the combination of more than one curriculum within one institution. This was in fact not a new concept. The HBS for instance had a 3 year basic curriculum awarded with a diploma on request, followed by two parallel curricula. HBS-B was the real modern school with a focus on mathematics and natural sciences. The double reference to HBS in figure 3.3 is to be explained by the difference between the basic curriculum and the full curricula.

An effort was made close small schools in the HEF-VO operation aiming at restructuring and amalgamation in secondary education (*Herstructureren en Fusie in het Voortgezet Onderwijs*). Closure was only optional and not attractive, making the operation ineffective (3.5.3.4).

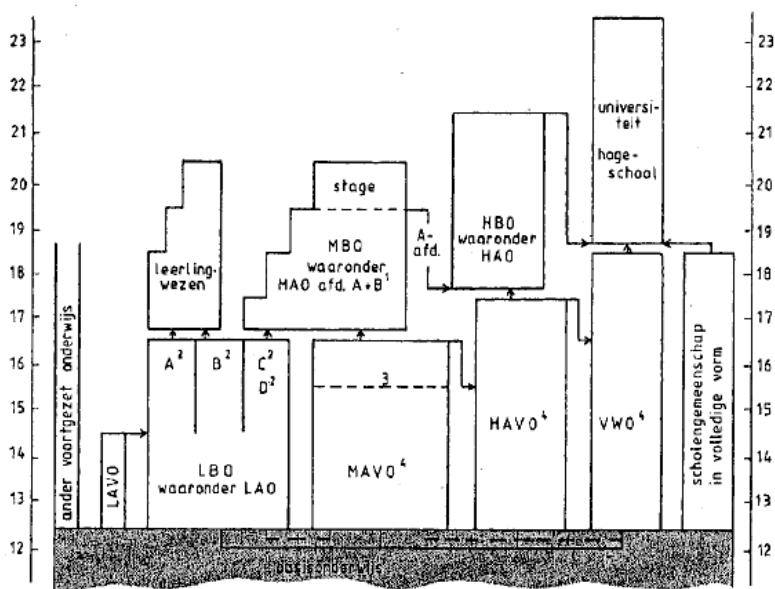
3.5.3.2 *Under the 'Mammoth Law': HBS, LHS and MMS exit*

The new *Law on Secondary Education* of 1963/68 was intended to improve the transfer from primary to secondary education and between different levels and categories of secondary education. The law was called 'Mammoth Law' because it was regarded to be a monumental operation (Goudswaard 1986, pp. 303 – 311).

The problem then and later was the entrapment of students in an educational direction, once a choice had been made. To ease the step from primary to secondary education for pupils a 'bridge year' was introduced to postpone the final choice for a specific type of school.

The HBS, preparing for most University curricula, and the MMS were abolished, to be replaced with a six year *Atheneum school*, because only about 50% completed the older schools in five years, and 40% did not complete these at all (see Ahlers, 2000). A similar, less difficult school (*HAVO, higher general education*) was introduced to prepare for higher vocational education in five years.

The (M)ULO disappeared as well, to be replaced with the 4 year *MAVO*, giving access to *HAVO* (4th year) and secondary vocational education. The female MMS and LHS were abolished as an act of women's emancipation. The LHNO went on though, of course with many of the LHS former students.



HAO = Hoger Agrarisch Onderwijs, Higher Agricultural Training
 HAVO = Hoger Algemeen Onderwijs, Higher General Education
 HBO = Hoger Beroepsonderwijs, Higher Vocational Training
 LAO = Lager Agrarisch Onderwijs, Lower Agricultural Training
 LAVO = Lager Algemeen Voortgezet Onderwijs, Lower General Secondary Education
 LBO = Lager Beroepsonderwijs, Lower Vocational Training
 Leerlingwezen = trainee system
 MAO = Middelbaar Agrarisch Onderwijs, Secondary Agricultural Training
 MAVO = Middelbaar Algemeen Onderwijs, Secondary General Education
 MBO = Middelbaar Beroepsonderwijs, Secondary Vocational Training
 VWO = Voorbereidend Wetenschappelijk Onderwijs, Preparatory Scientific Education

Figure 3.6 The structure of the school system after basic education from 1968 to 1995. Source: Goudswaard, 1985, p. 311

First phase secondary vocational education was structured into four main directions:

- technology,
- agriculture and natural environment,
- economics,
- service and health care

The second phase of vocational education was structured in a similar way. It is disregarded in this treatise, because it followed its own extreme concentration course.

It was the subject of a number of studies by the author, the most relevant one being 'MBO: Steeds verder van huis' (MBO: ever further from home), a case study of one region (Nederveen and de Boer 1994).

The new complex construction is shown in figure 3.6 (Goudswaard, 1985, p. 311).

3.5.3.3 The introduction of 'school communities'

The principle of the 'school community', being an institution supplying more than one curriculum, was introduced. The creation of '*broad school communities*' with curricula in both advanced general education and vocational education was stimulated as being positive for the desired exchange between curricula.

This kind of school concentration was in fact not unusual, neither in primary education nor in secondary education.

School types related to the primary school were often accommodated in these schools under one director. The small town of Leerdam counted four Protestant primary schools in 1960. Two of these had an extended (secondary) type of education.

- The 'Bergstraat School' had a VGLO department repeating primary education content for less gifted pupils until the end of the school duty age.
- The 'Juliana school' had a MULO department.

Curricula in general education were often or even standard combined in one institution.

- The combination of HBS and MMS was more or less standard
- Within the HBS there were in fact three curricula
 - the 'three year HBS' similar to MULO/MAVO
 - the 'five year HBS-B with two additional years, the original natural science oriented school
 - the 'five year HBS-A, the two additional years having a more economic/administrative character

Textbox 3.8. School communities before the coining of the concept

For abbreviations see annex 1.

The creation of school communities and especially that of broad school communities was a rather slow process. As late as 1981 only 3% of the schools belonged to the latter category (van Dam, 1995, p. 122). In the Gorinchem case study (chapter 4) the process is demonstrated for the two broad school communities of the city, both starting as a HBS.

3.5.3.4 The HEF-VO closure operation, a failure

Declining birth rates reached secondary education during the early nineteen eighties. Its impact on secondary education is shown in Figure 3.7. The figure comprises three types of information

- a histogram with the development of pupil numbers per year, approximated by the 12-18 year age category,
- a histogram with the development of the numbers of three types of education between three years, being 1981, 1988 and 1993,
- diagrams for school/pupil ratio of these types for those years.

The 12-age category fell by about 30% in the 1981- 1993 period. The school numbers are shown to follow that development slowly and in proportion to the changing taste for education type. The HAVO curriculum is clearly attracting more pupils, supported by a modest increase of locations. The MAVO curriculum with declining numbers of locations, profits from the spectacular decline of VBO locations. Evidently the Mammoth Law reforms had been a success, regarding the increasing numbers of students in the HAVO school type.

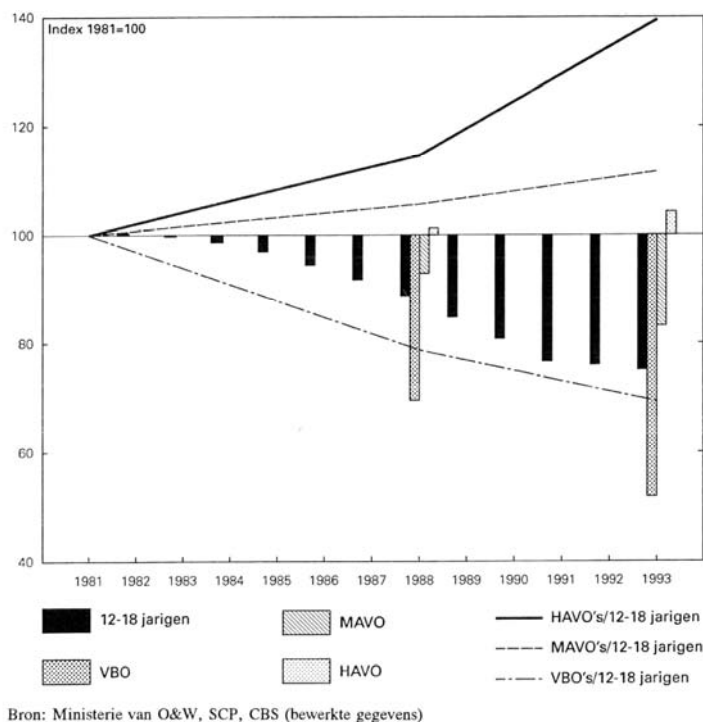


Figure 3.7 Development of the number of Dutch VBO, MAVO and HAVO schools and of the number of 12 – 19 year old, 1981 – 1993 (1981 = 100). Source: Van Dam 1995, p. 123. For abbreviations see annex a.

An operation was started to reduce the number of schools in the lowest range of secondary education, the HEF-VO operation of 1983: Restructuring and Amalgamation in Secondary Education. Until then a secondary school like a MAVO needed only 15 pupils per year. Given a four year curriculum this implied a minimum school size of 60 pupils. The goal of the operation was to quadruple the minimum size to 240 pupils. This process was facilitated but not enforced. Regional government was hardly enthusiastic, being afraid of a strongly reduced access to secondary education in the countryside. Categorical MAVO schools in the countryside seemed to suffer from decline caused by the attraction of school communities in regional centres, offering a certain perspective for continued education like HAVO. The ‘distribution plan for secondary education’ of the Province of Groningen does indicate this development (Provincie Groningen 1988). See chapter 4 for spatial development of secondary education in that region.

The Province of Fryslân gave the author an assignment to develop a method for assessing the closure cost of schools in terms of travel (bus transport and traffic safety measures) and to assess three cases. Assessed were a historical one (LAS Metslawier 1972), a closing school (LHNO Garijp) and a school under threat of closure: the Public MAVO at Kollum.

In the first case no cost could be calculated. In the second one closure proved to be advantageous, because two thirds of the girls came from the larger village of Bergum where they were to be accommodated at the local MAVO with an adapted programme.

In the third case the closure travel cost of the 200 pupils proved to be higher than the savings in education cost (De Boer, 1984, p.53). The alternative school was located at the city of Dokkum. The itinerary crossed the dangerous secondary road N358 (to be crossed by 70% of the pupils, tunnel required) and followed the 19th

century straight 'street road' along the tow canal Dokkum - Stroobosch N910 (cycle path required). The school is still on location as part of a regional school community 'Piter Jelles', supplying VMBO-T (successor of MAVO), HAVO and VWO. Piter Jelles has additional settlements in Dokkum, Leeuwarden and St-Annaparochie. There is now a roundabout in the N358 crossing and a cycle tunnel to the south of it, located in the school route from western villages to the schools at Kollum and close by Buitenpost. A cycle path along the N910 is still missing. Along the road one finds several citizens' monuments for traffic victims (information regional complaint department for traffic safety, 'meldpunt verkeersonveiligheid Friesland').

Textbox 3.9. An effort to assess the travel cost of school closures

Only 10% of the schools did amalgamate (van den Berg 2000, p.13). These were the smallest ones, which soon after the amalgamation with another small school threatened to become too small again. Blank and Boef mentioned that 50% of these schools had less than 60 pupils per school year and school type, the level that was strived for.

The operation was finished in 1987 because of uncertainty about the future of the school system. A 30 pupil rule was used for the time being (Blank and Boef, 1990 p.168).

3.5.3.5 Summarizing

The 'Mammoth Law' brought an enormous change in curricula, but much less in institutions, let alone locations. The decline of birth rates was felt in secondary education during the mid nineteen-eighties and therefore amalgamations of small categorical schools were encouraged. Especially the lower vocational schools suffered. MAVO did too, and probably the categorical schools more than those in school communities. The HEFVO operation intended to decrease the number of schools systematically was a failure.

3.5.3.6 Only modest travel impact?

The number of schools (institutions) declined only modestly, the numbers of locations perhaps even less, because the use of existing locations may have been continued. Transport impacts were no doubt modest, because the closed locations housed only a few percent of the pupil population.

There showed to be an increasing tendency though to choose for a higher level of general education and for curricula offered in school communities, both to be found in regional centres only. This implied longer cycling journeys on busier roads and probably an increased use of the moped by those of 16 years and older.

This development increased the awareness of safety problems in cycling and Provinces started to develop plans to expand the system of cycle ways along secondary roads. This can be noted in the transport plans of Friesland and Groningen of the time for instance. See chapter 4. For development of distances travelled see chapter 9.

3.5.4 Special education reshuffled

The new ISOVSO law, Interimwet op het Speciaal Onderwijs en Voortgezet Speciaal Onderwijs (Interim law on Special Education and Secondary Special Education) of 1982 defined a system of altogether 15 school types. The most common ones were LOM and MLK. The school for those with 'Leer- en OpvoedingsMoeilijkheden' was intended for pupils with difficulties in learning and behaviour. The school for 'Moeilijk Lerende Kinderen' was intended for those with modest intellectual gifts.

The SCP mentions for 1987/88 the existence of 1,001 schools for special education, an increase by more than 60% since 1963! Of these 326 were of the LOM type and 331 of the MLK type. The number of schools increased by 3% from 1985 to 1988, the number of pupils by 9%. The mean school size in 1987/88 was 135 for LOM and 101 for MLK (SCP, 1989, p. 29).

An effort to control school travel cost. The higher school density in special education did perhaps reduce the mean distance of school journeys in this sector, but it no doubt enlarged the volume of transport. The cost was born by the Ministry of Education seeking to economize on the ever rising cost in the early nineteen eighties. It expressed a preference for public transport to be used by the LOM and MLK pupils (and financed by the Ministry of Transport). Dedicated transport was to be organised (or rather remunerated) for these only on journeys longer than one hour and only when this might reduce the travel time by 50%, see De Boer (1984-1).

3.5.5 Summary

In this period from 1950 to 1990 *the school system underwent substantial changes under a series of pressures* such as:

- population growth and subsequent decline of birth rates,
- increasing participation in education with a shift towards advanced general education,
- the need to improve the exchange between school types to make the most of the potential of the population for a developing technological society and
- the need to economize in the face of rising cost and economic recession.

School concentration was introduced structurally in both primary and secondary education *at the level of curricula*.

In *primary education* the toddler school and the lower school were amalgamated to become the basis school. This vertical integration implied an enormous concentration of institutions, approaching the level of a 50% reduction. It had an impact on physical school concentration, because the toddlers had to be accommodated in one and the same building used for the older children. Since most of the toddler schools were built next door to a primary school, at the same location as defined in chapter 2, the reduction of the number of locations was only modest and so were travel impacts.

Efforts to increase the standards for minimum school size and to reduce the number of school locations in this way were hardly successful.

In *secondary education* system changes were incisive as well, although perhaps less than all the new names suggest. Under the VWO umbrella the old Gymnasium could continue its activities. The old HBS school institutions acquired a stronger position, giving unlimited access to University education as 'Atheneum' (an ancient name underlining this function) and incorporating the 'easier' HAVO as a rule. The principle of 'school communities' was introduced to express the desirability to supply several curricula within the same institution. The broad school community (general education plus vocational training) remained the exception though. Therefore the system changes had hardly an impact on the number of locations. A reduction of the number of school locations was caused sooner by the decline of school types like LAS, LHS/LHNO and MULO and by increasing the minimum school size from 15 pupils per year to 30: 120 pupils for a MULO/MAVO instead of 60. Here school (institution) closure will have been identical to location closure because the small number of pupils involved could be easily accommodated at the next one. The LAS demonstrated an impressive revival as 'green education' but now at mostly urban locations.

The number of HBS/Atheneum/HAVO locations no doubt increased during the period, because of an increased population and participation, but this development was not studied.

In *special education* there was a distinct de-concentration caused by the same tendencies. School travel increased however because of increasing specialization and participation.

Travel distances are not unlikely to have increased for some categories of schools/curricula, not so much in primary education, but sooner in secondary education. This was caused by closure of small secondary schools of certain types, being both general and vocational in character. It concerned the MAVO, LHNO/LHS and LAS types. These closures were incited largely by a spontaneous decline of pupil numbers, caused both by a shift in demand and inspired by a coming wave of lower birth rates. The numbers of pupils affected were no doubt quite modest though.

Travel opportunities changed radically. First full 'bicyclization' developed and after that nearly general car ownership. The second development threatened traffic safety both in the city and in the countryside though. This threat inspired traffic calming in residential areas and construction of additional cycle-ways, both inside and outside the city.

The balance of these interactive developments is likely to have been a positive one.

3.6 School Reforms after 1990. Larger integrated and independent schools

3.6.1 A general policy to create larger organisational units, being able to work with fixed budgets

In this period, which has not ended yet at the time of writing this text, ambitions of the previous period were continued and new ones were added. The *approaches changed* though. Quality improvement and cost control had always been important goals, but now efforts were made to achieve these in ways different from before:

- creating larger school organizations integrating different school types, both with regard to school authorities and school institutions,
- giving the institutions a fixed budget, having to control cost themselves (requiring larger school authorities),
- *stopping bothering about locations*, providing a fixed budget for school buildings to local government.

In the early nineteen nineties *a renewed effort was made to do away with the small school*: a committee of officials proposed a minimum *primary school* size of 250. Rural Netherlands organised massive political resistance, which was successful. In the countryside schools with only 23 pupils or even less could be continued in scarcely populated areas. The goal of a stable number of schools was achieved by closing relatively large urban schools and by introducing a 200 pupil minimum standard for school foundation, being much higher in densely populated Municipalities.

The efforts to create larger *secondary schools* were successful at last. The number of schools was reduced from 1917 in 1987/88 to less than 600 in 1999/00. Herweijer presents data on 'nevenvestigingen', subsidiary locations, probably official satellites, until 2000 (Herweijer 2002, p.74). Van den Berg is the only author who mentions the use of 'dislocations', in-official school locations not financed by national government. These locations must be known to get a correct picture of physical concentration and the school travel distances caused by this (van den Berg, 2000, p. 64).

In *special education* ambitious measures were taken to fight growing participation: promoting reintegration into regular primary and secondary school with the help of individual budgets for pupils, introducing the 'special primary school' as part of a regional cooperative association of regular primary schools and abolishing secondary special education (VSO), integrating the pupils in regular secondary schools. These efforts were only modestly

successful. VSO was continued in fact in the ‘Practice school’ curriculum of ‘broad school communities’ covering the whole range of curricula in secondary education.

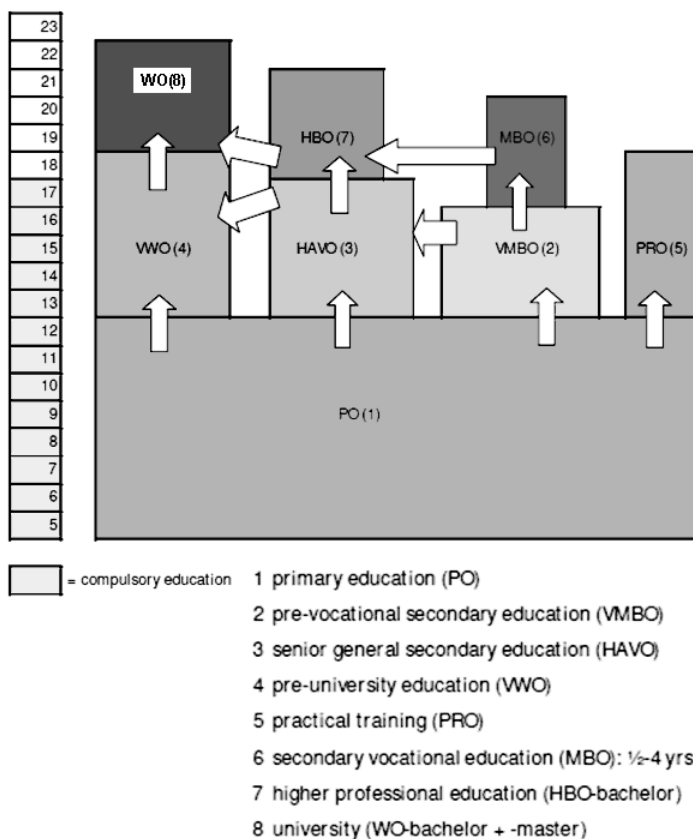


Figure 3.8 The structure of the Dutch school system in 2008 (Source: Colo, 2008).

The revised structure of the school system is indicated in figure 3.8. After 8 years of primary education, secondary education may be enjoyed at four different levels, varying from pre-scientific (VWO) to purely practical (PRO). A common three year basic secondary education was introduced in 2002 and withdrawn soon. In spite of the intentions, it was no integrated supply. Even at schools with the full supply of VWO, HAVO and VMBO pupils were placed in classes with education levels according their assessed potential.

See for a full description the site of the Dutch Ministry of Education. <http://english.minocw.nl/english/education/index.html/>.

3.6.2 Political and scientific pleas for larger schools

In our theoretical chapter 2 the political pressure for school concentration was mentioned as were the SCP studies into this subject. These events will be recapitulated and the SCP results will be discussed in more detail.

At the discussion of the national budget for 1989 a majority of national parliament passed a vote stating ‘... that pedagogical renewal being started in all sectors of education, demographic and technological developments and financial-economic potential in the near future make necessary a policy to enlarge the scale of education.’ It invited government to have a ‘rearranging plan’ developed by a committee of independent experts. The savings were to be invested in an improvement of the quality of education (Sociaal en Cultureel Planbureau 1989, p. 4).

The Ministry of Education gave the SCP, the Dutch (governmental) Institute for Social Research, an assignment instead. It was to ‘collect empirical material for a societal discussion whether and how advantages of scale may be achieved in basic, special and secondary education’ (SCP, 1989, p. 5).

This more restricted task was motivated as follows:

‘The largest and most urgent problems of scale are occurring in primary and secondary education, where earlier amalgamation operations (HOB and HEFVO) did not or hardly lead to an enlargement of scale, but did put a break on a further reduction of scale at most. Both sectors are at a deadlock. Developments in special education will have to be related to those in primary education.’

The first exploratory study of 1989 explains the general problems of school and scale, the intricacies of school planning both for expansion and reduction and the research topics. For each of the three school types conclusions are promised with regard to:

- optimal school size as seen from different perspectives: cost, quality and accessibility (interpreted as travel time),
 - an optimal spatial distribution of schools as seen from ...
 - the need for supporting policies, regarding transport for instance.
- (SCP, 1989, p. 45).

The SCP reported in 1990. The report discusses the education sectors separately.

For primary education it arrives at the following conclusions:

- there is no proven relationship between school size and the quality of education,
 - up to a size of 400 pupils education is increasingly cheaper in terms of cost per pupil. Given a mean cost of hfl. 4,200 per pupil the level of a school with less than 75 pupils is 75% higher and that of a school with more than 300 pupils 10% lower,
 - accessibility is hardly a problem, even in case of a 250 pupil minimum size for a rural school. Of the pupils 93% will still find a school locally. Only 3% will have to travel more than 3 km. This in spite of the fact that only 50% of all settlements would have a school left. In 1990 79% of the settlements had one or more schools.
 - pupil transport might be a solution in problematic cases. It is only vaguely mentioned though.
- (Blank and Boef, 1990, pp. 109 – 117).

3.6.3 Granting schools a degree of autonomy and stimulating concentration of school authorities

Traditional government tends to reign by detailed regulations to make sure that its policies are put into effect correctly and that the people, the subjects of these policies, are not subjected to arbitrariness.

Modern government makes efforts to deregulate, to leave the details of applying its policies to responsible authorities like the education authorities. For central government it has the advantage of a reduced cost of administration.

In Dutch education a *deregulation philosophy* was conceptualised in 1988 (SCP, 1989, p.32). Its central idea was providing each school with a fixed budget to be spent at will on different

entries. Of course the school would have to report on input and output. This and the local policy development required were likely to increase the cost of school authorities. In fact the movement was supported by the associations of confessional schools as early as 1990, to prevent closure of small schools. Boef explains that, as soon as this was prevented, the enthusiasm for larger authorities cooled down (Boef 1995, p.75). Therefore there was very little movement from 1992 to 1994. In fact the mean number of schools per administration decreased from 2.4 to 2.3!

The Ministry of Education increased the independence of individual schools since then and it moreover stimulated the *creation of larger school authorities by providing additional funding*. A gradually larger part of management tasks, like paying the salaries, arranging for insurances, and maintenance of buildings, rests with the school administration, which has to professionalize and to grow in volume. This is possible only with larger schools or with a larger number of schools. See for a general analysis of national government education policies Van Wieringen (1996).

This was reason to enhance a concentration of school authorities. Until 1988 the authorities of particular schools were organized at a local level. In primary education about 3500 authorities were managing about 8000 schools. Municipalities, being responsible for public education, managed a mean number of 10 schools.

The authorities for particular schools in primary and secondary education managed a mean of just 1.9 schools. Only two particular school authorities managed more than 10 schools (SCP, 1989, p.33).

The SCP noted the beginning of a process of concentration of authorities and of supporting administrative and consultancy organisations (pp. 33/34).

The Education Council did an exploratory study into bureaucratisation in education. It mentions a reduction of the percentage of authorities governing only one school from 63% in 1995 to 51% in 2001 and 46% in 2003 (Education Council, 2004, p. 39).

The number of primary schools was reduced from 8,145 to 7,721 in the 1995 - 2001 period. The Council mentions for 2003 a number of 6,994 schools at 7.150 locations. These were likely to be official satellites only (EdB). See the Zwijndrecht case study in chapter 6.

The policies of the Ministry have become quite successful. The number of school authorities is decreasing rapidly. School authorities with only one school, once dominant in the countryside, might be close to extinction by 2015.

The site of 'ab-zhw, ict management and education' consultancy shows a number of 16 sites of particular school authorities in the urban western part of the country. These cannot be regarded to be a representative sample, but the sheer size of some of these is typical of the development.

- SCO Lucas, probably the largest authority in the country, governs 59 schools of different types with 29.000 pupils in the urbanized western part of the Province of South-Holland, including the city of The Hague. It was the subject of a 2005 case study of the Education Council (Baarda and Smets 2005).

- SCOH, concentrating on The Hague, governs 36 schools of different kinds.

- CVO Rotterdam governs 7 secondary schools with 22,000 pupils on 40 locations (www.abzwhw.nl/cms, retrieved 2007)

In chapters 5 and 6, on physical school concentration in primary education, the development of the number of school authorities will be studied for one region (the Province of Friesland) and a few urban Municipalities. The relationship of this development with those of the numbers of institutions and locations will be assessed.

3.6.4 The 'Equipment and accessibility' operation in primary education

The SCP study did not produce clear-cut recommendations for school concentration, in spite of the fact that it did conclude that small schools were relatively expensive and that accessibility problems would be modest and probably to be solved by school transport. In the

most radical option, a minimum school size of 250 pupils, irrespective of the degree of urbanization, the savings on education were estimated to be 700 million Guilders (about €320 million) per year and the cost of school transport for all pupils visiting a school outside their own settlement 20 million Guilders per year.

Strange enough the earlier German experiences with rural school closures and school transport were not studied. There is no German source to be found in the study, nor is there in the van Dam study, which used data collected for the SCP (van Dam, 1995). See: 'a German intermezzo' (Textbox 3.10).

Before the SCP reported a 'project group scale enlargement primary education' of officials of the Ministry of Education produced a report with two remarkable statements (Ministry of Education, 1990, p. 106).

1. The optimal school size is 500 pupils from a point of view of educational quality.
2. A uniform minimum standard for existing primary schools should be 250 pupils.

In order to guarantee accessibility public transport and school transport should be improved (Ministry of Education, 1990, p. 39).

This created storms of protest, with two central arguments:

1. The relationship between size and school quality is not proven (confirmed by SCP),
2. It would create unacceptable accessibility problems in the countryside (denied by SCP).

The countryside managed to organize support from the large factions in Parliament. Radical school closures in the countryside were not accepted.

The Under-Minister of education, Mr. Wallage, bound by the government agreement of the coalition parties *chose for closure of urban schools*: 'large schools where possible, small schools where necessary' (Under Minister, 1991, p. 15).

In the operation '*Equipment and Accessibility*' (Toerusting en Bereikbaarheid) the new approach was elaborated and executed.

- Each Municipality is assigned founding and closing standards on the basis of its pupil density (pupils per km²). For foundation these vary from 200 to 333 (an enormous scale enlargement), for closure from 23 to 200.

The minimum pupil number for school founding in the Municipality of Zwijndrecht for instance (subject of studies in our chapters 6 and 8) is 290 pupils (see Staatscourant, 16 september 2008, nr. 179).

- By taking population density as a central criterion, a flexible distance criterion was introduced in fact. There were no calculations made of the consequences for travel distances (EdB).

- a Municipality may split its territory into two parts in case of large disparities in pupil density, introducing different norms for these,

- the only school of each denomination within a radius of 5 km, may stay open if it has at least 50 pupils

- public (communal) schools may stay open if the distance to the next one is more than 10 km

- a too small school, having at least 23 pupils, may stay open, when the mean school size of the relevant authority is 160% of the closure norm, or 290.

(cited from Boef, 1995, pp.17, 18).

Until then the school was synonymous with the school location. Under the regime of Equipment and Accessibility this changed, both in a formal and in an informal sense.

Schools were allowed to continue their existence as *satellites* (nevenvestigingen) with the necessary funding under certain conditions:

1. being the only school within 2 km as the crow flies, having at least 23 pupils,
2. being the only school of its denomination within 3 km as ..., having at least 50 pupils
3. being the only school of its denomination within 5 km as ..., having at least 23 pupils,
4. being the only public school within 10 km by road, irrespective of pupil numbers (!)
5. belonging to a school authority with a mean school population 10/6 the minimum norm, or 260 and having at least 23 pupils.

(Boef, 1995, p. 27).

On this basis former schools, which had amalgamated with continued schools were still serving as education locations. In the CFI financial registration of the Ministry of Education these are included under the code of the school proper with the indication 'settlement' (vestiging) or 'inspection location' (inspectie locatie). The second category of locations is only tolerated, not financed. It is included to make clear that the location is assessed by the Inspection because it supplies a full curriculum.

The existence of these 'shadow locations', formally 'dislocations', can be explained by the fact the Equipment and Accessibility operation was meant to economize on the cost of education proper. No additional funds were provided to accommodate the pupils of closed schools in the buildings of continued schools.

It is remarkable that one does not find references to *German developments* in the debate, not even in well documented studies like those of Boef and van Dam.

The Bundesland (State) of Niedersachsen for example saw a large decline in birth rate during the nineteen sixties and seventies. From 1974 to 1984, the deepest point, the primary school population declined by more than 40%. About 1970 Germany did away radically with the small village school, which was regarded to be obsolete. In Niedersachsen the minimum size for a Grundschule was from then on one with two parallel classes for each of its 4 years, roughly 200 pupils, with only a few exceptions for schools half that size. For Dutch schools with their 8 classes this would imply a pupil number of 400.

The school closures have not been documented. For the Landkreis (county) of Aurich we found that of about 120 schools only 53 survived, which implies that 70% of the country schools were closed (de Boer and van Goeverden, 2007).

In 1980, when the decline was still going on, and ever more schools had to be closed, the Bundesland changed its course. The new policy was presented by the Minister of Education in a booklet, in which the small school was praised for its opportunities to personalize education (Remmelts, 1980). It cites a committee of the Land complaining about the massive pupil transport that had been caused by the closures. In the mid-eighties it was costing yearly about one billion Euro's (then about two billion Marks) for the whole German Bund.

'Burdening factors are overloaded and ill to children adapted means of transport, violence exercised by older pupils, a lack of consideration of adults, a lack of protection from weather conditions and from traffic risk at bus stops, early leaving home and returning late, irregular bus schedules that are not observed, a lack of supervision, insufficient coordination of school hours and time table of the bus' (Remmelts, 1980, p.24).

Under the new regime a pupil number of about 40 would be sufficient for a school to continue, if the journey to school would get worse for a substantial part of its population upon closure (Erlasz des Niedersächsischen Kultusministers, in Remmelts, 1980, p.90)

Similar developments or at least feelings could be noted in the State of Bavaria. Citing Schorb (1980), p. 34. The cost of pupil transport in Bavaria amounted to 275 Million DM in 1976 (Schorb same page).

Textbox 3.10. A German intermezzo on school closure and school transport

These developments may imply that about ten years after closure or amalgamation of more than a thousand too small schools most locations do still exist, either as an official satellite for which additional means are provided by the Ministry of Education, or as a dislocation for which this is not the case. In the Frisian case studies (chapter 5) the presence of dislocations will be registered. A case study of the South-Holland Drechtsteden region, counting several

dislocations is added to get a better understanding of the development of urban locations (chapter 6)

The national statistical office CBS mentions in its 'Yearbook education in figures 2009' the number of 6910 primary schools and some 170 additional 'teaching locations', probably government financed satellites (CBS, 2009). Inquiries at the CBS lead to an agreement on the likely number of additional Inspection locations, being an estimated additional 1,000 ones!

Summarizing. Again the Ministry of Education did not manage to convince Parliament that small schools in the countryside could be disposed of. In order to stabilize the number of schools it decided to reduce the school institution density in cities on the one hand and to make the founding of new schools difficult on the other hand. For this approach it could find support. By not bothering about locations, leaving the cost of those to Municipalities and school authorities, it achieved its goal of economizing all the better, because many schools continued at the old location while being part of an institution formally housed elsewhere. School authorities were invited in fact to amalgamate by the new 10/6 rule for the mean school size, allowing these to maintain schools that did not comply with the minimum pupil number standard of the location Municipality. In the Frisian case study we will see whether this happened indeed.

Travel impact? From a transport perspective this development was not neutral in character. For the countryside the impact was no doubt marginal, but for the city it did have an impact especially in neighbourhoods with an ageing population. On the long run it may have the impact of location concentration in order to economize on the cost of education buildings, both by school authorities and by local government. This concentration is supported by other tendencies too, like the 'broad school' movement (see chapter 6). The result is not unlikely to be the creation of school catchment areas which are larger than traffic calming areas and an increase of parental pupil transport by car. The latter development is partly an autonomous tendency, stimulated by a second parent job and second family car, alas adding to safety problems on school routes and at the school. See chapter 9 on school travel.

3.6.5 Introduction of 'basic training' in secondary education

The 'Wet op de basisvorming' (Law on basic education) of 1993 remoulded secondary education by prescribing a *uniform three-year (continued) basic training*, i.e. a largely common curriculum *in all secondary schools*. It should solve the problem of a premature (and wrong) choice for a specific type of secondary education forever. Especially the MAVO was favoured by the public to the detriment of lower vocational education, which witnessed a dramatic decline in lower technical education for instance. It demonstrates the constant craving for general education hoping for social improvement. As for the MAVO, only 15% of its students did continue in HAVO, but it could prepare as well for the secondary level of vocational education, MBO, in the fields of care and administration.

The lowest school for general education, *MAVO*, and *lower vocational education* (craft schools, lower economic and administrative schools etc.) were *amalgamated into VMBO*, preparatory secondary vocational education. This school type has four different learning-paths: theoretical, mixed, staff oriented professional and basic professional. In fact the operation enlarged the opportunities to receive secondary general education for the slower and less gifted students.

Only the theoretical path gives access to HAVO. Only late in the second year students can choose for an application field: care, administration, technology or green and nature.

The influx of pupils is guided by an advice from the basic school, indicating VWO, HAVO or VMBO). It implies that students are placed in different streams preparing for an education at the indicated level. The consequence is that in spite of one and the same programme integration is restricted.

To harmonise the selection and choice process as much as possible, the creation of *school-communities* with all types of (first phase) secondary education is encouraged. It makes correction of the original school choice easier.

The most important *stimulus* for creating school communities was the introduction of different standards for minimum pupil numbers for curricula inside and outside school communities.

In 2008 existing *categorical schools* for MAVO (4 year curriculum), HAVO (5 year), Atheneum (6 year) and Gymnasium (6 year) had to have at least 240 pupils, ignoring the differences in length of their curricula. As soon as a MAVO is part of a school community this may be reduced to 80 in fact. The Lyceum community of Atheneum and Gymnasium requires 300 pupils in stead of 2 x 240 pupils for a minimum (Ministry of Education 2008, section 107).

For recent standards see Law on Secondary Education, 2009, foundation and closure norms, articles 65 and 107, www.overheid.nl/wetten/

A second *stimulus* is the privilege for broad school communities, i.e. those schools with the full range of education types, to have subsidiary locations (nevenvestigingen). Some of these may receive additional funding because these have to be maintained for reasons of ‘required spatial distribution’ (spreidingsnoodzaak), meaning that the distance to the main seat of the institution is thought to be too large.

The distribution of this type of satellite will be investigated for the Provinces of Groningen and Friesland (chapter 4).

The law does not enforce the creation of school-communities. The growth of broad school communities is spectacular though. These communities with full curricula in both all VMBO directions and HAVO/VWO were nearly absent in 1992/93. In only 7 years about 60% of the independent institutions disappeared.

The broad school communities now constitute more than 40% of all schools. The only other category that suffered hardly, was the small one of categorical VWO schools including many of the old Gymnasias, going on in ‘splendid isolation’ and being popular for that exclusiveness. See Figure 3.9, VWO.

The national statistical office CBS presents different figures for the numbers of schools, being 692 for the year 2000 (SCP 600) and 658 for 2008 (CBS, 2009). See table 3.5, compiled from the CBS Statline site. These differences are unexplained.

The amalgamation of schools does not imply automatically a physical integration of curricula and pupils on one location. In secondary education one may note the same location phenomena as in primary education. There are official main sites, accepted and even financed satellites and dislocations, the latter being only tolerated by the Ministry of Education.

Figure 3.10 shows the number of satellites known to the SCP in 2002 (Bronneman – Helmers 2002). It proves to be respectable, suggesting that less than 20% of the locations of 1993/’94 had gone.

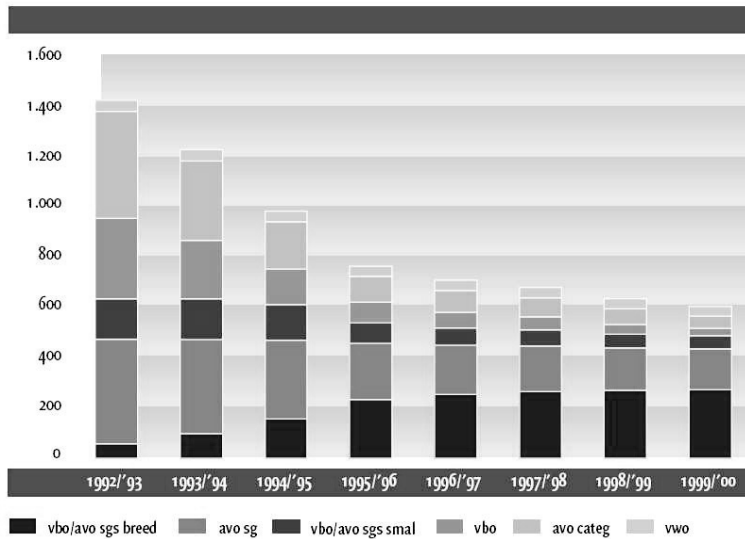


Figure 3.9 Evolution of the number of schools for secondary education in the Netherlands from 1992/'93 to 1999/'00, regarding school structure (Figure 4.2 in Bronneman-Helmerts a.o. 2002, p.73).

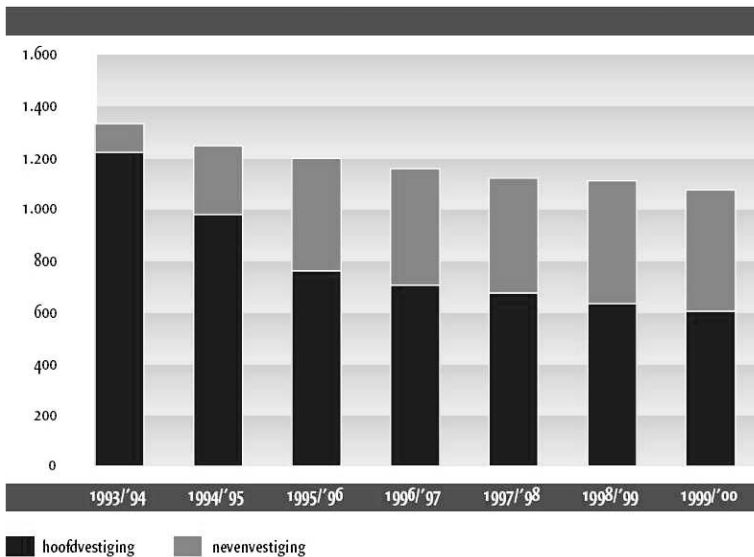


Figure 3.10 Evolution of the numbers of main locations (hoofd ...) and satellites (neven ...) in secondary education 1993/'94 – 1999/00 (Herweijer 2002, p. 79). Locations of Practice schools (56) not included.

Basic training was generally regarded to be problematic for two reasons, being *an overload of courses and a lack of integration*.

The basic training programme counted 15 different compulsory courses, in each of which both theory and practice were to be taught during 2.5 years.

Integration of different hitherto separate curricula was thought to be necessary to prevent early and wrong choices. In the broad school communities pupils are selected upon entering the school on the basis of the assessment in the primary school. They are put in classes with pupils of a similar level. It means that integration is quite modest from the very beginning.

Reports and expertises of the National Education Council and the SCP institute advised to change the structure of the first years of secondary education.

The Law on Secondary Education (WVO) was changed by the Ministers of Education, Agriculture (responsible for that branch of education) and Justice. *Basic training was abolished* and replaced with a set of ‘central targets’ in 13 categories.

The school (or rather the school authority, ‘bevoegd gezag’) is to develop a coherent curriculum ‘.. for the different school types and different groups of pupils, respecting the stimulation of upward mobility and the freedom of choice for the pupils (Minister of Education a.o., 2006, p. 3). These ‘differentiations’ are a rather explicit acknowledgement of the practice of working with school or ‘level groups’ in the school population (EdB).

Summarizing. The introduction of basic training brought a spectacular decline of the number of school institutions but much less so for locations. The basic idea of integration to improve the opportunities for disadvantaged pupils proved to be only moderately successful. Therefore it was replaced with a shorter and more open programme. This is likely to make it somewhat easier to continue the use of different locations, because fewer specialist teachers are needed.

Travel impact and travel conditions. The impacts for school travel are perhaps less clear than ever. Relatively few locations seem to have been closed. It might be that these were predominantly rural ones. In that case the pupils involved will have to travel longer distances than before. For the entire school population the sum effect will be modest. The massive amalgamation of institutions is not unlikely to have caused migratory processes within the cities though. These may change travel distances and travel conditions for both pupils from the city itself and from outside it. Cycling policies have been continued though, both outside and inside the city. The conditions for cycling, the favourite travel mode amongst this public, were improved by the continuing expansion of the dedicated cycling network and of regimes to lower speed limits, even on country roads.

The 1999 evaluation of the ‘Masterplan Fiets’ reports a remarkable reduction of cyclist fatalities and (serious) injuries between 1980 and 1999. Fatalities were reduced by about 50% in spite of a certain growth in cycling (Directorate – General, 1999, p. 80).

3.6.6 The ‘Together to school again’ operation in special education

In 1990 the plan ‘*Weer samen naar school*’ (Together to school again) was presented. Special education, expensive because of a much lower pupil – teacher ratio, was growing fast still. The basis-school was thought to be able to keep more pupils within its walls by cooperating with special schools. The most common special schools, those for children with behavioural problems (LOM) and with restricted learning capacities (MLK), were amalgamated into ‘special basic schools’, and were to be provided regionally and to cooperate with basis-schools in their region in order to provide adequate services for problematic pupils. The growth of this type of education in absolute numbers was reversed around 1995 (Source: CBS Statline).

The *departments for secondary education* (VSO) in these schools were *closed* around 2000. The students would have to be integrated into normal secondary education. Vlietstra, chief-inspector of Dutch BLO, presented this principle already in 1965 (Knijff, 1965, p. 277). Of course integration is not all that easy and many of the schools can be found back as ‘practice

school' location (praktijkschool) or 'care location' (zorglocatie), being part of the local broad school community.

The more specialized special schools, so-called '*expertise centres*' would have to cooperate in regional centres, to guarantee a correct assignment to a specific type of school. Pupils with an indication for one of these schools might nevertheless be admitted to a normal basis-school with a '*rucksack*', an amount of money for tailored individual support.

One category of expertise centres, the 'cluster 4, very difficult to rear children' was growing spectacularly though, from 3080 pupils in 1995 to 4600 in 2006.

Summarising. The development trend in special education was directed towards integration, even more than was the case in secondary education. For the 'light cases' this seems to have been modestly successful, partly by integration into standard primary education, partly by enforcing a regional, coordinated provision of basic special education in the special primary school.

Implications for school transport. For school transport this implies that more pupils are living so close to school that they are not entitled to dedicated transport. Given the abilities of these pupils this is slightly worrying.

Dedicated transport is subjected to continuous scrutiny for economizing, threatening travel conditions. There is little doubt that the growing number of cluster 4 pupils, who often do require school transport may constitute a problem for transport itself.

3.6.7 Summary and perspectives for further studies

In this period, from 1990 on, institutional school concentration seems to have reached its summit, but with rather uncertain implications for school travel, partly because the once strict relationship between school institution and school location was relaxed.

In *primary education* the 'natural' tendency towards ever more schools seems to have been thwarted definitely by demanding high pupil numbers for new schools: a minimum of 200 pupils, even in the countryside. Efforts to close small country schools were thwarted definitely by Parliament and therefore much larger urban schools were closed in order to reduce the number of schools under the assumption that this would have less serious travel impacts. Indeed the mean distance to the next school 'of the desired kind' is likely to be shorter than in the countryside, but what about travel conditions?

The case studies in chapters 5 and 6 will have to shed light on the development of locations, which may include considerable redevelopment of old locations and development of new locations.

The Zwijndrecht case study (chapter 8) will shed light on the influence of general travel conditions on school choice.

In *secondary education* the system change to basic education and the privileges of school communities and especially those of the broad school communities to have satellites had a spectacular effect on the number of school institutions. These were reduced by 60% in seven years time from 1992 to 1999. De impact on the number of locations seems to be rather limited because the number of satellites increased from less than 150 in 1993 to about 500 in 1999.

The case studies in chapter 4 will have to shed light on the development of locations, which may include considerable redevelopment of old locations and development of new locations.

In *special education* underwent important system changes, but, more importantly, participation as such was sought to be reduced. The system changes were regional provision of the most common special education in the special primary school and abolishing secondary special education of the schools of these common types. Integration in standard primary education was financially supported. Integration in standard secondary education was enforced, but it proved to be largely an institutional manoeuvre, because the VSO-department was continued in fact often as the 'Practice school' department at a separate location of the local secondary school community.

Developments in this small sector of education, that does not seem to develop unfavourably in terms of accessibility, will not be subjected to further studies. Only for this sector school transport is substantial in The Netherlands. Therefore this traditional subject is discussed neither.

Two related general matters deserving attention.

School concentration causes larger travel distances. But what distances may be regarded to be acceptable, especially in relation to the learning duty, or rather the school duty? We will seek an answer in *chapter 7, a reasonable distance to a reasonably large school*.

School travel, chapter 9, including school travel mode choice, is the subject of our final study.

3.7 General conclusions: towards more coherence and diversification, requiring larger school organisations, but not necessarily larger locations

The development of the school system was described in this chapter, distinguishing five periods of widely different length.

Of course the most recent periods are the shortest ones while being discussed at length. Recent history is likely to be more useful for actual policies, but moreover the efforts to create a school system which is both functional for society and beneficial for the individual have become more intense during recent decades.

The search for an optimal integration of schools and of the individuals seems to be continuing. It is contrasting with the need for a certain diversification in education, both for society and individual.

In recent decades the congruency of school institution and school location has become more and more uncertain. For the study of travel impact of school concentration, the character of concentration has to be studied at a regional level (school settlements) and at a local level (school locations). Chapters 4 to 6 are dedicated to this physical concentration. The chapter on secondary education (4) is more exploratory in character. The chapters on primary education are more explanatory, especially because of inclusion of larger numbers of schools and the use of a more distant time horizon.

3.8 Further changes to be expected?

There seems to be no clear perspective for further change in the Dutch educational system, except maybe for the most constant element, being the religious orientation of education.

Demographic developments are not spectacular, neither with regard to birth rates, nor with regard to population development in general, although some rural Municipalities and less attractive regions in the periphery of the country may suffer from out-migration (Demos, 2009). Parish schools were primarily religious in purpose. Urban French schools taught religion as one of the subjects. Municipal schools worked during the nineteenth century on the

basis of a liberal conception of Christian religion. In the twentieth century municipal schools were made non religious and orthodox religious schools received equal rights.

The *religious orientation* of the Dutch population seems to be weakening rapidly, and especially the active participation in religious activities. Becker and De Hart (2006) mention an increase of the percentage of people considering themselves not to be connected to a church (buitenkerkelijk) from 24% in 1985 to 64% in 2004). About 50% is distinctly non religious. Yet the particular schools do not show signs of decline in the 2000 to 2008 period. These still are controlling two thirds of the market as demonstrated by table 3.5.

Implications for hypothesis 2.5.5.

Hyp.2.5.5. Secularization causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.

The hypothesis has to be **rejected**.

Religion has become a less and less important motive for school choice (see chapter 8). Therefore some argue that religious schools should be abolished. Some types of religious schools however still have their own dedicated customers. This is true of the orthodox protestant schools of the types 'Reformatorisch' and 'Gereformeerd' (vrijgemaakt). It is also true to a certain extent for the anthroposophist 'Free school'. It certainly is true for the relatively new Muslim schools (nationwide more than 40 schools) which have their basis in different branches of this religion. The fact that these sometimes promote ideologies antagonistic to Dutch society, and the fact that these show concentrations of disadvantaged pupils constitute arguments to abolish religion dominated education. Some of these problems will be discussed in chapter 8 on school choice.

Table 3.5 Development of the number of schools, their mean size in pupil numbers and the total numbers of pupils in 2000 compared with 2008. Source: CBS Statline.

	2000			2008		
	schools	mean size	pupils	schools	mean size	pupils
All primary	7059	219	1,546,550	6913	226	1,552,548
second.	692	1268	877,180	658	1431	941,469
spec. pr	368	140	51,560	316	122	44,932
special	332	138	45,820	323	210	64,658
Publ. primary	2331	211	491,920	2277	209	475,683
second.	187	1192	222,820	186	1303	242,433
spec. pr	103		13,650	87		11,217
special	79		9,610	74		12,235
part. primary	4728	221	1,054,630	4636	209	1,076,865
second.	505	1294	654,360	472	1570	699,036
spec. pr	265		37,910	229		33,715
special	253		36,210	249		52,423

Note: The number of primary schools refers most likely to institutions. CBS mentions about 200 additional 'teaching locations'. The data in our chapter 6 (section 6.3) suggest that there are most likely about a 1000 more of these locations. The CBS specialist for this field agreed with this after a discussion with the present author.

Further changes maybe found in correcting or completing recent changes in the school system. The abolition of special secondary education and the integration of the students into mainstream education seem to have caused *security problems* in numerous schools. The Ministry of Education seeks to counteract these by creating thousands of places in cluster 4 expertise centres for pupils with behavioural problems.

The unsatisfactory choice and selection process in secondary education is reason to discuss the continuation of separate MAVO-schools, in order to increase the chance for a *transfer to adequate vocational* training. The number of school institutions is still declining as data retrieved from the CBS Statline site show. See table 3.5. The number of pupils in special primary education is going down, but the decline is more than compensated for by the growth in the ‘heavy’ expertise centres. There the cluster 4 centres for those with very serious behavioural problems are grown by 50% in primary education en 120% in secondary education from 1996 to 2006.

3.9 Implications for our theory

Three hypotheses were to be discussed in this chapter. We will do this in numerical order. The hypotheses are presented in table 3.6, including the general outcome, being either confirmation or rejection.

The hypothesis postulating a *decline in agricultural education* (nr. 3.4.2.) as a consequence of a decline in agricultural employment was confirmed in two respects, concerning both the number of schools (institutions) and the numbers of pupils. Yet a later increase of interest in ‘green’ education was found. The supply of curricula included over 100 locations in 2010.

The hypothesis postulating a *decline in (demand for) religiously coloured education* (nr. 2.5.5) had to be rejected. In all three types of education considered religious schools are dominating the market in spite of a remarkable secularization trend amongst the population, at least in terms of (a feeling of) belonging to a church community.

Perhaps most religious schools present their identity very modestly only, perhaps with the intention not to repel non-believers. In all discussions on school concentration the religious character of schools was hardly a topic.

This outcome is in strong contrast to our analysis of the development of school institutions in two Northern Provinces as will be presented in chapter 4.

In chapter 8 on school choice, the religious character of a school will be one of the variables in a modelling effort. It will show that it is a dominant motive, certainly for some religious minorities.

Table 3.6 Assessment of the hypotheses discussed in chapter 3.

Hypotheses	Sections	Outcome
Hyp. 2.5.1. Technological developments in agriculture, especially mechanisation leading to a strong decline of employment at farms, cause a reduction of demand for basic agricultural education and, through that, a strong school concentration that is a reduction of the number of locations for this type of education	3.4.2	++
Hyp. 2.5.5. Secularization causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.	3.8	—
Hyp. 2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil, which is an important motive for school concentration	3.5.1	++

Legend; ++ = confirmed strongly, — = rejected

The hypothesis concerning decreasing birth rates (nr. 3.5.1), being a motive for school concentration, was confirmed. The combination with economic decline in the 1980’s led to the introduction of a policy to reduce the number of school institution and to prevent ongoing growth in numbers afterwards.

Chapter 4.

School concentration in secondary education, following a post war de-concentration

4.1 Introduction

4.1.1 Background

In *chapter two* a theoretical framework for the explanation and analysis of school concentration was developed. In this framework a number of factors potentially explaining school concentration were included. The development of one important factor, being birth rates, was quantified.

School concentration was described in three layers, being those of authority, institution and location.

The reduction of the number of authorities and institutions is called *concentration of control*, while the reduction of the number of locations is called *geographical concentration*,

The relationship between developments at these levels is a central object of our research. The concentration of control might imply geographical concentration but it might be undertaken just as well to prevent unnecessary geographical concentration.

Chapter three was dedicated to the development of the Dutch school system for primary and secondary education. Secondary education is the differentiated education for children of over 11 years old, following upon the uniform primary education. System changes as well as new norms for minimum school size and developments in the numbers of schools were discussed.

It was demonstrated that in secondary education there were the following remarkable changes:

- a shift in participation from vocational training to general education starting in the nineteen-sixties, causing a spectacular reduction of the number of agricultural schools (LAS) first, to be followed by an equally spectacular reduction of the number of (partly agricultural) household schools (LHNO) and other vocational schools later on (see figure 3.7).
- a shift during the nineteen-nineties from categorical general and vocational schools to broad school communities, stimulated by national government (see figure 3.9).
- a spectacular decrease of the number of schools during the latter period by about 60% as a consequence of these shifts and of an increase of minimum pupil number standards, especially for categorical schools for MAVO, HAVO and the newer VMBO

4.1.2 Purpose of this chapter

In this chapter *the impacts of these developments in secondary education on school locations and school travel distances* will be assessed empirically, using a number of regional case studies.

The central motive (Leitmotiv) for this thesis is that school closures will increase the home to school distance for the pupils involved, with a negative impact on school travel in terms of travel mode and travel time.

In this chapter only the distance impact of school closure is analysed and this only from the opportunity perspective. The other aspects, like school choice, are the subjects of the series of school travel chapters 7 to 9.

In a general sense a decrease in local education opportunities is to be expected, especially at the VMBO level, including VMBO-Theoretical (the former MAVO), and particularly so for the countryside. This decrease will necessarily cause longer travel distances for the pupils concerned.

For HAVO rather a partial increase of opportunities is to be expected, being caused especially by incorporation of HAVO-level basic education into VMBO school locations. This of course will cause shorter travel distances for HAVO pupils.

This combination of increasing distances to the one type of education and decreasing distances to the other type may have a neutral impact or perhaps even a positive impact on the distances the entire pupil population is confronted with. This balance will be assessed below.

We analysed the contrasting distance impacts of MAVO curriculum withdrawal (sub section 4.2.4.2) and HAVO basic education introduction at the remaining locations (4.2.4.3). The distance reduction caused by the latter development might compensate substantially for the distance increases caused by MAVO withdrawal.

Distinctly new in this chapter is the assessment of the volume of geographical school concentration and of its relationship with concentration of control.

4.1.3 Hypotheses to be addressed

Quite a few of the hypotheses developed in chapter 2 are relevant for the analysis in chapter 4. Only the following, most relevant ones will be discussed explicitly on the basis of the evidence provided. These are not ordered numerically but following the hierarchical distinction in authority, institution and location. For each of the hypotheses the operational indications are mentioned.

Table 4.1 Hypotheses discussed per section of the chapter on school concentration in secondary education. The numbers of the hypotheses refer to sections of chapter 2, where these were developed (2.6.6 = section 2.6)

Hypotheses	Sections	4.2	4.3	4.4
2.6.5. <i>The central motive to amalgamate school authorities into units governing several schools in a region is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i> This is indicated by a moderate development in amalgamation of authorities and institutions and the preservation of locations in medium sized settlements in a certain area.	X	X		
2.5.5. <i>Secularization causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious institutions and a relative de-concentration of non religious ones.</i> This is indicated by a shift in the share of institutions and locations in a certain area towards public or general particular education.	X	X	x	
2.6.7. <i>Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denominations of remaining schools into a common denomination.</i> This means that a school of certain distinct denomination, like Roman Catholic, would assume the identity of an 'inter-confessional' or even of a neutral particular school.	X	X		

2.5.3. <i>The decreasing participation in less advanced secondary education curricula causes a decrease of the number of locations where these are supplied and correspondingly even a reduction of the number of school location (selective school concentration).</i> The demand for several types of education, both general and vocational in character decreased during recent decades as demonstrated in chapter 3. Against this background the development of the number of MAVO/VMBO-T locations will be investigated without connecting this with regional change in demand, by lack of data.	X	X	
2.5.4. <i>Survival of school locations with less advanced secondary education curricula like MAVO/VMBO-T is enhanced by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).</i> The occurrence of this action will be investigated for the introduction of HAVO level basic training at rural VMBO locations.	X	X	
2.5.2. <i>The increasing participation in more advanced types of secondary education causes an increase of the number of (institutions and) locations where these are supplied (selective school de-concentration).</i> The occurrence of this phenomenon will be investigated for the addition of full HAVO curricula at existing locations for MAVO .	X	X	x

Legend: X = important contribution; x = marginal contribution

In this chapter these hypotheses will be scrutinised by studies of developments in three regions, covering two or more decades. The third study of these (the Gorinchem case) is indicated to contribute only marginally, because it focuses on one regional school centre only.

Apart from the six hypotheses listed and operationalised the following ones have a degree of relevance too. These are discussed shortly.

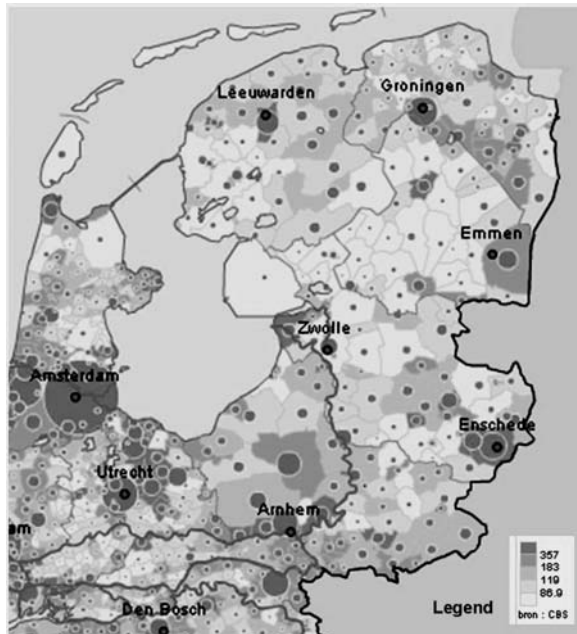
- 2.4.1, 2.4.2 (on concentration of control and school concentration). These hypotheses are related to the more specific hypotheses 2.5.4 and 2.6.6. A convincing discussion of these more general ones would require a larger sample than that in our three case studies.
- 2.5.1 (on concentration of agricultural education). The decline of agricultural schools/locations was largely completed before the periods studied in the case studies, with the exception of the geographically modest Gorinchem case (section 4.4).
- 2.5.6 (ethnic emancipation and school foundation). The focus of our study is on the countryside, and especially on Provinces with only small ethnic minorities. Typical of that is the fact that even Muslim primary schools are entirely absent except in the Gorinchem case.
- 2.6.4.bis (on local school concentration by local government accommodation policies). The concentration on the countryside with locally often only single schools implies that local concentration is bound to be rare. In the city of Groningen we met with a certain local concentration, especially of VMBO but one of the colleges assured that the initiative came from the schools rather than from the City. The Gorinchem case will provide some insight.
- 2.6.7. (on local competition stimulating preservation of small school locations). Only the evidence in the Frisian case study (map 4.7) is sufficient to support this hypothesis. The more general Groningen one doesn't. One might say that in regions with a large population density or a certain balance between denominations like Public and PC there is the opportunity for such a policy.

4.1.4 Research approach and data used

Three dominantly rural regional case studies. Impacts of school closures are likely to be the largest for less densely populated regions and especially for those with a relative population decline and relatively weak secondary centres.

Three areas were chosen for studies into school location development, two for medium term studies 1984/1987 to 2008) and the third one for a longer term study (1945 – 2008). The selection of those was guided partly by the fitness of the regions concerned, and partly by the

availability of data, mostly resulting from earlier research by the author (see de Boer 1984 and 1990).



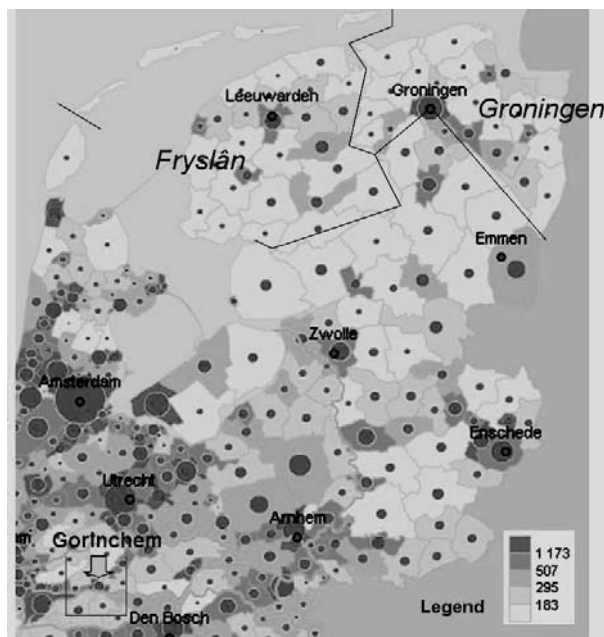
Map 4.1 Population density per km² and population size of Dutch Municipalities in 1950
 Source: NIDI Population Atlas 2009, The Netherlands by Municipality 2000.
<http://www.nidi.knaw.nl/en/atlas/>

The three areas are characterized by the following properties:

- The Northern *Province of Groningen* (section 4.2) has a stagnant population (4% growth 1978 – 2006), a strong central town (the city of Groningen with about 150.000 inhabitants) and relatively weak regional centres. The city counts about 30% of the provincial population. In 1985 the city's schools were housing about 40% of the province's pupils in secondary education in (Hetteema 1988, p.5).
- The neighbouring *Province of Friesland* (section 4.3) has a slowly increasing population (+12% 1978 - 2006) of similar size but with a relatively modest provincial capital (Leeuwarden with about 95.000 inhabitants). The city counts less than 20% of the Province's population and regional centres are stronger, with cities like Drachten, Heerenveen and Sneek. This is demonstrated by the distribution of pupils about these (school) centres in 1985: Leeuwarden 22% and Drachten 17%.
- The *region of Gorinchem*, a city of a size comparable with the Frisian regional centres, lying in the southwest of the country, *on the borders of three Provinces*: South-Holland, Gelderland and North-Brabant (section 4.4). This region has shown a considerable population increase since 1960 (60%) and one of 18% since 1978.

Maps 4.1 and 4.2 show the positions of these regions in the Netherlands and their relative population densities in 1950 and 2000 respectively. Please mind the difference in legends. A difference between the maps is the degree of detail, being larger on map 4.1. It is caused by large scale amalgamation of Municipalities between 1950 and 2000.

The maps do show that large parts of the two Northern Provinces are still under the 183 threshold, which is valid for only two Gorinchem region Municipalities, being Graafstroom and Zederik, as demonstrated by the selection presented in map 4.3.



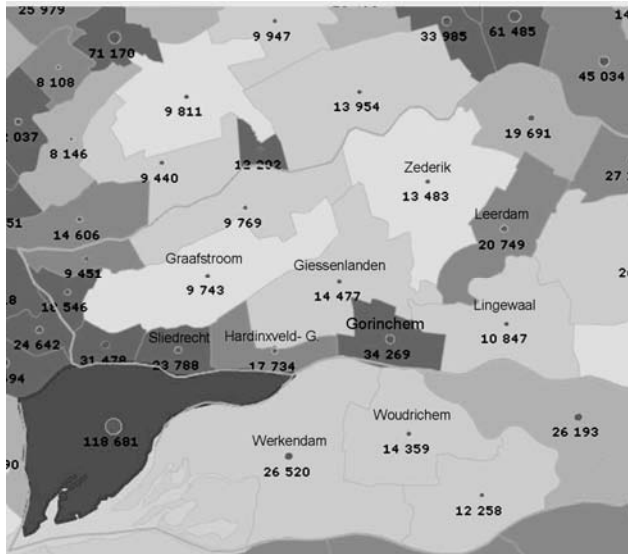
Map 4.2 Population density per km² and population size of Dutch Municipalities in 2000 with an indication of the three case study areas.

Data sources. The analyses of school institution and school location developments in the case studies are historical in character. These are restricted to ‘regular’ secondary education, leaving out the so-called ‘practice schools’, replacing former special secondary schools and ‘learning route supporting’ education, replacing former ‘individual secondary education’. The foundation for reconstruction of the historical situation is provided by documents from the period and some supplementary interviews with regional experts. The new situation (2008) is constructed by means of three digital sources and supplementary interviews with local experts, where the education supply was inaccurately defined in the digital sources.

Historical data concerning the situation of two or more decades ago were derived from the following sources:

- reports concerning secondary school planning of the Provinces of Friesland (1984), Groningen (1987) and South-Holland (settlements and their schools, 1975) and moreover for Groningen a 1988 list of school authorities, schools and locations, including zip-codes. (Hetteema 1988 and 1990, Verbeek 1985, Woldendorp 1975),
- jubilee volumes of two secondary school communities at the city of Gorinchem, commemorating their start as HBS schools in 1871 and 1949 respectively (Klijn etc. 1997, Van der Giessen and Geljon 2000),
- the collection of pupil records of the ‘Hoven’ PC school community of Gorinchem with complete information on its pupils from 1949 on, indicating the development of its catchment area (made available by Mr. Van Driel).

These data were supplemented with interviews of present and former school leaders.



Map 4.3 Detail of map 4.1, showing the Gorinchem region and mentioning the relevant Municipalities and the numbers of their inhabitants in 2006.

The *actual data* (2008) concerning organisations and locations, including postal codes, were retrieved from the following sites:

(www.cfi.nl / BRIN gegevens/ instellingen) of the financial agency of the Ministry of Education, which however mentions official locations only;

The CFI registration includes only official, separately financed locations. It does not mention so called 'dislocations', being precincts without a formal status and moreover supplying only part of a curriculum. Each school has a registration number. For the Groningen General Particular 'Dollardcollege' this number is 20CM, belonging to its Winschoten central precinct. Its Woldendorp location to the north has number 20CM07. It is a formal satellite because of 'spreading necessity', an acknowledged location entitled to additional finance (a director, a janitor).

The private site www.schoolinbeeld.nl, which is consumer oriented and presents all locations therefore;

We found about 20% additional locations that way, compared to CFI. These are included in the analysis because they are decisive for travel distances.

The sites of individual schools, presenting more detailed information on curricula, especially HAVO level basic education.

Data concerning the catchment of the Gorinchem Gomarus College were friendly made available by the school (Mr. Flikweert).

Home to school distances. Home to school distances are calculated as the distances between four-digit postal codes of the home and of the nearest school locations of a certain type (like MAVO) as the crow flies (Dutch postal code database), with a standard correction for detours. These distance estimates may be regarded as an acceptable proxy when assessing the travel impact of location changes. For areas with lakes (parts of Friesland) and rivers with only few crossings (the South-Holland Gorinchem region) these imply a certain underestimation.

The *correction factor* to be used for all distances is 1.4. This value is based on a comparison of the distances with those recorded for the home to school travel distances between the

respective postal codes in the 2007 data base of the Dutch National Travel Survey. A constant value for a detour factor seems to be unlikely at first sight, but the hierarchy of road systems may explain it. For longer trips less dense regional networks have to be used.

Only at distances above 10 km as the crow flies the average detour factor might be slightly lower, but since these (14 road km) are rare in individual travel to Dutch secondary schools (see chapter 9) the same constant is applied.

Only in the Gorinchem region case study longer distances are found (but not calculated) and that only for a special case, being the Reformatory Gomarus College, as may be inferred from map 4.10, indicating the locations of reformatory primary schools. A combination of social control in religious communities and a school bus system makes pupils travel up to 30 km (Geldermalsen - Gorinchem).

Nationwide there are eight of these schools and four more of a different orthodox-protestant church

The numbers of pupils, living in a certain postal code zones, are taken from the zonal database of the Dutch New Regional Model. Data friendly provided by Dutch AVV service.

4.1.5 Main empirical findings

Below we summarize our crucial concentration findings for authorities, institutions and locations successively.

In the nineteen-eighties there were a large number of *school authorities* still, being Municipalities for their public schools and associations for particular schools. The latter ones governed hardly ever more than one school.

In 2008 the number of school authorities in secondary education is one quarter of what it was 20 years before, caused not so much by the large scale amalgamation of Municipalities, but rather by school closures and by amalgamation of local authorities of particular schools. The *share of Public school authorities increased* remarkably to the detriment of particular education, both of the religious and general particular types.

There still are *hardly more school institutions than school authorities*. The authorities evidently used this geographical concentration of control to save their schools by integrating these into regional school communities. It required in several cases a *change of identity* yielding even a 'Roman Catholic and Protestant' school called after a Protestant leader (Ubbo Emmius). Outside the eight regional school centres of the Groningen region only two independent school communities are left. In Friesland there were quite a few more.

The distinction between school authority and school community is often unclear, because some, like 'AOC Terra' and 'Noorderpoortcollege', found predominantly in the Province of Groningen possess a multitude of school locations.

The *creation of school communities* made it possible to continue education locally, partly because of friendly minimum pupil number norms for school departments (curricula) within these and partly because of additional finance for remote locations 'required for spreading'. This implied that *particular education is still dominant in terms of locations*, in both the Province of Groningen and that of Friesland.

In the countryside, *MAVO schools were continued in several cases*, usually as satellites of urban school communities. Often these improved their market position (potential for survival) by supplying additional basic education for HAVO and VWO types of education, mitigating the increase of travel distances and of pupil numbers at central school locations.

Locally, *distances to religious education* of the most affected type, being MAVO/VMBO-T, were enlarged considerably, but the 85 percentile distance moved only modestly from roughly ten to eleven kilometres in the Province of Friesland.

Disregarding denomination, travel distances to the nearest school location supplying a curriculum of the desired type prove to have *decreased in fact*, since only small settlements lost their school locations, while most remaining rural satellites expanded their supply with basic HAVO/VWO education. General consumer acceptance of that supply would far more than neutralise the impact of concentration in the countryside!

The general explanation of a certain stabilisation of distances is no doubt the attachment to local provision of secondary education, rejecting both longer travel distances and massive city schools. The absence of government subsidised school transport provisions supports this attitude.

In *urbanising regions* like that of the Gorinchem case the longer term development of distances appeared even more favourable, since urbanisation made de-concentration of full higher level curricula for general education possible (both HAVO and Atheneum). One may even find a remarkable *emancipation of denomination related factions*, as was the case with the founding of the second and third broad school communities of the City of Gorinchem. The PC College of 1949 was one of a regional series reducing travel distances for this denomination by at least 50%.

4.2 Concentration developments in the Province of Groningen from 1988 to 2008

4.2.1 Background

The Province. The Northern Province of Groningen is called after *the city* bearing the same name. It is an expression of the city's dominance over its originally Frisian surroundings, the 'Ommelanden'. During the Middle Ages it did not tolerate the founding of cities in the prosperous coastal agricultural region to the North of the town. Only Appingedam and Winschoten, lying far to the Northeast and the East respectively, managed to get a status of independence. Later on substantial population concentrations developed at the Groningen harbour of Delfzijl and in the extended moors in the southeast of the Province: the cities of Hogezeand, Veendam (Moordam) and Stadskanaal (City canal), along the long canals that opened the most remote moors owned by the City of Groningen.

Directly to the south of 'the City' lies the Province of Drenthe, originally mostly poor sandy and moorlands. It counts only one medieval town, Coevorden (Oxford), lying in the far southeast. Illustrative for the dominance of 'the City' is that Coevorden, like Bourtange (subsection 4.2.4.1), had the function of a border fortress protecting an access route to Groningen.

Both the dominance of 'the City' and its geographical position made it the centre for secondary and higher education in the two Provinces. Two Groningen regional education centres, Leek and Stadskanaal, are lying at the Drenthe border as well (see map 4.4).

Activities and sources of the Province. The government of the Province, until about 1990 responsible for secondary school planning, acts as a guardian of 'ommelander' interests and therefore it was particularly active in efforts to safeguard regional supply of secondary education in the latter decades of the 20th century.

In the 'Project secondary education' the Province had the University of Utrecht Institute of Geography assess (1986) the accessibility of secondary education after a likely introduction of a '30 norm' (Huigen and Krijgsman 1986).

The 'Spreading plan for secondary education ...' of the Province (Hetteema 1988) is an important source for information on school and pupil numbers, showing the decline of pupil numbers causing closure in the face of raised minimum norms for pupil numbers ('60 norm', see subsection 3.6.5).

Hetteema mentions a decline of the number of the Province's secondary schools by amalgamation from 129 in about 1980 to 89 in 1990, that is mostly before the period we will study: 1987/88 – 2008. Only in a few cases this did not imply closure of locations.

In the 'Dossier satellites' (Hettema 1990) the progress of decline and the new option of school community satellites is discussed.

The Village of Loppersum for instance, capital of a Municipality, counted two MAVO schools in 1986/87, a Public one and a PC one. These had 97 and 100 pupils respectively. This was way too small for the new norm for independent schools, being 240 pupils. In 1989/90 these schools had been amalgamated to a 'cooperative' school but then it counted only 165 pupils. In 1993 it had either to comply with the new norm or to be integrated into a school community (norm 120 for a department). No amalgamation partner could be found and the school was closed. (Data to be found in Hettema 1988, p.36 and Hettema 1990, p.24).

4.2.2 School authorities and institutions

4.2.2.1 Introduction

In the following the situations with respect to authorities and institutions in 1988 and 2008 will be compared. For 1988 the Hettema sources are used, supplemented with a provincial list of school locations and their addresses, allowing for a before and after postal code comparison. In this section firstly the relationship between developments in the numbers of school authorities and those of institutions is studied, supposing (hypothesis 2.6.6) that authorities in the countryside tend to follow schools. *Authorities are amalgamated because their schools have to be amalgamated in order to survive.*

After that the evidence concerning the other two hypotheses, referring to shifts in the denominational composition of the set of institutions (hypothesis 2.5.5.) and to change of the denomination of individual schools (hypothesis 2.6.8) is presented.

Table 4.2 is of central importance, comparing the numbers of authorities, institutions and locations in 1988 and 2008 for the respective denominations.

4.2.2.2 A continuing congruency of authority and institution

The *school authorities* in secondary education were mainly of four different kinds, being national government, local government, religious associations and utilitarian associations, the latter ones especially for vocational training. These authorities provided public education, religious particular education and general particular education respectively.

The school list of 1988, provided by the Province of Groningen, includes 87 school institutions, but for 14 of these no authority is mentioned. It is assumed that each of these had their own authority.

National government (Het Rijk) developed the concept of the HBS in the 19th century (see chapter 3). It founded the Groningen Rijks HBS schools of Warffum and Ter Apel for instance and it took over other ones when Municipalities were not able to bear the cost of their school anymore.

The Province of Groningen had seven Rijks-HBSes, located at Appingedam, Groningen, Hoogezand, Ter Apel, Veendam, Warffum and Winschoten. The Winschoten school was transferred to local government before 1987. The other ones were transferred in 1991 when the national Ministry of Education ended its task of a school authority (Klijn 1997, p. 113).

A reform of *local government* reduced the potential of local government school authorities, from 50 to 26 Municipalities. Only fifteen Municipalities acted as an authority for one or more of the 26 local Public secondary schools before. The City of Groningen was the most important one, governing six schools. In four cases the municipal authority was executed only indirectly via a special governmental committee.

In *particular education* the congruency between authority and institution was even stronger. For 61 schools 55 authorities existed. The small Liberated Reformed Church counted 3 authorities with 5 schools together.

These data demonstrate that *authorities were strongly local in character*. Apart from national government, only two authorities seem to have controlled a second school in a different settlement. This was the case only with schools under serious threat of closure. Two of the few remaining agricultural schools had a common PC agricultural authority. Two schools in the relatively sparsely populated Northwest were controlled by a common PC authority.

The result of our 1988 – 2008 comparison is shown in table 4.2. For the different denominations the old and new numbers of authorities, of institutions and of locations are indicated.

In 2008 both the number of authorities and the number of school institutions prove to have been reduced strongly. The congruency of authority and institution is still remarkably large though. The congruency of institution and location has disappeared evidently.

The individual developments and their interdependencies will be discussed and additional information will be provided.

The *number of authorities* has declined from an estimated 70 in 1988 to 18 in 2008, a reduction by roughly 75% (see table 4.2).

Of the most common denominations the administrative structure of *Public education* seems to be affected least, the number of its authorities being reduced by 60%. The largest authority in the Province is still the City of Groningen with 5 schools. Public schools elsewhere in the Province are not governed directly by a Municipality anymore, but by a special municipal governmental committee or a foundation (3 and 2 cases respectively). Public authorities may be said to have disassociated themselves from public education (!).

The number of *PC authorities* was reduced by some 85% to a mere four. Now this may seem to indicate an enormous secularization, but this decline may be ascribed rather to the fact that most of the PC schools were small country schools, being threatened most by the elevated minimum pupil number standards.

This denomination was strongly represented in the areas to the north and the west of 'Stad', the city of Groningen, without substantial school centres and suffering most from population decline (see Hettema, 1988, p.11, map 2 and p.13, map 3).

Table 4.2 Numbers of secondary school authorities, school institutions and school locations in secondary education per denomination in the Province of Groningen in 1988 and 2008

	Year	Publ	PC	Refo	RoCa	Free	GPar	Intc	Tot	%
Authorities	1988	15	29	3	2	1	19	1	70	100
	2008	6	4	1	0	1	4	2	18	25
Institutions	1988	26	33	5	2	1	20	1	87	100
	2008	10	4	1	0	1	4	2	22	25
Locations	1988	29	42	5	2	1	20	1	100	100
	2008	20	13	3	0	1	19	5	61	61

Legend: Publ = Public, PC = Protestant Christian, Refo = Reformed ProC, RoCa = Roman-Catholic, Free = R. Steiner, GPar = General Particular, Intc = Interconfessional (ProC + Roman Catholic).

The PC authorities mentioned, governing one school each, ceased to exist because their schools could not survive.

The only *Particular* school governed by a large *authority* for secondary education is the interconfessional, originally RC Maartenscollege. The authority is the Foundation Carmel College, that is operating nationwide.

Carmel governs 12 institutions for secondary education, working at 50 locations with 35,000 pupils. It does not call itself Roman Catholic although its schools are mostly explicitly RC in character. (<http://www.carmel.nl/overCarmel/inleiding>).

This authority was discussed in national parliament as a specimen of an education monopoly, because it is dominant in the Province of Overijssel (Onderwijsraad, 2008, annex ‘some parliamentary discussions ..’ p.15). One of the Province’s largest towns, Deventer, counts only a Carmel school, being the ‘Etty Hillesum College’, which is General Particular in character. It is the product of an amalgamation of PC, Public and RC schools.

In the Province of Groningen the most remarkable *geographical concentration of control* into a single authority and a single institution for an entire denomination was the result of the amalgamation of the existing Liberated Reformed school associations. The Province of Groningen counted three LR school authorities (Groningen and Zuidhorn). Other ones were found in the Provinces of Drenthe (Assen) and Friesland (Drachten and Leeuwarden). One authority was formed for the three Provinces and all schools were amalgamated into the existing City of Groningen Gomarus College, while preserving the original locations. Nevertheless its roughly 3,000 pupils are travelling 240,000 km per school day in the home to school return trips (information Mr. Slofstra, Gomarus College).

Roman Catholic authorities and schools ceased to exist as well. These were integrated into ‘inter-confessional’ organisations.

In chapter 5 we will see that single authorities for LR and RC primary education were created in the Province of Friesland as well.

The conclusion must be that there is no ground for rejecting hypothesis 2.6.5. Indeed amalgamation of authorities in the countryside followed the amalgamation of schools that was intended to save local provision of education by the introduction of satellites.

4.2.2.3 *A shift in the denominational composition of the set of institutions, towards dominance of non-religious schools*

The number of school institutions is reduced to a mere 22 in 2008, leaving about one quarter of the supply of 1988 (table 4.2).

Most spectacular is the *decline in PC schools*: a reduction by 88%% from 33 to 4 schools! The General Particular schools, reduced in number from 20 to 4, suffered most from the decline in demand for vocational training.

The composition of the set of schools in terms of denomination has changed considerably. In 1988 the PC schools had the largest share (38%). *Now the public schools are dominant* with 10 cases (45%).

Hypothesis 2.5.5 thus seems to be confirmed, in the sense that the *numbers of religious education institutions were strongly reduced*. This seems to have had largely geographical causes however, as was explained in subsection 4.2.2.2.

Hypothesis 2.6.7 is confirmed too, in the sense that *RC schools are living on partly under the cover of an ‘interconfessional’ identity*. This is exemplified by the Saint Maartencollege that changed its name in Maartenscollege.

Incidentally PC schools too may live on under the cover of a particular neutral school. The remaining agricultural secondary school locations are part of the Terra College. The Winsum location of this particular neutral college was governed by a PC agricultural association in the past. Presently it is advertising itself explicitly as a PC school on the Terra College site (www.aoc-terra.nl).

4.2.2.4 *Summarizing the implications for our theory on the development of the numbers of authorities and institutions.*

The following theorems were presented for testing in subsection 4.2.2.1. The numbers refer to the full list of hypotheses included in chapter 2.

Hypothesis 2.6.5. The central motive to amalgamate school authorities into units governing several schools in a region is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.

This is indicated by a moderate development in amalgamation of authorities and institutions and the preservation of locations in medium sized settlements in a certain area.

Conclusion: the number of school authorities was reduced strongly in the Province of Groningen, but following the reduction of the number of schools and not leading it. It made it possible to maintain far more locations than there are schools. The hypothesis is **confirmed**.

Hypothesis 2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious institutions and a relative de-concentration of non-religious ones.

This is indicated by a shift in the share of institutions and locations in a certain area towards public or general particular education.

Conclusion: the numbers of religious authorities and institutions were strongly reduced, as was expected, but not so much because of secularisation, but sooner because of these being largely rural in character and smaller in pupil numbers, which implied a larger number of closures. The hypothesis is **not confirmed**.

Hypothesis 2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denominations of remaining schools into a common denomination.

This means that a school of certain distinct denomination, like Roman Catholic, would assume the identity of an 'inter-confessional' or even of a neutral particular school.

Conclusion: this phenomenon was found indeed in some cases and both for Protestant and Roman Catholic schools. The hypothesis is **confirmed**.

4.2.3 School locations, partly preserved as 'spreading location'

4.2.3.1 Introduction

The local presence of school institutions is not vital for education. Decisive is the presence of locations, maybe of institutions having their main seat elsewhere. In this subsection we will study the persistence of school locations in the countryside, irrespective of denomination. Apart from the Liberated Reformed schools every school will accept a pupil that does respect its 'identity'.

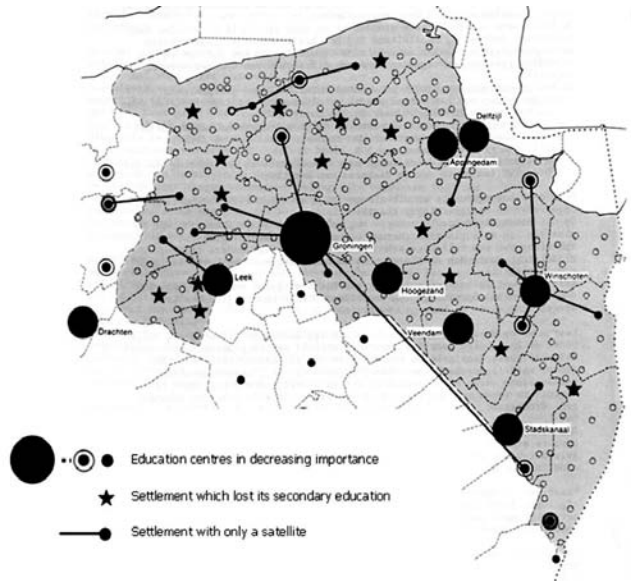
The relevant hypotheses cited in section 4.1.3 concerned:

- the decline of school locations and of the local supply of education in the countryside as a consequence of a decrease in the demand for less advanced education as supplied in rural settlements (number 2.5.3).
- an increase of supply in more advanced education (especially HAVO) as a consequence of increasing demand (number 2.5.2) and as a strategy to preserve local supply (2.5.4).

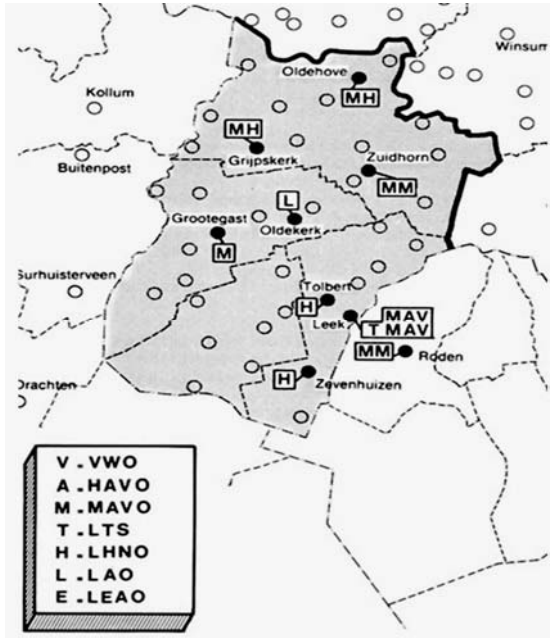
4.2.3.2 Decline of school locations with only MAVO and/or LHNO in the countryside

The number of school locations (all categories) was reduced by 39%, which is less than the reduction in the number of schools (see table 4.2, subsection 4.2.2.2).

The decline at the level of both institutions and locations is shown partly on map 4.4, which includes all settlements with a school location in 1987/88. The 15 settlements that lost their school locations are indicated with a black star.



Map 4.4 The formal settlements in the Province of Groningen, highlighting those with secondary schools or satellites in 1988 and 2008. Adapted from Hettema, 1990. Settlements without a school are indicated with a small open circle.



Map 4.5 Secondary schools in the 'Westerkwartier' region in 1988. Source: Hettema 1990. The Southwest Marum MAVO school, presented on the provincial map 4.2 by a black star, is missing.

Settlements with only a satellite left are connected to another one by a line, indicating an institutional relation with a school in that settlement. The remaining locations of the Western Quarter are all connected to schools outside the area, with the exception of the regional school centre of Leek. It used to have two school communities with MAVO-HAVO-VWO (indicated as MAV on map 4.5) of which one was closed.

In the 15 settlements that lost their schools 17 school locations were closed, 12 of those being of the PC denomination. Only locations with a MAVO and or LHNO curriculum were involved, being 9 MAVO, 4 MAVO/LHNO and 4 LHNO locations. This is illustrated by map 4.5, indicating the character of the curricula in the 'Western Quarter' (Westerkwartier).

This development confirms the decline of locations supplying only less advanced types of secondary education (hypothesis 2.5.3).

In 1988 secondary schools had only one location as a rule. Only in twelve cases a second location of the same school was found. In six of these cases it was located in a different settlement. In 2000 the situation has changed radically.

The map of the entire Province (4.4) shows not only that 15 settlements have lost all their school locations (black stars). It shows too that another 15 have only one or two satellites of a school left (dots connected by a line to a larger one). Outside the eight regional education centres only two settlements have an independent school still.

These schools, located at the villages of Ter Apel (far south) and Warffum (north) respectively, each have a former Rijks HBS school as a core. The Warffum one was initiated by (Prime) Minister Thorbecke himself in 1868, being nationally the first one in the countryside (See chapter 3).

In chapter 3 the concept of the 'spreading location' was presented, being a school satellite supported financially by the Ministry of Education. It was intended to ease the introduction of 'basic education' and its higher minimum pupil number standards, by restricting an extreme growth of travel distances. Schools at a distance of more than 12 km from the next one of the same type and denomination were allowed to continue as a satellite of a larger school with 120 pupils instead of 240 ones if at least 30% of its pupils lived at a distance of over 15 km from that larger school. The 15 km value is used traditionally in secondary school planning (see chapter 7 on 'reasonable distance').

The spreading location is allowed to supply only basic education and the education type it had before. In most cases this was MAVO or MAVO/LHNO.

Sixteen of the 39 satellites (41%) implicit in table 4.2 are qualified as having 'spreading necessity'. These are not only rural locations, but urban ones too, lying at a large distance from the next education opportunity of the same type and denomination. Spreading necessity locations are found in four of the seven regional school centres and even in the city of Groningen.

The inter-confessional (PC and RC) Ubbo Emmius College with its seat at Stadskanaal has two of those in the regional centres of Veendam and Winschoten respectively and a rural one in Onstwedde. Only the Onstwedde link is shown on map 4.4.

The Public Hogeland College with its seat at rural Warffum has this type of location at rural Uithuizen and Wehe – Den Hoorn (shown on map 4.4, at the northern coast).

In the City of Groningen the local Free School is a satellite of a school at the City of Zutphen (Province of Gelderland).

4.2.3.3 Supply spreading of more advanced education

Schools might try to enlarge their chance for survival by attracting more pupils by means of widening the supply of curricula, reducing thereby the mean distance to the types of supply involved.

Independent schools might do so by adding for instance a 5 year HAVO curriculum (hypothesis 2.5.4) or, given the presence of VWO, a Gymnasium curriculum. This did require

formal consent of the Ministry of Education, because an additional provision might be a threat to the continuity of the supply at a nearby location of a second school.

Satellites were allowed only to add the 3 year basic training at HAVO/VWO level (hypothesis 2.5.2). Formal consent of the Ministry is not required, since basic training is formally uniform. Additional basic education supply is advertised as adequate for HAVO and VWO with the exception of Gymnasium. There is no registration of actual local demand for advanced basic training though. Inquiries at a number of schools yielded that this supply is sometimes accepted hesitatingly only. Therefore it is interpreted as a basic training opportunity for just HAVO.

The supply of a *full HAVO curriculum* was compared for the Groningen school locations of 1988 and 2008. It proves to have declined from 20 to 19 locations. Evidently the market for this type of education was saturated already in 1988.

This proved not to be the case for *Gymnasium curriculum*. In 1988 the Gymnasium curriculum was supplied at three locations only, being two categorical Gymnasiums in the city of Groningen and a school community at distant Winschoten. In 2008 its number had been more than doubled by addition of one Groningen location and of three further ones in the regional school centres of Hogezeand, Leek and Stadskanaal (see map 4.4).

The Gymnasium curriculum, teaching the classical Greek and Latin languages, was traditionally the most prestigious curriculum. It gave access to the full spectrum of University curricula. The Gymnasium lost ground when the Atheneum (former HBS) curriculum was given the same formal status in the education reform of the nineteen-sixties. During the nineteen-nineties it became increasingly popular again, because of its relative exclusiveness. The national Education Council mentions in a 2008 advice on school administration a growth of 2% per year (Onderwijsraad 2008, pp. 20, 21). See subsection 3.6.5.

The introduction of *HAVO level basic training* was assessed by scrutinizing the sites of individual institutions and of their locations. It showed that nearly all rural satellites (6x) in the eastern part of the Province supply basic HAVO.

These outcomes imply that hypothesis 2.5.2 (introduction of basic HAVO for survival) is confirmed and that hypothesis 2.5.4 (introduction of full HAVO) is not supported by the evidence, probably because the regional market for this curriculum is saturated.

4.2.3.4 Summarizing the implications for our theory

The following theorems were presented for testing in subsection 4.2.3. The numbers refer to the full list of hypotheses included in chapter 2.

Hypothesis 2.5.3. The decreasing participation in less advanced secondary education curricula causes a decrease of the number of locations where these are supplied and correspondingly even a reduction of the number of school locations: a case of selective school concentration.

Conclusion: this hypothesis was tested for the number of MAVO/VMBO-T locations and was **confirmed**.

Hypothesis 2.5.4. Survival of school locations with less advanced secondary education curricula like MAVO/VMBO-T is enhanced by the addition of a more advanced curriculum like HAVO: a case of mitigating school concentration by selective de-concentration.

Conclusion: this hypothesis was tested for the introduction of HAVO level basic training at rural VMBO-locations and was **confirmed**.

Hypothesis 2.5.2. The increasing participation in more advanced types of secondary education causes an increase of the number of (institutions and) locations where these are supplied: a case of selective school de-concentration.

Conclusion: this hypothesis was tested for the introduction of a full HAVO curriculum at MAVO/VMBO-T locations and was **rejected**.

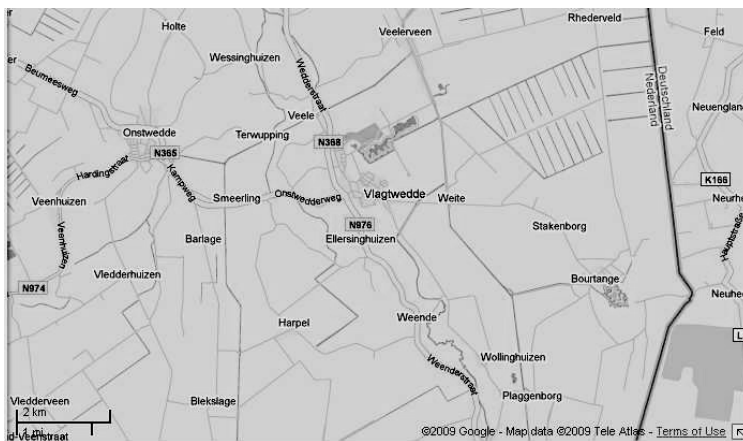
4.2.4 Development of minimum travel distances to a school of the desired type

4.2.4.1 Introduction

School location closures are most likely to increase the home to school distance for the pupils involved, with a negative impact on school travel in terms of travel mode, travel time, cost and (un)safety (see chapter 9).

Huigen and Krijgsman (1986) assessed the impact of a likely introduction of a '30 minimum norm' (per curriculum year) on travel times to the nearest school of the desired type and denomination in the Province of Groningen. Indicated were the schools/curricula to be closed. The travel time results for bike and public transport each were summarized by assigning one of four travel time classes to 221 different zones in the Province. The class borders were 20, 40 and 60 minutes respectively. Only zonal results were available via the report and its annex with tables and figures. Nevertheless, the outcomes will not be used because the factual closures after introduction of the '60 norm' and of satellites were partly different and generally more substantial.

The worst accessibility per bike of PC MAVO education for instance was expected by Huigen and Krijgsman to come about in Bourtange, requiring a bike journey of more than one hour to Stadskanaal. It presupposed closure of the Onstwedde school (see Map 4.6). That one survived as a satellite of the Ubbo Emmius school at Stadskanaal though. Yet the distance is 12 km from Bourtange, or nearly an hour biking (Huigen and Krijgsman, 1986, p.18)



Map 4.6 Bourtange, Vlagtwedde and Onstwedde in East Groningen, the road connection being one of the longest to MAVO/VMBO-T supply.

We will analyse the contrasting distance impacts of MAVO curriculum withdrawal (sub section 4.2.4.2) and HAVO basic training introduction at the remaining locations (4.2.4.3). The distance reduction caused by the latter development might compensate substantially for the distance increases caused by MAVO curriculum withdrawal.

The travel distance impact of the introduction of the Gymnasium curriculum at additional locations is not assessed, because this improvement is not an essential contribution to the

supply of education, given the fact that the Atheneum curriculum, present on these locations already, offers the same opportunities for tertiary education.

The travel distance impacts are expressed in the percentages of pupils of 13 to 17 years of age in the year 2000 falling in different travel kilometre classes for the school location patterns of 1988 and 2008.

Detailed demographic data for the year 2000 were available in the National Regional Model. It uses demographic data per age category and four digit postal code area. The 13 to 17 age category is the best available proxy for the population of a MAVO age. Using the demographic data of one year demonstrates the impact of changing distances most adequately. Population development was marginal anyway.

The change in the distribution over kilometre classes will be expressed in figures showing the cumulative distributions for the entire Province and separately so for the pupils living in settlements without VWO schools in 1988. For the latter analysis this implies that not only those living the city of Groningen and the seven regional school centres are excluded but the inhabitants of the historical VWO locations of Warffum and Ter Apel as well.

In the northern coastal area and its hinterland, there is one Public school community with two satellites, being the Hogeland College, indicated on map 4.1 by an east-west line connecting four settlements. The central one, Warffum, is housing its main seat, the former Rijks HBS.

South of Warffum another settlement, Winsum, indicated by a half open circle, is connected to the city of Groningen by a line on the map. This represents the presence of two satellites of schools in the city, one of the Terra College (agriculture) and one of the PC Wessel Gansfort College. The latter satellite is all that remains of the rural PC MAVO's north of the Grijpskerk - Groningen - Delfzijl line. Grijpskerk survives as a satellite of the Frisian Lauwers College as is indicated by a line drawn to Buitenpost, across the border.

Around the village of Winsum six black stars indicate closed PC schools. Of these only four were left in 1989/1990, housing more than 600 pupils! (Hettema 1990). The most distant ones were those of Ulrum in the west and of Uithuizermeeden in the east. Children from their former catchments may hardly be expected to reach the Winsum school by bike. Even the villages themselves are lying at respectable travel distances.

The regional train service from Roodeschool to Groningen city bridges the 19 km distance from Uithuizermeeden to Winsum in 24 minutes (NS 2008, line 83). Ulrum used to have a railway connection to Winsum as well. The local station is still standing. The frequent public bus service brings the children from 'Ulrum church' bus stop to Winsum bus station in 26 minutes (14.5 km) (Arriva 2008, line 65).

The Winsum Terra College satellite has its own bus network collecting pupils even beyond the city of Groningen in order to survive.

Note that pupils in secondary education in the Netherlands are not entitled to any government transport provision at all.

Textbox 4.1. Long distances to particular education in the North-Groningen countryside.

The total number of pupils of 13 to 17 years old in 1987, irrespective of school type, was approximately 31.000 (inferred from Hettema, 1988, p. 26). The absolute number of pupils of rural locations (outside VWO settlements) closed before 2008 was 2,300 in 1988, being less than 8% of the total pupil population.

The travel impact of closures for the accessibility of the schools of a certain denomination will not be assessed in detail. No doubt the accessibility of the common PC education has suffered considerably. The mean distance to religious VMBO-T in general changed from 3.7 km to 6.8 km. The 85% value moved from 7 to 12 km. A group of about 110 pupils likely to prefer this education type (15% of the population) is living at a distance of 22 km from a location with a supply of this type and denomination(s).

Especially in the northern part of the Province the impact on travel distances to PC schools is significant (see illustration in textbox 4.1).

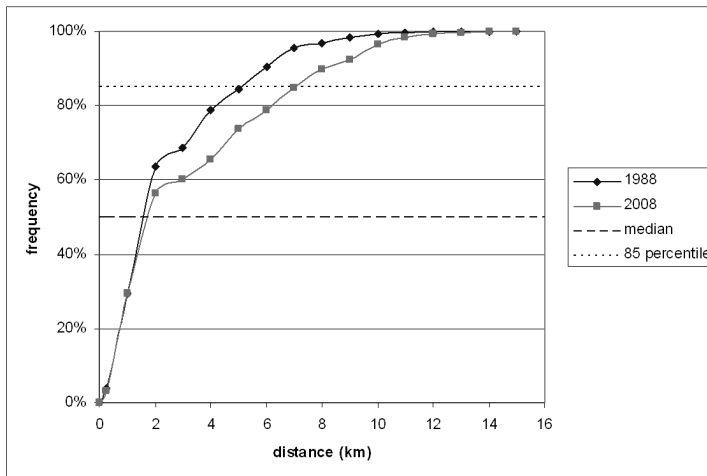


Figure 4.1 The cumulative distributions of distances to the closest MAVO/VMBO-T location in 1988 and 2008 for the Province of Groningen children in the 13 to 17 year age category (N = 31,000). Data: inhabitants per four digit postal code area, Dutch AVV, collected for NRM 2000.

4.2.4.2 Increasing travel distances caused by MAVO school location closures.

The increase of the distances to the nearest MAVO/VMBO-T supply for all Province of Groningen children in the 13 to 17 year age category is shown in Figure 4.1. No distinction is made between the denominations of the schools. Theoretically particular schools may refuse to accept pupils, but even religious schools are known to accept those pupils that do not explicitly reject the specific religion. Only the Liberated Reformed College with locations in the city of Groningen and at Zuidhorn demands religious participation of its kind. In the figure the distance distributions in 1988 and 2008 are compared.

The following *conclusions* seem justified on the basis of figure 4.1:

- hardly any youth in the age category lived more than 10 km from the nearest MAVO location, and this is still the case, which implies that distances in the countryside to either an urban or a rural school have not become more excessive.
- the (calculated) mean distance increased from 2.9 km in 1988 to 3.8 km in 2008.
- the increase happened particularly for distances over 2 km, indicating rural school closures,
- the 50% value (median), expressing in fact the impact for urban areas, was less than 2 km and it still is,
- the 85% value, expressing the impact for the countryside more adequately, has increased from about 5,1 km to about 7.0 km.

The *development for the pupils living outside the ten settlements with VWO curricula* is shown in figure 4.2, because these are likely to suffer more from increasing distances. The difference between the situations in 1988 and 2008 is indeed more distinct than in figure 4.1.

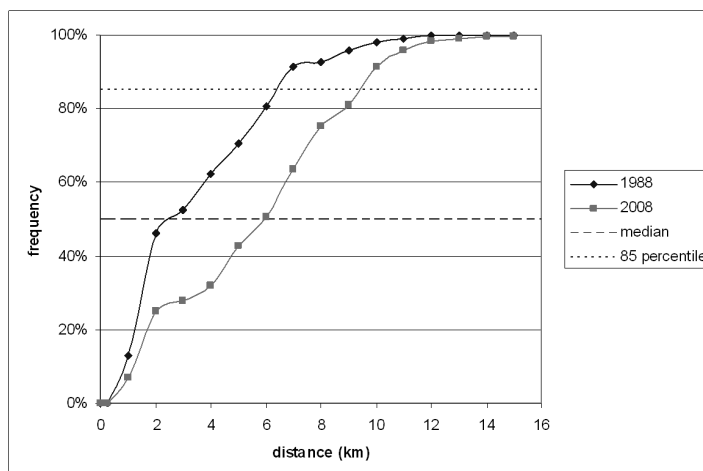


Figure 4.2 The cumulative distributions of distances to the closest MAVO/VMBO-T location in 1988 and 2008 for the Province of Groningen pupils in the 13 to 17 year age category, living outside school centres with a VWO school (N = 12,000).

The following *conclusions* seem justified:

- the calculated mean distance increased from 4 km in 1988 to 6.1 km in 2008,
- the 50% value (median) was about 2.5 km, which demonstrates that there was a high school density in 1988. It has increased considerably to 6.0 km.
- the increase started at distances above about 2 km, indicating the loss of local facilities,
- the 85% value was about 6.4 km in 1988 and it increased to some 9.4 km.

One might say that only those who have to travel for more than 8 km are seriously affected. A distance of 8 km takes 30 to 40 minutes cycling (given an average speed of 13 km/h (Huigen, 1986), depending on the weather conditions. Schuitemaker and Hoogerbrug (1972) regarded it as a threshold for public transport use in a Frisian case study (see textbox 4.2).

So, in the following we adopt a distance threshold of 8 km to indicate an acceptable school distance.

The number of pupils that was affected seriously by the increasing distances in the countryside is modest.

Taking 8 km as a threshold, the number of pupils (e) being forced to travel beyond that distance can be estimated as follows:

$$e = a.b.c.d$$

a = number of children in the 5-year age cohort of 13 to 17 (12,000 in Groningen 2000)

b = those living beyond 8 km (25%, see figure 4.2),

c = participation in MAVO/VMBO-T curriculum (15%, CBS 2008, p.153)

d = duration of the VMBO-T curriculum (four out of five years 80%)

e = number of pupils being seriously affected

A total number of about $12,000 \times 0.25 \times 0.15 \times 0.8 = 360$ VMBO-T pupils living outside school centres are likely to have suffered from school distances of over 8 km. Less than about 120 of those had to bridge distances like that in 1988 already.

4.2.4.3 Decreasing distances caused by the introduction of HAVO level basic training at rural school satellites.

The only considerable geographical improvement in education opportunities was the introduction of basic training at HAVO level at a number of the remaining VMBO schools in the countryside. The change in distances to this supply is depicted in figure 4.3. The improvement is spectacular and it more than compensates for the worsening in MAVO/VMBO-T, regarding the numbers of pupils concerned.

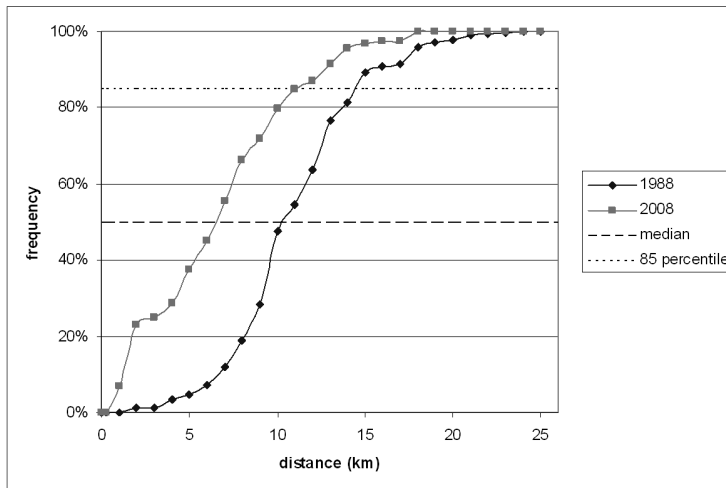


Figure 4.3 The cumulative distribution of distances to the closest school with HAVO level basic training in 1988 and 2008 for the Province of Groningen pupils in the 13 to 17 year age category, living outside school centres with a VWO school (N = 12,000).

The following *conclusions* seem justified:

- the mean distance decreased from 11.3 road km in 1988 to 7.1 km in 2008,
- the 50% value (median) was about 10.3 km, which demonstrates that there was a rather low school density in 1988. It was reduced to some 6.5 km.
- the decrease was most outspoken around the 20 percentile. For this share of the pupils the distance to school was minimised, because a local facility was made available,
- the 85% value was about 14.5 km in 1988 and it decreased to some 11 km. In 1988 this score belonged to a 55% value,
- the share of pupils living at over 8 km from the nearest location was 81% in 1988 and it decreased to 34% in 2008.

The number of pupils having advantage from this distance reduction is substantial.

The pupils living at a distance of over 8 road km are no doubt living outside the settlements with VWO (and HAVO) education. Their number is 12,000. The participation in HAVO is nationwide 17% (see CBS 2008, p.153). We assume that this percentage is valid for the Province of Groningen too.

Given the fact the basic training curriculum counts three classes, the number of HAVO pupils living beyond 8 km in 1988 was about: $12,000 \times 0.17 \times 0.81 \times 0.6 = 980$. In 2008 that number has decreased to about $12,000 \times 0.17 \times 0.34 \times 0.6 = 420$. This is a gain of about 560 pupils.

4.2.4.4 Summarizing: shifts in travel distances, disregarding school denomination.

School closures caused an increase in travel distances to the nearest school with a MAVO / VMBO-T curriculum disregarding its denomination. Travel distances of over 8 km may be regarded as problematic. In 1988 only a few pupils (120) had to travel further. In 2008 an estimated number of 360 VMBO-T pupils have to travel beyond 8 km.

The introduction of HAVO level basic training at remaining rural school locations has reduced the distances to the first three years of HAVO. This reduced the number of pupils having to travel beyond 8 road km from an estimated 980 to about 420 pupils.

The conclusion must be that increases in distances beyond the threshold of 8 km, caused by substantial MAVO school closure, have been more than compensated for by the introduction of HAVO level basic education in rural areas. In this case the number of pupils taking a MAVO or basic HAVO curriculum and having to travel over 8 km was reduced by about 30% (1.100 → 780).

The distance figures are summarised in table 4.3. Presented are figures for the entire pupil category and for those living outside a settlement with VWO. Compared are the situations in 1988 and 2008, using population numbers of an intermediate year (2000). Presented are the scores on different statistical indicators and the numbers and percentages of the pupils living at a more than acceptable distance.

Table 4.3 Minimum distances in km to school locations with MAVO/VMBO-T and HAVO basic training in 1988 and 2008 for pupils taking these curricula living respectively inside and outside settlements with VWO in the Province of Groningen and the number of pupils having to travel over 8 km.

Pupil category	Year	Obs.	Distance			# Pupils		See
			Avg	Med	85%	>8km	%	
MAVO/VMBO-T All	1988	3,000	2.9	1.6	5.1	120	4	Fig 4.1
	2008		3.8	1.8	7.0	360	13	
MAVO/VMBO-T Non VWO settlem.	1988	1,500	4.0	2.5	6.4	120	8	Fig 4.2
	2008		6.1	6.0	9.4	360	23	
HAVO basic train. Non VWO settlem.	1988	1,210	11.3	10.3	14.5	980	81	Fig 4.3
	2008		7.1	6.5	11.0	420	37	

4.2.5 Conclusions of the Groningen case

In this case we have analysed developments regarding school organisations, school locations and minimally required school travel distances, discussing the relevant hypotheses on these that were elaborated in chapter 2.

School concentration was described in three layers, being those of authority, institution and location.

The *concentration of control*, that is the reduction of the numbers of authorities and institutions, was downright spectacular, leaving only one quarter of the original numbers of actors.

The *geographical concentration*, being the reduction of the number of locations was far less spectacular, leaving 60% of the original ones. Yet 15 settlements lost all locations. Another 15 had only a satellite of a school elsewhere left. Only 10 settlements counted one or more independent institution(s) still.

Surprisingly the logical *increase of minimum school travel distances* as a consequence of location closures did not occur. The explanation lies in a fourth layer, being that of the curriculum. Satellites, mostly presenting a full MAVO/VMBO-T curriculum often grasped the new opportunity to provide general basic education for potential HAVO/VWO students as

well. The gains of this development in terms of a reduction of long travel distances (> 8 km) surpassed the losses in MAVO education.

This is a most surprising conclusion. Hypotheses concerning the development of required travel distances were not developed because a negative balance was thought to be self evident!

The *general conclusion with regard to school concentration* is that during the period 1988-2008 the number of locations was reduced so carefully with regard to accessibility, that (*disregarding denomination*) school travel impact was modest and was largely compensated for by de-concentrating a higher curriculum.

4.2.6 Implications for our theory

In the individual subsections the relevant hypotheses were discussed. The conclusions of these discussions are summarised in table 4.4.

The Groningen regional case study did confirm that the amalgamation of *school authorities* was functional for the continuity of school institutions and school locations (hypothesis 2.6.5). Religiously oriented *institutions* declined more in number than public ones, but not as a consequence of secularisation but because these were especially small country schools (hypothesis 2.5.5). Survival was achieved in some cases by changing the denomination as predicted in hypothesis 2.6.7.

Closure of school *locations* was expected and found frequently amongst those providing less advanced secondary education (hypothesis 2.5.3). These locations were often protected from closure by supplying basic education at HAVO level (hypothesis 2.5.4). For addition of a full HAVO curriculum, a possibility suggested in hypothesis 2.5.2, there was evidently no market.

Table 4.4 Assessment of the hypotheses in the Province of Groningen case

Hypotheses	Sections	4.2
2.6.5. <i>The central motive to amalgamate school authorities into units governing several schools in a region is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i>		+
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious institutions and a relative de-concentration of non-religious ones.</i>		±
2.6.7. <i>Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denominations of remaining schools into a common denomination.</i>		+
2.5.3. <i>The decreasing participation in less advanced secondary education curricula causes a decrease of the number of locations where these are supplied and correspondingly even a reduction of the number of school locations (selective school concentration).</i>		+
2.5.4. <i>Survival of school locations with less advanced secondary education curricula like MAVO/VMBO-T is enhanced by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).</i>		+
2.5.2. <i>The increasing participation in more advanced types of secondary education causes an increase of the number of (institutions and) locations where these are supplied (selective school de-concentration).</i>		-

Legend: + = confirmed; ± = doubtful; - = rejected; bold = very explicit

4.3 Concentration developments in the Province of Friesland from 1984 to 2008

4.3.1 Background

The Province of Friesland is the western neighbour of the Province of Groningen. It bears the name of a much larger coastal region in the Netherlands and Germany, including the Groningen 'Ommelanden', which had a common language, being 'Frisian'. The language is

nowadays spoken mostly in the countryside of Friesland only. Therefore the Province tends to be protective of country schools, having a function in supporting the language. Urban schools like the city of Sneek 'Bogerman College' may have a pro Frisian language policy, but the school itself complains that the Dutch language is dominant amongst its pupil population ([http://www.networkofschools.org/member-schools/Frisian ...](http://www.networkofschools.org/member-schools/Frisian...)).

During most of the period studied the 'Provinsiale Underwiisried' (Provincial Education Council), being an advisory board of the Province with promotion of the Frisian language as a central task, was active in protecting country schools (see chapter 5 too).

The Province of Friesland has a much larger territory and a larger population than its eastern neighbour. Its land surface is 40% higher, the lakes on the mainland not included. Its population is 15% higher. On the basis of that a larger number of schools may be expected.

Unlike Groningen no city managed to gain early control of the Province. Therefore it counts 11 medieval towns. At least three of these have acted as a capital in history.

Leeuwarden became the seat of regional government only after 1500, after a bitter party-strife (see Elzinga etc. 1983, p.9). Its dominance remained rather restricted though. Its population (92,000) is considerably smaller than that of the City of Groningen. Drachten, the foremost regional centre, is larger than its Groningen counterpart: Drachten 44,000 versus Hoogeveen 34,000.

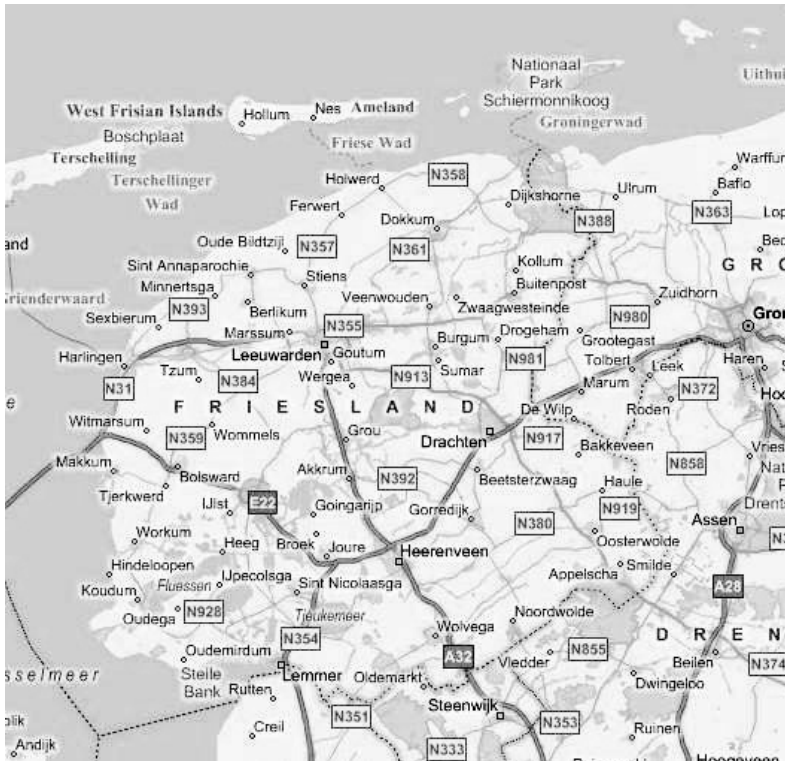
Most of the cities could develop into education centres in the course of the 19th century (Elzinga, 1983, p.8). Apart from Leeuwarden this is still valid for the cities of Bolsward, Dokkum, Franeker, Harlingen and Sneek.

There are *four dominant education centres*. Apart from Leeuwarden and Sneek these are the later moorland developments of Drachten and Heerenveen (Lords' Moor), serving the Northwest, the Southwest, the Northeast and the Southeast respectively.

Of 73,843 pupils in secondary education in 1984/85 Leeuwarden had a 22% share, Drachten had 17%, Heerenveen 12% and Sneek 10% (Verbeek 1985, pp. 20-24). This demonstrates how modest the dominance of the provincial capital is and how many pupils (39%) were educated outside these four cities.

In the outskirts of the four regions smaller centres are present, being Buitenpost and Dokkum in the Northeast, Harlingen in the West and Oosterwolde in the Southeast.

Only in the sparsely populated Southwest such a smaller centre is absent. Here a railway line constitutes the shortest connection between Sneek and a series of 4 dead-alive medieval towns. Stavoren, once the dominant port of the Province, is the terminus at a distance of 29 km from Sneek. Stations like those of Hindeloopen and Koudum-Molkwerum moreover may lie at several kilometres distance from the settlements served. In the Province of Groningen two regional lines radiating from the City have their terminus of Roodeschool and Nieuweschans at only 14 and 12 km respectively from Warffum and Winschoten, each providing VWO education.



Map 4.7 The Province of Friesland (Source: maps.live). Two school centres are not mentioned by name: Franeker (above Tzum) and Sneek (E22)

The modest education supply of the utter southwest was reason for a 1972 study initiated by local government (Schuitemaker and Hoogerbrug 1972). It assessed accessibility per public transport of HAVO and VWO at Sneek to be bad for the whole southern area beyond the MAVO schools of Workum (the second small town on the line) and Balk, municipal capital of Gaasterland, lying at a long bus line from Sneek. Yet the study concluded that pupil numbers were insufficient to justify the introduction of advanced secondary education (HAVO, VWO), although HAVO level basic education might be introduced at some existing MAVO schools. Concluding rightfully that the distances concerned were not cyclable, improvement of bus transport was suggested.

The authors stated that public transport is most important for distances over 8 km, without presenting data.

The formula used for assessment was $A = 2.2 \times F/T$. F is the number of arrival/departures per day. T is the travel time in minutes per single trip. A travel time of 45 minutes was regarded to be the maximum being acceptable still (S and H, p. 8).

Three scores given were: ≥ 5 = very good; $\geq 2, \leq 5$ = good; $\geq 1, \leq 2$ = poor; ≤ 1 = bad

Textbox 4.2. The accessibility of education in Southwest Friesland as studied in Schuitemaker and Hoogerbrug 1972.

The contrasts with the Province of Groningen both with regard to hierarchy of education settlements and to travel distances were reasons to apply a similar analysis to this Province.

For comparison the data in Verbeek (1984) and the CFI data base of 2008 will be used (see section 4.1.4).

The outcomes of the analysis will be confronted with our set of hypotheses only when fundamental differences with Groningen are shown, except for the summarising sections 4.3.2.4. and 4.3.3.4.

The Frisian results for the development of minimum home to school distances will be confronted with the Groningen ones, looking especially at the 8 km distance threshold.

The government of the 'Province of Fryslân', as it is called officially, was particularly active during the nineteen eighties in national debates on the increase of minimum pupil numbers. It does not seem to have organised a project to coordinate amalgamations like Groningen did, but it initiated studies and actions. One finds studies by the Welfare Institute of the Province (Ynstiút foar it Wolwêzen in Fryslân) and by the Provincial Education Council (Provinsiale Underwiisried) (Verbeek 1985, Provinsiale .. 1985). Provincial government gave the present author the assignment to assess the travel cost of three school closures, being the cost for government in terms of public transport subsidies and traffic safety investment (De Boer 1984, see textbox 4.3).

A cheaper school at the cost of a disproportionally more expensive way to reach it?

The Province of Fryslân was worried about the losses of travel time and of traffic safety to be caused by school closures. The author was asked to assess the cost of additional bus transport and of traffic safety measures necessary to avoid an increase of accident victims.

Three closures were studied:

1. The historical closure of the Lower Agricultural School (LAO) at *Metslawier* in the utter Northeast, closed 1969 by lack of demand, when only 49 pupils were left.

Outcome: *no identifiable closure cost*, because of a diffuse school catchment and of regional supply of an acceptable alternative education route at the city of Dokkum. That route was closed during the 1990's though.

2. The closing *LHNO*, (agricultural) household school of *Garyp*, near the local education centre of Burgum. It was closed in 1984 by a sudden lack of demand (- 50%), caused by a new more or less competing supply at nearby Burgum MAVO. In 1980 there were still about 130 pupils.

Outcome: *positive*, because the Burgum alternative supply reduced travel and dangerous crossing of a major road for most of the pupils.

3. The *Public MAVO* at the local education centre of *Kollum*, having about 150 pupils, too few for the threatening increase of the minimum pupil norm of 60 per year and even for a potential 45 norm.

Outcome: *distinctly negative*, because of the distance to a similar Public education supply at the Regional school centre of Dokkum. Bus transport would be necessary for part of the pupils and for the other part during winter. The cycling route would cross a major dangerous road and follow a most dangerous tow-road without a cycle track. The cost of the necessary measures would have to be much higher than the savings created by school closure.

The school survived as a satellite of the Leeuwarden Piter Jelles school community (30 norm and spreading necessity). Recently it changed its education system because of a critical decline in demand (<http://impulse.pj.nl/impulse/>).

Textbox 4.3. School closure does not lead inevitably to travel problems and to government cost to solve these (De Boer, 1984).

4.3.2 School authorities and institutions

4.3.2.1 Introduction

In this section, like that of the Groningen case study, firstly the relationship between developments in the numbers of school authorities and those of institutions is studied, supposing (hypothesis 2.6.6) that authorities in the countryside tend to follow schools. *Authorities are assumed to amalgamate because their schools have to be amalgamated in order to survive.*

After that, the evidence concerning the other two hypotheses, referring to shifts in the denominational composition of the set of institutions (hypothesis 2.5.5.) and to change of the denomination of individual schools is presented (hypothesis 2.6.7) is presented.

Of central importance is the evidence presented in *table 4.5*, where the numbers of authorities, institutions and locations in 1984 and 2008 are compared for the respective denominations.

4.3.2.2 *An even larger congruency between authority and institution than in the Province of Groningen*

The sources used did not present information on the school authorities in 1984. Only the authorities of the public schools could be identified easily, since these were Municipalities. No doubt most of the particular schools had their own authority, as was the case in the Province of Groningen. The data concerning particular authorities as presented in table 4.5 are estimated on the basis of the Groningen distribution.

The structure of local government in the Province of Friesland used to be different from that of Groningen. The latter Province had in fact ‘Village Municipalities’ with only one settlement of some substance. The larger Province of Friesland had for ages eleven-and-thirty administrative units, being the eleven cities and thirty ‘Delen’ (parts) with generally each about a dozen of formal settlements having their own village administrations (see chapter 5 for the ‘Dongeradelen’). The larger scale of Frisian Municipalities is likely to imply a larger number of public secondary school authorities, which is the case indeed (table 4.5).

During the 1990’s the smallest Municipalities were amalgamated, including seven medieval cities, leaving 31 Municipalities. The number of public secondary school authorities was lower than that in 1984 already.

Between 1984 and 2008 the number of *public school authorities* was about halved, being a reduction from 23 to 12 (table 4.5). The remaining authorities in the Province often are co-operations of Municipalities, like those in Groningen. Local government has put Public Education at a distance as a rule, by putting the direct responsibility in the hands of a special governmental committee or even a foundation. Only three of the four Municipalities of the islands north of the Frisian mainland are still responsible directly for their small secondary schools. Two of the Public school authorities have their basis outside the Province, i.e. in the southern neighbour Provinces of Flevoland and Overijssel.

Public education authorities (12) constitute half of the present number of school authorities. *PC school authorities* amount to one third.

Of the other three particular authorities two have their basis in the Province of Groningen: the Liberated Reformed one and the General Particular one governing one of the rare agricultural schools.

The reduction of the number of authorities is proportional to that of the number of institutions. In 2008 there are 23 authorities governing 28 schools.

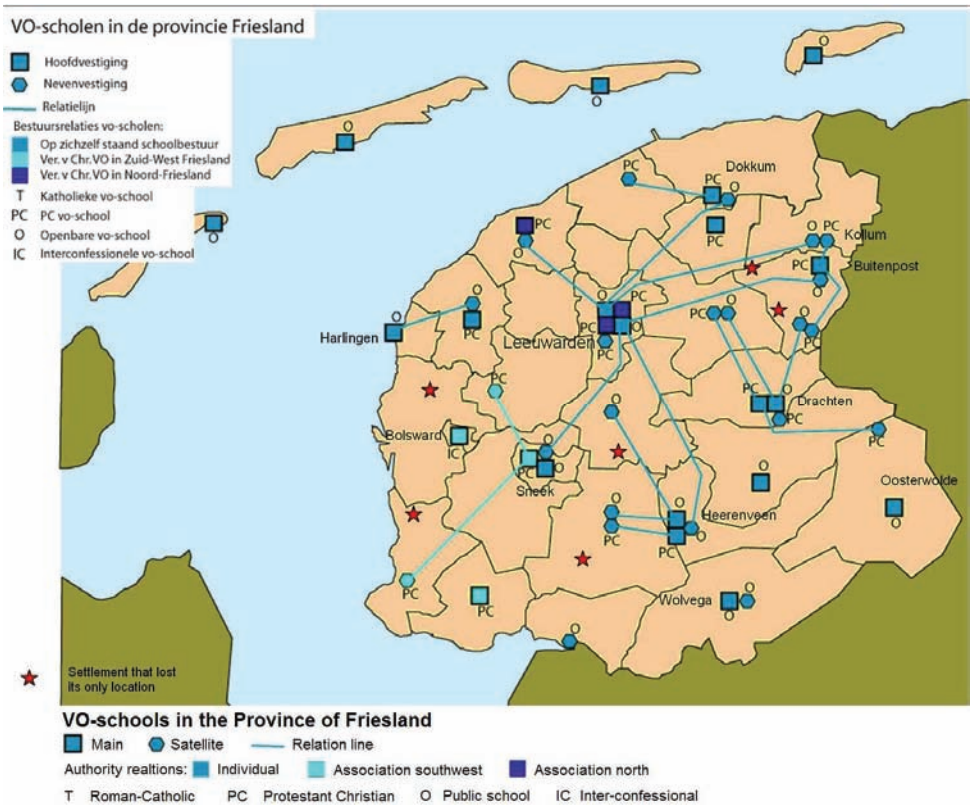
Huigen calculated the likely reduction of the number of schools in the Southwest of Friesland, roughly the area southwest of the Harlingen – Leeuwarden – Heerenveen line, as a consequence of the introduction of a 60 pupil norm per curriculum year. He concluded that only 11 of the in 1982 existing 27 schools would be closed (Huigen 1986, p. 208). In fact only four schools are left, as are seven satellites of those schools and of schools outside the area. See map 4.8.

The discrepancy between prediction and reality is likely to be the result of ongoing decline, of local amalgamations and of the introduction of formal satellites, inviting amalgamation of schools at a regional level.

The **conclusion** must be that there is *no ground for rejecting hypothesis 2.6.6*, postulating that the amalgamation of authorities in the countryside followed the amalgamation of schools that was intended to save local provision of education by the introduction of satellites.

The 2008 Municipalities, including the four islands, are shown on map 4.8, presenting:

- school locations and their status (main or satellite),
- their relationship with other locations within one institution, indicated by a link; where the link is absent the main location is to be found in a neighbouring Province.



Map 4.8 Secondary school locations in the Municipalities of the Province of Friesland in 2008, their status (main versus satellite) and dependence on other locations within the Province or on a common authority. The eleven settlements with VWO curricula are mentioned by name. Individual locations of the same school in the same city are not indicated. Liberated Reformed (satellites at Drachten and Leeuwarden) is indicated as PC.

Table 4.5 Numbers of school authorities, schools and school locations per denomination in the Province of Friesland in 1984 and 2008

		Publ	ProC	Refo	RoCA	GPar	Intc	Tot	%
Authorities	1984	23	50	2	8	17	0	100	100
	2008	12	8	1	0	2	0	23	23
Schools	1984	35	56	2	8	17	0	118	100
	2008	13	11	1	0	2	1	28	24
Locations	1984	35	57	2	8	18	0	124	100
	2008	33	28	2	0	3	2	69	56

Legend: Publ = Public, ProC = Protestant Christian, Refo = Reformed ProC, Free = R. Steiner, GPar = General Particular, Intc = Interconfessional (ProC + Roman Catholic). Numbers of authorities in italics are estimated, following the Groningen pattern in table 4.2.

In table 4.5 the latter ones, like the Lemmer one in the extreme south, are counted as institutions, being present in the Province unless there are two of the same institution.

- authorities with more than one school, indicated by a common colour.
- settlements with VWO, indicated with their names (1984, Kollum and Wolvega added 2008).

4.3.2.3 *A shift in the denominational composition of the set of institutions, towards dominance of non-religious schools*

The number of secondary schools in 2008 is reduced to a mere 28, leaving less than one quarter of the supply of 1984 (table 4.5).

The *decline in PC schools* is spectacular, showing a reduction by over 80%% from 65 to 11 schools! The explanation must be that this denomination was strongly represented in the rural areas in the northeast and the southeast of the Province, suffering most from population decline (see chapter 5).

The *General Particular schools* suffered even more, being founded especially for vocational training, that met with a decline in demand. In 1984 there were still eight agricultural schools (LAO) of different denominations. The four locations that are left are mostly part of the GP Agricultural Training Centre Friesland (AOC Friesland).

Roman Catholic schools do not exist anymore. Only one survives in fact in the city of Bolsward interconfessional school, governed by a 'Christian' authority with two other PC schools in the region ([www.cfi/BRIN-gegevens/zoekinstellingen/Marne college/bestuur](http://www.cfi/BRIN-gegevens/zoekinstellingen/Marnecollege/bestuur)). This development is most likely the result of the modest minority position of this Christian denomination. Only in some villages, like Blauwhuis (Blue house) and Roodhuis (Red house), it has a substantial share of the population. Yet its annihilation in secondary education is in strong contrast to the development in primary education, where nearly all of the over 30 RC schools in the Province survived, thanks to very lenient norms for minimum school size of remote primary schools of a denomination (see chapter 5).

The *composition of the set of schools in terms of denomination has changed considerably*. In 1984 the PC schools had the largest share (47%). Now the Public schools are dominant with 13 cases (46%).

One may interpret these shifts as a result of a proceeding secularisation in the Province.

Hypothesis 2.5.5 stating that religious education institutions would be strongly reduced in numbers, is confirmed but this seems to have had at least partly geographical causes as in the case of the Province of Groningen.

Hypothesis 2.6.7 on changing the identity of a school to save its location is confirmed too, but only in the sense that one RC school is living on partly under the cover of an 'interconfessional' identity.

4.3.2.4 *Summarizing the implications for our theory on the development of the numbers of authorities and institutions*

The following theorems were presented for testing in section 4.3.2. The numbers refer to the full list of hypotheses included in chapter 2. We found no cases whatsoever indicating contrasting developments.

Hypothesis 2.6.5. *The central motive to amalgamate school authorities into units governing several schools in a region is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.*

This is indicated by a moderate development in amalgamation of authorities and institutions and the preservation of locations in medium sized settlements in a certain area.

Conclusion: The number of school authorities was reduced strongly in the Province of Friesland, but, like in Groningen, following the reduction of the number of schools and not leading it. It made it possible to maintain far more locations than there are schools.

The hypothesis is **confirmed**.

Hypothesis 2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious institutions and a relative de-concentration of non-religious ones.

This is indicated by a shift in the share of institutions and locations in a certain area towards public or general particular education.

Conclusion: the numbers of religious authorities and institutions were strongly reduced, as was expected, but, as in Groningen, not only because of secularisation, but partly because some of these were rural in character and smaller in pupil numbers, which implied a larger number of closures. The hypothesis is **confirmed**.

Hypothesis 2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denominations of remaining schools into a common denomination.

This means that a school of certain distinct denomination, like Roman-Catholic, would assume the identity of an 'interconfessional' or even of a neutral particular school.

Conclusion: this phenomenon was found indeed in one case, being a Roman-Catholic school. The hypothesis is **confirmed**.

4.3.3 School locations, partly preserved as 'spreading location'

4.3.3.1 Introduction

Vital for the geographical accessibility of education is not the local presence of independent school institutions, but the presence of locations supplying one or more curricula.

One of the hypotheses cited in section 4.1.2 concerned the decline of school locations and the local supply of education in the countryside as a consequence of a decrease in the demand for less advanced education as supplied in rural settlements (number 2.5.3).

The other hypotheses were dedicated to an increase of supply in more advanced education (especially HAVO) as a consequence of increasing demand (number 2.5.2) and as a strategy to preserve local supply (2.5.4).

These developments will be discussed in the subsequent subsections 4.3.3.2 to 4.3.3.4.

4.3.3.2 Decline of school locations with only MAVO and/or LHNO in the countryside

The termination of institutions does not necessarily imply closure of school locations as we have seen in the Province of Groningen case study.

In 1984 there were 35 settlements with school locations for secondary education. Four of those had only a supply of vocational training, being either an agricultural school (LAO) or a household (girls) school (LHNO). These four locations (Drogeham, St Nicolaasga, Witmarsum and Zwaagwesteinde) were closed before 2008.

Of the other 31 settlements 9 had a VWO supply and 1 (the city of Franeker) only a HAVO supply apart from MAVO.

The remaining settlements (21) had all a supply of a MAVO curriculum, often combined with LHNO. In seven of these settlements there were two MAVO schools of different denominations.

Remarkably few settlements (Akkrum and Workum) lost their MAVO curriculum completely, in contrast to the Province of Groningen and even the double VMBO-T supply is still present in some larger villages (Burgum, Joure).

In 2008 there are still five independent rural schools, supplying VMBO-T as the most advanced general full curriculum. Four of these are special cases though, being the only schools of the four Frisian islands across the 'Wadden Sea'.

Map 4.8 shows that there are nine settlements with only a satellite left. In one case (Lemmer) it is a satellite of a school in a neighbouring Province.

Summarizing: of 35 settlements with at least one secondary school location, only six lost it and nine have only one or two satellites left. This implies that 20 settlements have an independent school institution still, being twice as many as in the Province of Groningen.

This modest local decline will no doubt imply that the *increase of minimum distances to MAVO/VMBO-T* has been *rather modest* as well. The number of pupils involved in closure of the two locations concerned were 536, less than half of those taking a MAVO curriculum (1984 data, Verbeek 1985).

This development hardly confirms hypothesis 2.5.3, postulating the decline of locations supplying only less advanced types of secondary education. This might be explained as follows.

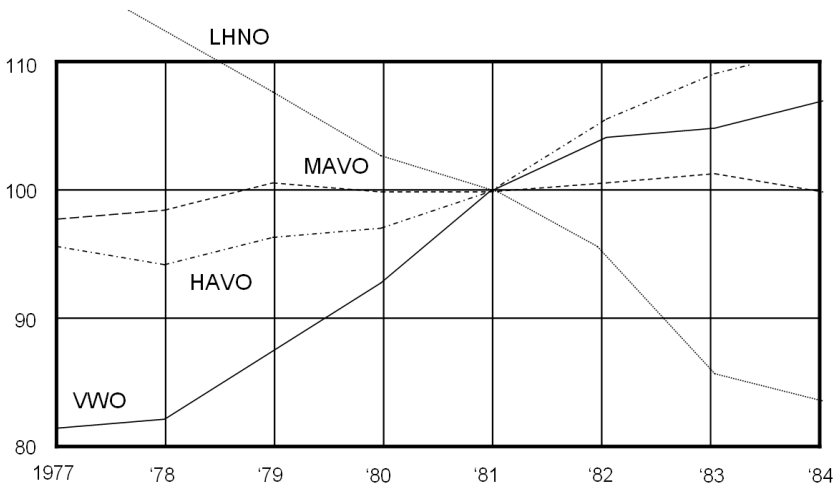


Figure 4.4 The development of the participation in four types of secondary education in Friesland from 1977 to 1984. 1981 = 100. (compiled from Verbeek 1984, fig. 5.1 and 5.2). LHNO 1977 = 118

Figure 4.4. shows that participation in LHNO did decline sharply in the Province of Friesland from 1977 to 1984. The demand for MAVO was more or less constant, while that for HAVO and VWO increased, following national developments. Those children who are assessed to be fit for just MAVO may choose for an urban school supplying both MAVO and HAVO, hoping to reach the higher level education, and thus weakening the position of the country school. The physical scale of Frisian education was evidently that large already that this development had no decisive impact. Calculations of the development of necessary travel distances (subsection 4.3.4) demonstrate that distances to MAVO in Friesland in the before situation were comparable to those in Groningen in the after situation!

Indeed the reduction of the number of school locations from 1984 to 2008 was less radical than that in the number of school institutions, being 44% as compared with 74% for institutions. The location decline is similar to that in the Province of Groningen with its decline by 40%. The mean number of locations per school is less than 3.

The different denominations have similar numbers of satellites.

The share of ‘spreading necessity’ locations (18 of the 69 locations) is comparable to that in the Province of Groningen as well, indicating similar distances in 2008 (see section 4.2.3). In Friesland too there are a number of urban cases, like the satellites of the Groningen Gomarus College in Drachten and Leeuwarden.

4.3.3.3 Supply spreading of more advanced education

The increasing demand for HAVO and VWO as indicated in figure 4.4 opened the opportunity to improve the position of rural schools and satellites. This was all the more necessary because of the dramatic decline of LHNO while MAVO demand was stagnant. We will discuss the expansion of VWO, HAVO and HAVO level basic training.

The increase of settlements with VWO and HAVO locations was only modest since 1984. Nine had HAVO/VWO (see map 4.4) and one (Franeker) just HAVO. Only two additional settlements gained these advanced curricula in 2008.

The ‘Linde College’ at the Municipal capital of Wolvega (Weststellingwerf), that was the result of a complex amalgamation process, managed to introduce both. The satellite of the large Leeuwarden ‘Piter Jelles’ school community at the Municipal Capital of Kollum (Kollumerland) managed to develop from a MAVO to a location with HAVO and VWO as well.

The Province counted only two categorical *Gymnasia*, both in the City of Leeuwarden. It had six school communities with a Gymnasium curriculum too in 1984 (Dokkum, Drachten, Heerenveen and Sneek). It demonstrates the relative importance of the regional centres in comparison to the Province of Groningen, that had only one Gymnasium location outside the City. Another two locations were added before 2008 at Buitenpost and Heerenveen.

The spreading of HAVO level basic education too is more common than in the Province of Groningen. There are 17 locations offering this opportunity explicitly. Eleven of those have the ‘spreading necessity’ indication.

Evidently the initiative to offer this education depends on the contribution it makes to survival of a location. Dominance of the distance motive would have incited all the VMBO schools of the four Frisian islands north of the mainland to supply basic HAVO. Visiting a school on the mainland requires a time consuming journey by ferry and, in the case of two islands, by bus to the city of Dokkum. Nevertheless only two of the island schools do supply basic HAVO. One of the schools that doesn’t argue that it was too small for providing this supply. One of the schools that does argue that it was small enough to do so (personal information from school leaders). The schools had about the same size!

4.3.3.4 Summarizing the implications for our theory

The following theorems were presented for testing in section 4.2.2. The numbers refer to the full list of hypotheses included in chapter 2.

Hypothesis 2.5.3. *The decreasing participation in less advanced secondary education curricula causes a decrease of the number of locations where these are supplied and correspondingly even a reduction of the number of school locations (selective school concentration).*

Conclusion: This hypothesis was tested for the number of MAVO/VMBO-T locations and was **not confirmed**.

Hypothesis 2.5.4. *Survival of school locations with less advanced secondary education curricula like MAVO/VMBO-T is enhanced by the addition of a more advanced curriculum like HAVO: a case of mitigating school concentration by selective de-concentration.*

Conclusion: This hypothesis was tested for the introduction of HAVO level basic training at rural VMBO-locations and it was **confirmed**.

Hypothesis 2.5.2. *The increasing participation in more advanced types of secondary education causes an increase of the number of (institutions and) locations where these are supplied (selective school deconcentration).*

Conclusion: This hypothesis was tested for the introduction of a full HAVO curriculum at MAVO/VMBO-T locations and was **confirmed**.

4.3.4 Development of necessary travel distances

4.3.4.1 Introduction

The number of schools was reduced by 76% during the period that was studied, while the number of school locations was reduced less, but by 44% still. This may be expected to have a considerable impact on travel distances to the nearest school of the desired type and denomination.

Yet we have seen that only a few settlements lost their only school location. Only two of those supplied a MAVO curriculum. The modest distance implications of MAVO withdrawal in the countryside will be calculated nevertheless for reasons of comparison with the implications of basic HAVO introduction in the countryside.

The analysis is somewhat less accurate than that for the Province of Groningen, because no four digit postal codes were available for the 1984 locations, by lack of addresses. For each school the central code of the settlement is used. It implies that the distance implications of a reduction of MAVO-locations within a settlement cannot be calculated!

The analysis is started with the development of distances to the MAVO/VMBO type of education as such, irrespective of the denominational character of education, excluding the 11 school centres with HAVO/VWO that underwent no change in this respect. This exclusion implies that the distance bias caused by working with only one four digit code per settlement is negligible.

Religious education suffered relatively much from school and location closures. Therefore the VMBO-T supply of this set of denominations will be analysed separately for the entire Province.

The remaining schools and locations of this type in the countryside often extended their supply with HAVO level basic training. Therefore we will analyse the development of travel distances to this type of school. Only a general analysis for the countryside, excluding 11 school centres will be made.

The approach is the same as in the similar subsection 4.2.4.1 of the Groningen case.

The number of children in the age of 13 to 17 years of age used for calculations (AVV 2000) is 40,800 for the whole Province and 24,200 for the 11 settlements without VWO in 2008 (see map 4.4).

4.3.4.2 Changing travel distances caused by MAVO school location closures.

The distances to the nearest MAVO/VMBO-T supply for rural Province of Friesland pupils are shown in Figure 4.5. All denominations are included. As stated before (section 4.2.4.1) religious schools will accept those pupils that do not explicitly reject the specific religion. Only the Liberated Reformed Gomarus College with locations in the city of Leeuwarden and at Drachten demands religious participation.

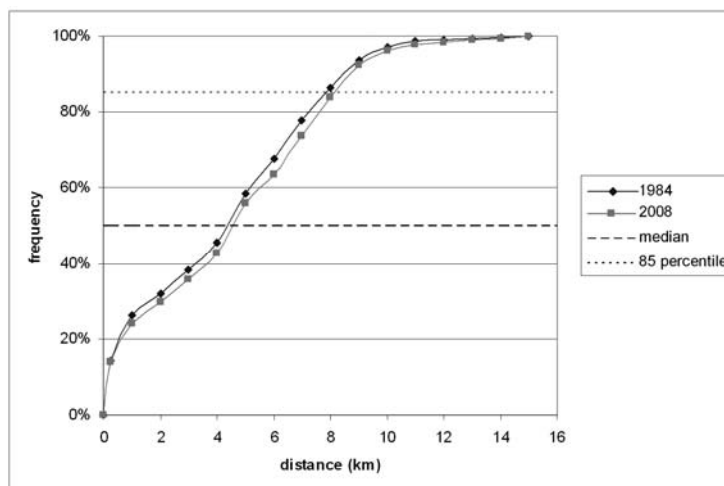


Figure 4.5 The cumulative distributions of distances to the closest school with a MAVO /VMBO-T curriculum in 1984 and 2008 for the Province of Friesland pupils in the 13 to 17 year age category, living outside school centres with HAVO/VWO. N = 24,200.

Data: inhabitants per four digit postal code area, Dutch AVV, collected for NRM 2000.

The following conclusions from figure 4.5 seem justified:

- the distance distributions for 1984 and 2008 are nearly identical and thus its parameters too,
- the mean distance increased from 5.7 km in 1984 to 6.0 km in 2008,
- the 50% value (median) was about 4.4 km, which demonstrates that there was a less high school density in 1984 than in the Province of Groningen. It has increased to 4.6 km only.
- the increase started at distances above about 1 km, indicating the loss of local facilities,
- the 85% value was just under 8 km in 1984 and it increased hardly to just over 8 km, by 200 m at most. Yet a considerable portion of the pupils had and have to travel respectable distances.

The number of pupils (e) affected seriously by the changed distances in the countryside is negligible, compared to the Province of Groningen. Yet this number will be estimated for comparison with the impact of basic HAVO introduction.

The participation in VMBO-T is nationwide 15% (see CBS 2008, p.153). Assuming that this percentage is valid for the Province of Friesland too and given the fact the curriculum counts four classes, the number of pupils living beyond 8 km in 2008 are 465 pupils, more than in 1984. This is no doubt a marginal increase, if any.

Calculating the number of pupils living beyond 8 km of MAVO/VMBO-T in Friesland 1984-2008

a.b.c.d = e

a = number of children in the 5-year age cohort of 13 to 17 (24,200 in Fryslân 2000)

b = those living beyond 8 km (16% in 2008, 14% in 1984)

c = participation in MAVO/VMBO-T curriculum (15%, CBS 2008, p.153)

d = duration of the VMBO-T curriculum (four out of five years 80%)

e = number of pupils being seriously affected

The development of *distances to religious MAVO/VMBO-T locations* is shown in figure 4.6.

The following observations seem justified:

- opting for religious VMBO-T education may require much longer travel distances than opting for the nearest supply. This is caused largely by the Public education monopoly on the four islands, causing long travel distances to locations on the mainland. Most likely all islanders are opting for this denomination. A glance at map 4.4 tells that Public education has a monopoly in the Southeast and that PC education has one in the Southwest. This reflects the dominance of these denominations in primary education (see chapter 5).

- distances have increased rather modestly, but more than for the supply in general. Some locations were closed, leaving the ground for Public education in the same settlement. The PC MAVO of Wolvega is an example of this. Public education lost locations elsewhere. Balk in the Southwest for instance lost its Public school but the PC school managed to survive.

No estimates of affected pupil numbers are made, because it is uncertain what the share of religious education would be in cases where it is not the closest option.

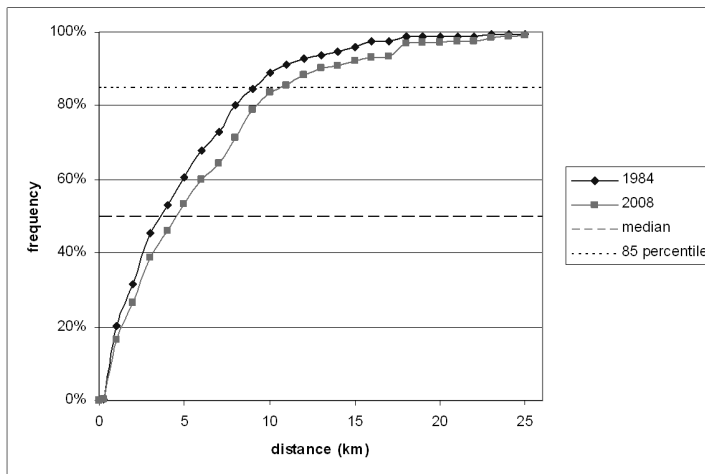


Figure 4.6 The cumulative distributions of distances to the closest religious school with a MAVO /VMBO-T curriculum in 1984 and 2008 for the Province of Friesland pupils in the 13 to 17 year age category. N = 40,800.

4.3.4.3 Decreasing distances as a consequence of the introduction of HAVO level basic training at rural school locations.

Given the marginal increase of distances by rural MAVO location closure the fairly general introduction of basic HAVO education at remaining VMBO-T locations is likely to have decreased the distances to this type of education substantially. Knowing that the distances within the larger settlements are most inaccurate, the selection of pupils made for figure 4.5 is used for the following calculations of distance distributions too.

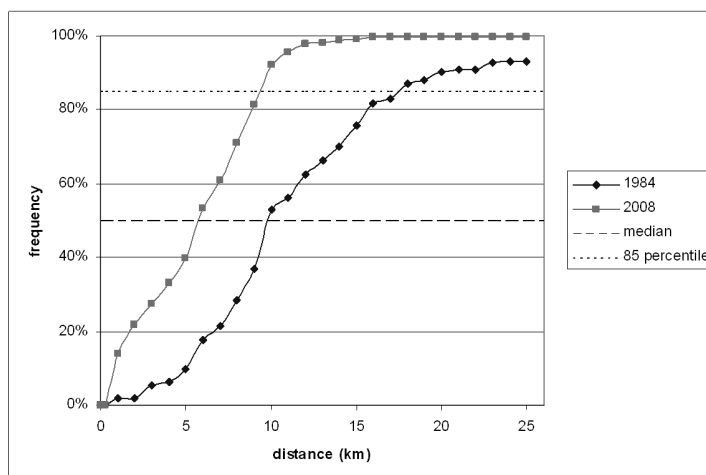


Figure 4.7 The cumulative distributions of distances to the closest school with a HAVO basic training supply in 1984 and 2008 for the Province of Friesland pupils in the 13 to 17 year age category, living outside school centres with HAVO/VWO. N = 24,200.

Data: inhabitants per four digit postal code area, Dutch AVV, collected for NRM 2000.

Figure 4.7 confirms the supposition of decreasing distances to HAVO level basic education. In this figure the difference between the situations before and after school closures and curriculum additions is by far the largest we have seen so far!

The following observations can be made:

- distances to HAVO were quite considerable, with only about 29% of the HAVO potential living under 8 km from the nearest supply in 1984. It increased some 71% in 2008!
- the mean distance decreased from 12.3 km in 1984 to 6.3 km in 2008.
- the 50% value (median) was about 9.8 km, which demonstrates that there was a rather low HAVO school density in 1984. It was reduced to about 5.8 km.
- the 85% value was a 17.5 km in 1984 and it decreased to nearly half that distance in 2008, being 9.3 km.

This reduction of distances was a tremendous improvement for those children participating in HAVO education.

Given the following factors,

- a. number of children in the 13 to 17 age cohort (24.200)
- b. participation in HAVO education (17%)
- c. reduction in the percentage of children living beyond 8 km ($71 - 29 = 42\%$)
- d. percentage of the age cohort involved (60%)

the *gain* is estimated at about $24,200 \times 0.17 \times 0.42 \times 0.6 = 1500$ pupils shifting to an accessible distance.

4.3.4.4 A remarkably positive result, disregarding denomination

We have seen (table 4.3) that 44% of the school locations in the Province of Fryslân was closed after 1984, although only a few settlements lost all school locations. Therefore the distances to MAVO/VMBO-T locations in general increased hardly. Religious school institutions lost relatively much ground.

Many of the remaining VMBO-T locations were enriched with HAVO level basic education, which improved the accessibility for many children choosing this curriculum. An estimated 1500 pupils did not have to travel over 8 km anymore to the next location supplying this curriculum. See table 4.6. For an explanation see table 4.3.

Table 4.6 Minimum necessary distances in km to school locations with MAVO/VMBO-T and HAVO basic education in 1984 and 2008 for pupils taking these curricula and living outside settlements with VWO in the Province of Friesland and the number of pupils having to travel over 8 km.

Pupil category	Year	Obs.	Distance			# Pupils		See
			Avg	Med	85%	>8km	%	
MAVO/VMBO-T	1984	3,000	5.7	5.3	7.9	420	14	Fig 4.6
	2008		6.0	5.5	8.1	470	16	
HAVO basic educ.	1984	3,400	12.3	9.8	17.5	2530	71	Fig 4.7
	2008		6.3	5.8	9.3	1010	29	

It is clear that the net effect of the combination of school concentration and of de-concentration of (partial) curricula is positive: *the mean distance to be travelled has decreased by about 6 km for the rural basic HAVO pupils.*

It must be reminded that *the effect was perhaps grossly underestimated* because the de-concentration of basic education was presented locally as one concerning not only HAVO but VWO as well. One school satellite stated that this supply is generally accepted in fact at its Koudum location of the City of Sneek Bogerman College. Only Gymnasium students should go to Sneek from the very beginning, because of the lack of local supply of education in classical languages.

4.3.5 Conclusions of the Friesland case study

School concentration was described in three layers, being those of authority, institution and location.

The *concentration of control*, that is the reduction of the numbers of authorities and institutions, was downright spectacular, leaving only one quarter of the original numbers of actors.

The *geographical concentration*, being the reduction of the number of locations was far less spectacular, leaving 56% of the original ones. Only 6 settlements lost all locations. Another 9 had only a satellite of a school elsewhere left. The number of settlements keeping at least one independent institution amounted to 20, being twice the Groningen number.

It is hardly surprising that the expected *increase of minimum school travel distances* to MAVO/VMBO-T occurred hardly. In fact the introduction of basic education at a HAVO level introduced a major reduction of distances to this advanced curriculum. The share of rural pupils having to travel over 8 km to this supply was reduced by some 44%. This impact is likely to be grossly underestimated because the supply is advertised as basic HAVO/VWO.

Concerning *the development of distances to school*, it is shown that in the Province of Friesland only a few settlements lost their last school location. This implies that distances to the nearest MAVO/VMBO-T curriculum hardly increased, because it is generally the last one. Distances did increase somewhat more for religious education at his level, but in fact not spectacularly so.

A most surprising outcome is that the mean distance to HAVO level basic education (the first three of a five year curriculum) was nearly halved by the general introduction of this curriculum at rural satellites.

Surprisingly, in Friesland school de-concentration has been stronger than school concentration because its quantitative effect was stronger than the much resented closure of small local schools.

The number of *authorities* could not be identified for 1985, but their present number is identical to the number of authorities of public schools in that year, which indicates a substantial reduction.

The number of *schools* was reduced by about 75%. Roman-Catholic education institutions were annihilated. Only a few General Particular institutions were left. Protestant Christian ones were reduced by 80% and lost dominance to Public schools, constituting 13 (reduction 55%) of the present 28 schools.

The number of education *locations* was reduced less, that is by about 60%. Here too Public education is affected least (minus 30%, PC minus 65%).

The minimum distance to education with the desired curriculum is hardly increased for schools of the VMBO-T type, because hardly any settlement lost this type of curriculum completely. For PC denomination schools there are moderate losses.

The mean distance to basic training of a higher level (HAVO) has decreased considerably by the common initiative of rural VMBO schools to supply this partial curriculum.

4.3.6 Implications for our theory

In the individual subsections the relevant hypotheses were discussed. The conclusions of these are summarised in table 4.7.

The Friesland regional case study did confirm that the amalgamation of *school authorities* was functional for the continuity of school institutions and school locations (hypothesis 2.6.5). Religiously oriented *institutions* declined more in numbers than public ones, maybe as a consequence of secularisation but partly too because these were relatively small rural schools (hypotheses 2.5.5). Survival was achieved in some cases by changing the denomination as predicted in hypothesis 2.6.7.

Closure of school *locations* was expected and found frequently amongst those providing less advanced secondary education (hypothesis 2.5.3). These locations were quite often protected from closure by supplying basic training at HAVO level as was suggested in hypothesis 2.5.4. For addition of a full HAVO curriculum, a possibility suggested in hypothesis 2.5.2, there was evidently only a modest market.

4.3.7 Groningen and Friesland compared

For the two Provinces we did studies with slightly different time spans. The before situation data of Friesland described the situation in 1984, those of Groningen described the 1988 situation. Differences in the original numbers of schools may be partly explained by the difference in time span. Hetteema mentions the closure of 40 schools in the 1980 – 1990 period for Groningen. Yet the tendencies in (further) development were similar. The regions share a substantial reduction of the number of school authorities, school institutions and school locations (see tables 4.2 and 4.5).

Table 4.7 Assessment of the hypotheses in the Province of Friesland case (4.3.) as compared with the Groningen case (4.2).

Hypotheses	Sections	4.2	4.3
2.6.5. <i>The central motive to amalgamate school authorities into units governing several schools in a region is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i> This is indicated by a moderate development in amalgamation of authorities and institutions and the preservation of locations in medium sized settlements in a certain area.		++	++
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious institutions and a relative de-concentration of non-religious ones.</i> This is indicated by a shift in the share of institutions and locations in a certain area towards public or general particular education.		±	+
2.6.7. <i>Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denominations of remaining schools into a common denomination.</i> This means that a school of certain distinct denomination, like Roman Catholic, would assume the identity of an 'interconfessional' or even of a neutral particular school.		+	+
2.5.3. <i>The decreasing participation in less advanced secondary education curricula causes a decrease of the number of locations where these are supplied and correspondingly even a reduction of the number of school locations: a case of selective school concentration.</i> The demand for several types of education, both general and vocational in character decreased during recent decades as demonstrated in chapter 3. Against this background the development of the number of MAVO/VMBO-T locations will be investigated without connecting this with regional change in demand, by lack of data.		++	++
2.5.4. <i>Survival of school locations with less advanced secondary education curricula like MAVO/VMBO-T is enhanced by the addition of a more advanced curriculum like HAVO: a case of mitigating school concentration by selective de-concentration.</i> The occurrence of this action will be investigated for the introduction of HAVO level basic education at rural VMBO locations.		+	++
2.5.2. <i>The increasing participation in more advanced types of secondary education causes an increase of the number of (institutions and) locations where these are supplied: a case of selective school de-concentration.</i> The occurrence of this phenomenon will be investigated for the addition of full HAVO curricula at existing locations for MAVO.		-	+

Legend: ++ = firmly confirmed; + = confirmed; ± = doubtful; - = rejected

In the past a *school authority* used to govern mostly one secondary school only, except for large Municipalities, governing several Public schools on their territories.

Nowadays all kinds of school authorities may govern more than one school each, but neither in the Province of Groningen nor in the Province of Friesland this is common practice.

Concentration of control has occurred more at the level of *institutions*, with the Groningen Liberated Reformed Gomarus College as an exponent. This institution is the result of an amalgamation of six schools in three Provinces (Gr., Fr. and Drenthe), operating at six locations nowadays.

At the level of institutions the *shift in denomination* is conspicuous. Roman Catholic secondary education has ceased to exist in the two Provinces. Protestant Christian education has shrunk, losing its dominant position in terms of institution and location numbers to Public education. The explanation is partly secularisation but sooner the modest size of the original countryside institutions.

The number of *locations*, affecting distances to school, was reduced least, yet in Groningen by 40% and in Friesland by 45%. In Groningen this led to a considerable increase of the distance to the nearest supply of the lowest level of general education, being VMBO-T. In Fryslân it

did not, because hardly a settlement lost its only supply of this education type, losing only one location instead, as a rule a PC one.

Therefore the accessibility of VMBO-T (disregarding denomination) has suffered in Groningen and hardly so in Friesland. Remarkably it is now at about an identical level in the two Provinces. The mean distance to VMBO-T for those living in settlements without full HAVO/VWO is 4.35 km for Groningen and 4.49 km for Friesland.

In Friesland, more than in Groningen, rural locations have sought to protect their continuity by supplying basic education at a HAVO-level. It is a potential compensation for losses in pupil numbers and for the decreased accessibility of education in the countryside.

4.4 Concentration developments in the Gorinchem region from 1960 to 2008. A full de-concentration of HAVO/VWO curricula

4.4.1 Background

4.4.1.1 Purpose

In the Groningen and Friesland regional case studies general developments in areas with a stagnant population were studied because in these cases considerable school concentration was to be expected. This was found indeed, but more at the organizational level (concentration of control) than at the physical level. The accessibility of general (theoretical) secondary education had improved in fact, at least for HAVO basic education, disregarding the school denomination.

These case studies did not include data on developments in areas with an expanding population and on physical developments within cities.

Therefore a third case study was undertaken in the catchment area of the South Holland regional centre of Gorinchem, in size comparable with Frisian centres like Drachten and Sneek.

4.4.1.2 The selected case

This region, lying on the outskirts of the Randstad Holland, has shown considerable urbanization since the 1950's. The South-Holland sector of the region is part of the Alblasserwaard/Vijfheerenlanden area. Even after 1980 the population of this area increased continuously as is shown by table 4.8.

There is now a nearly continuous urbanised zone from the city of Gorinchem, along the river Beneden-Merwede to the larger city of Dordrecht in the Drechtsteden region (see also chapter 5). On the basis of this development a de-concentration of complete HAVO/VWO curricula is to be expected. The focus will be on VWO de-concentration, because this was always combined with HAVO de-concentration in fact.

The area is part of the Dutch 'Bible belt', a zone with concentrations of orthodox Protestant people. It implies that a considerable part of the population has a distinct preference for Protestant education. This is expressed by the presence of PC en Reformatory primary schools (see map 4.10). It is not unlikely that de-concentration will coincide with emancipation of the protestant part of the population and even of orthodox factions within this segment of the population.

Table 4.8 Development of population numbers in the territories of present Municipalities of the Gorinchem region from 1960 to 2006 including the growth percentages for two periods. In the case of Werkendam two percentages are mentioned, because its territory was enlarged after 1989 by amalgamation with other Municipalities.

	1960	1969	1978	1989	1999	2006		60/06	78/06
Gorinchem	20898	25162	28859	28222	33248	34250		64%	19%
Giessenlanden	8304	10337	12918	14283	14062	14497		75%	12%
Hardinxveld-Giessendam	12741	13405	15745	16722	17687	17775		40%	12%
Graafstroom	6088	6690	8500	9142	9536	9730		60%	14%
Sliedrecht	17052	19562	22194	22833	23785	23801		39%	7%
Zederik	8832	9333	10714	11451	13629	13499		53%	26%
Lingewaal	7213	8736	10585	10204	10648	10826		50%	1%
Leerdam	13542	14998	16815	18123	20763	20809		55%	24%
Werkendam	9290	11250	16471	18470	25884	26521		52%/178%	42%/60%
Woudrichem	10012	11739	12412	13466	13974	14390		40%	
Total	113772	13122	155313	162916	189216	186204		60%/63%	18%/19%

4.4.1.3 Hypotheses to be discussed

This case study will contribute especially to the assessment of two hypotheses, being:

Hypothesis 2.5.2. *The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied (selective school de-concentration).*

Hypothesis 2.5.5. *Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.*

4.4.1.4 Set-up of the case study

In this case study we will see whether the accessibility of education developed in a similar or different way as in the Provinces of Friesland and Groningen although for a much longer period, being 1945 to 2005. The development of the number of authorities is not studied because it proved to be rather irrelevant in the earlier case studies. The development of the number of institutions is studied, but explicitly from the Gorinchem perspective, studying the founding of schools in and around Gorinchem on the one hand and the amalgamation of local schools in city and region with Gorinchem schools.

Apart from the normal *sources* for actual information of schools and school locations (the *cfi en schoolinbeeld* sites) local sources will be used, being school sites, interviews with school leaders and pupil data provided by two Gorinchem particular schools.

Gorinchem will prove to have four independent schools with a VWO curriculum, a phenomenon found in the North only in the city of Groningen, which is about 4x the size of Gorinchem. Here too we will find a fairly recent 'Gomarus College', but one of a different Protestant denomination than the city of Groningen college.

Special attention will be paid to the primary school network supporting the Gomarus College and to the development of the VWO catchment of the PC 'De Hoven' college under the influence of new competitors.

4.4.1.5 Outcomes

The outcomes are surprising. A very substantial selective de-concentration of HAVO/VWO took place (hypothesis 2.5.2). The number of schools supplying this type of curriculum about tripled in the period studied. This is no doubt the combined effect of studying an area with a considerable population increase during a longer period than in the Groningen and Friesland case-studies.

Even more remarkable is that the growth in the Gorinchem region and at its borders was almost exclusively found in PC and related Reformatory education, being a growth from zero to eight schools. Two of those schools are to be found at Gorinchem. This development did not affect the existence of Public schools though, neither in the city of Gorinchem itself nor in the region. Yet their position developed from a monopoly to minority one. Hypothesis 2.5.5 can be explicitly rejected for this region.

As in the other cases, the number of school institutions was reduced considerably as demonstrated by the 'Oude Hoven' case. That school proved to have swallowed six other ones from 1991 on.

4.4.2 General development of the city of Gorinchem school institutions and locations

4.4.2.1 Introduction

In 1925 the city counted nine secondary schools, constituting a more or less complete assortment (Bakhuis 1925, p.101). Most of these were accommodated within the city walls.

In the 1980's the assortment had been broadened with similar curricula provided by a range of both Public and PC schools.

In 2008 the city counted only four schools anymore and a satellite of a fifth one, but two of these had a supply of a range of curricula. All school locations were to be found outside the city walls.

The development of the Public schools and that of the particular ones will be sketched separately.

4.4.2.2 Public schools

In 1925, there were Public schools for *general education*, being a Gymnasium, a Rijks HBS and a (M)ULO (MAVO). *Vocational training* was supplied by Public schools/courses for trade and for sewing.

The 'Gymnasium Camphusianum' moved in the 1950's out of the town centre. In 2005 it moved to a new nearby building.

The HBS was Rijks HBS since 1922 (Klijn a.o. 1997, p.18). It was founded as a City school in 1871 at the Kalkhaven location in the inner city. An MMS curriculum was added in 1947 (Klijn, p. 12). The school, enriched with a HAVO curriculum moved in 1967 to a new location at the 'Wide Shield' (former Wijdschild firing range, Klijn p.64).

In 1992 four schools were amalgamated into the Public *Merewade College*: the former R-HBS, the public MAVO, the Nijehove school community for LEAO and LHNO and the Lingemond Technical School (General particular in character).

These amalgamations implied that the Merewade College developed into a broad school community. For its new VMBO curricula the Municipality of Gorinchem redeveloped the location of the Technical school.

4.4.2.3 Particular schools

There were only three particular schools in 1925. The supply of *religious* general education was modest with a PC MULO and a RC MULO. The Technical school had the General Particular ‘denomination’.

After Worldwar II a number of Protestant schools was founded in and around Gorinchem, having an explicit function for the education of the rural areas around the city.

Two schools will be discussed: the PC ‘Oude Hoven’ school community (1949) and the Orthodox Reformed (PC) Gomarus College.

The *Oude Hoven school community* started as a HBS, founded in 1949 after fierce resistance from the City of Gorinchem, that was afraid of losing its Gymnasium, counting quite a few Protestant pupils. The school indeed was not granted a Gymnasium curriculum by the Ministry of Education. It got this curriculum about 40 years later, when it was no longer considered to be a threat to the Public Gymnasium.

Within one decade (1991 – 2000) the Oude Hoven school absorbed six other ones inside and outside Gorinchem (Hardinxveld, Sleeuwijk) that could be continued only as part of a ‘broad school community’, having both general or theoretical and vocational curricula (see figure 4.8). Some of these, like the ‘Windroos’ VMBO had absorbed other ones outside Gorinchem before.

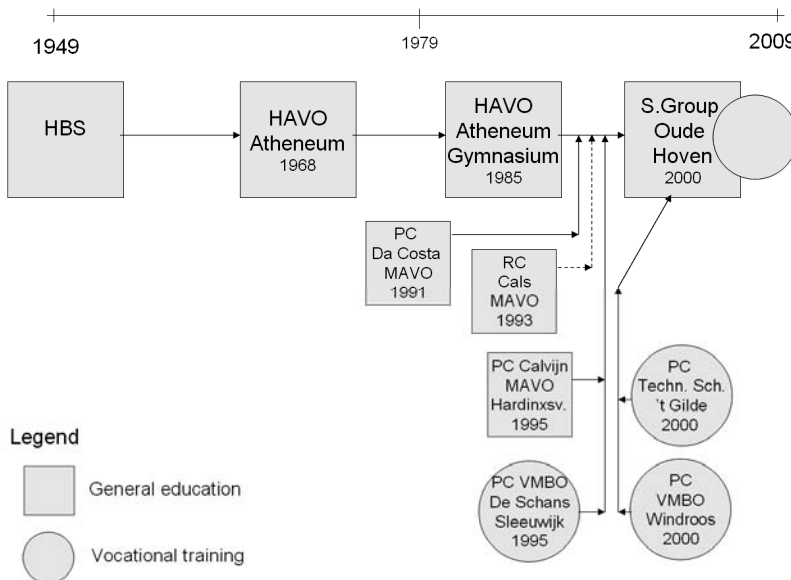


Figure 4.8 Development of the Gorinchem PC HBS ‘Oude Hoven’ into a broad regional ‘school group’ with locations in two other settlements (Hardinxveld, Sleeuwijk). Source: Van der Giessen and Geljon, 2000, pp. 5-12.

The Hardinxveld and Sleeuwijk locations were continued. At Gorinchem itself four locations are used. These are indicated at map 4.9. The old town centre is indicated by ‘centrum’. The old main building is situated close to the centre, just across the regional railway line. It is now used for basic training and VMBO-T. North and west of it two VMBO locations are found, one for administration, care and economics, the other one for technical occupations. The

Municipality negotiates with the school to leave one of these locations (information connector Van Driel 2010).

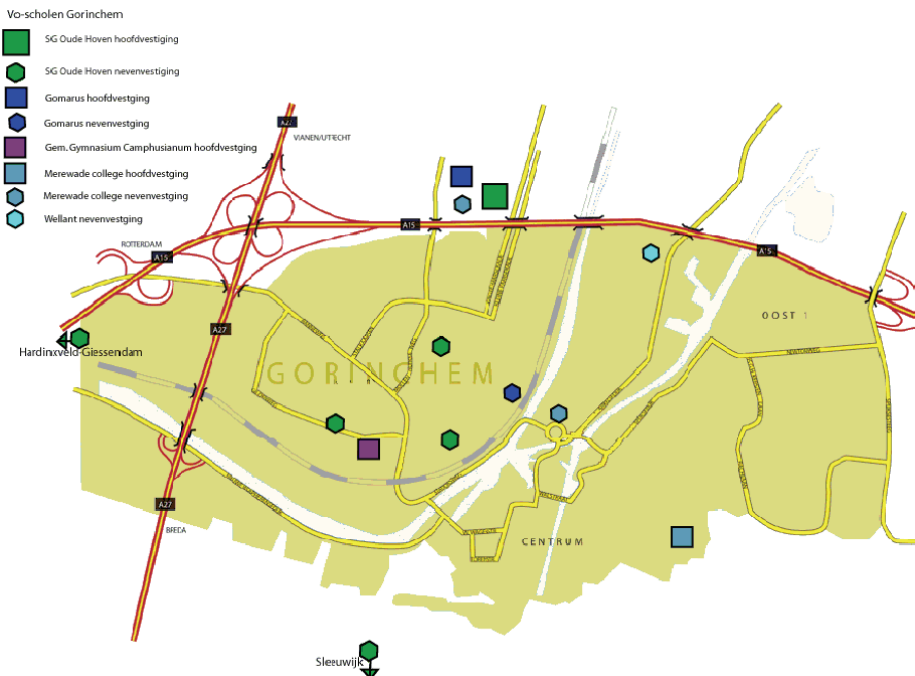
The central subject of our case study, the HAVO/VWO department, is located north of the motorway A15. It is indicated to be the main location. The Reformed Gomarus College's main building is located next it.

The fourth secondary school of the city of Gorinchem is this Gomarus College.

The Gomarus College is one of seven schools in the Netherlands, constituting their own orthodox protestant denomination. These schools are cooperating in the GOLV association. The Gomarus College was founded in 1975 as a MAVO and it started a HAVO/Atheneum department in 1985. In 2003 VMBO curricula were added.

Of all Gorinchem schools it has the most prominent regional function. It serves a network of 13 reformed primary schools in a larger area than the 'Oude Hoven' did before the introduction of PC VWO schools around Gorinchem (see sub section 4.4.3). In 2004 Gomarus attracted 85% of the pupils leaving these primary schools.

The school's catchment reaches from Sliedrecht in the West to Geldermalsen and Sprang-Capelle in the South. The latter one is a 'normal' PC school with a share of orthodox pupils. About 13 of these PC schools are contributing 20 to 25% of the pupils of the roughly 350 entering the school each year (information school director).



Map 4.9 School locations of different secondary schools in the city of Gorinchem with the main seats (hoofdvestiging) of four secondary schools and satellites (nevenvestiging) of those and of a fifth school.

One of the secrets of the Gomarus success is its extended dedicated public bus network intended to '... not to give them an argument to choose a nearby PC school'. There are lines

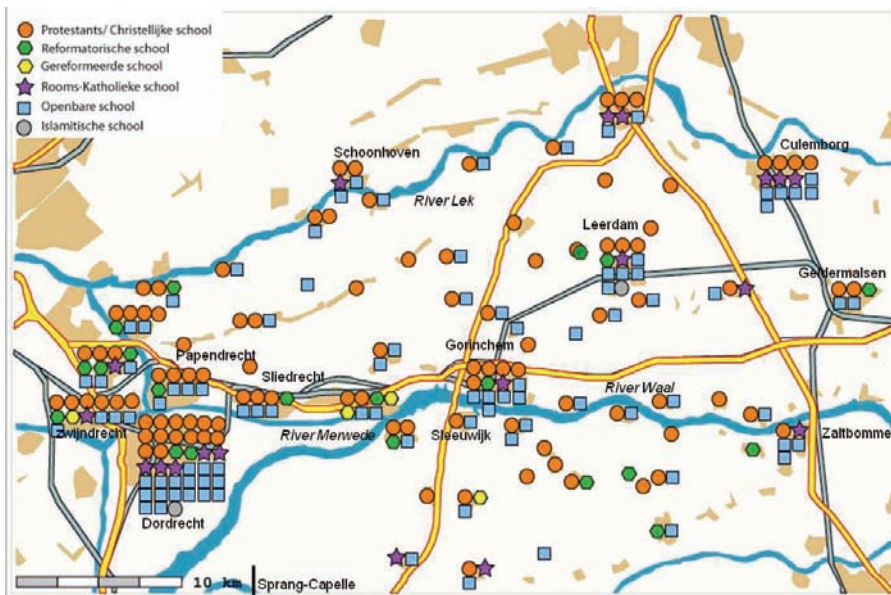
from the East, starting at Geldermalsen and a village west of Zaltbommel and from the southeast. The Geldermalsen bus line has a length of 28.3 km (ANWB planner).

Map 4.10. shows the denominational composition of the primary schools in the region indicating most of the reformatory schools of the Gomarus catchment (Data CFI database).

The founding, first of ‘Oude Hoven’ and of ‘Gomarus’ some 25 years later, were successive examples of emancipation in terms of education of a religious majority and of a minority within that one.

It is not unlikely that the orthodox reformed primary schools too are largely the result of the emancipation of this religious minority. Their central organisation (VGS) had no information on the founding data of its 161 schools in the nation (www.vgs.nl). Some of those are old village schools, like that of Leerbroek near Leerdam, belonging to the Gomarus ‘inner circle’. The ‘Johannes Calvijn’ school of Leerdam, belonging to it as well, was founded in 1969, evidently out of dissatisfaction with the four local PC schools (information Johannes Calvijn school).

The map of primary schools shows hardly signs of emancipation of ethnic religious minorities, probably because these are of a modest volume. Islamic schools are indicated only at Dordrecht and at Leerdam, the latter one building on the potential of Turkish immigrant workers of the Royal Dutch Glass Factory (www.royalleerdam.nl).



Legend: PC; Reformatory; Liberated Reformed; RC; Public; Islamic.

Map 4.10 Primary schools in Gorinchem and environment. In green from Sliedrecht (west) to Geldermalsen (east) the schools constituting the Gomarus catchment area.

4.4.3 General development of schools in the region around Gorinchem and the impact on the 'Oude Hoven' demand

4.4.3.1 Introduction

The region around Gorinchem demonstrated an even larger dynamism in secondary education than the city itself. Here too PC education expanded, curtailing the catchment of the Gorinchem 'Oude Hoven' school. A detailed picture of the supply of secondary schools in 1975 can be found in Woldendorp, but the analysis is concentrated on HAVO/VWO (Woldendorp 1975. p2)

In the Municipalities concerned the number of schools was about halved, both MAVO's and vocational schools being integrated in school communities.

In the next sub section (4.4.3.2) the VWO situation in 1960 is described. Competitors were found only at relatively large distances. In 2005 the situation had become very different (section 4.4.3.3). Three PC schools had acquired a HAVO/VWO curriculum in the mean time. The impact on the 'Oude Hoven's catchment is assessed. The school had an archive of student files that enabled us to follow the size and geographical origins of the school population in detail. The school indeed has lost a considerable part of its catchment but the number of pupils declined hardly.

4.4.3.2 The situation in 1960

In the city of Gorinchem we have seen an increase of the number of VWO schools (de-concentration) and amalgamations of two of those schools with institutions inside and outside the town (both local and regional concentration).

The combination of population development and emancipation in the environment of Gorinchem created a demand for advanced secondary education that was sufficient for founding additional schools without affecting existing ones. This is a standard condition for finance from national government.

When the 'Oude Hoven' was founded its nearest *competitors* of the same denomination were located as far-away as the city of Dordrecht, a distance of over 30 km.

Within a few years additional but still distant competitors were introduced. In the Northeast the city of Culemborg, lying at the south bank of the river Lek got a PC VWO curriculum in 1952. In the south, outside the map, the industrial settlement of Waalwijk got a VWO school in 1950. It lies across the river Amer, to be reached by a ferry only. The distance to both is slightly under 30 km.

The *catchment* of the 'Oude Hoven' school covered a large territory. In the West Sliedrecht was included and even some villages to the northwest of it. In the North only a narrow band along the river Lek was not included. In the Northeast some villages beyond Leerdam belonged to the catchment. Eastward along the river Merwede/Waal pupils came from villages near Zaltbommel. In the south roughly two third of the area shown on the map preferred the Gorinchem school above the Waalwijk one.

4.4.3.3 The situation in 2008

After nearly fifty years the education map has changed considerably. Four PC school communities were allowed to add VWO curricula to their existing supply. Only at Papendrecht an additional Public school acquired a VWO curriculum.

- In the West Papendrecht's 'Lage Waard' school pulled the voluminous settlement of Sliedrecht into its catchment (1973).

- In the Northwest the city of Schoonhoven PC school acquired a VWO department in 1981. The city is lying across the large river Lek, to be reached by a ferry (see map 4.6.).

- In the Northeast the Leerdam 'Heerenlanden College' (ca. 1994) curtailed the 'Oude Hoven' catchment at that side to a few villages, except for the zone along the river Merwede/Waal. The Culemborg school (1952) supported the founding of the school for reasons of over-population (personal information former rector).
- In the South the Altena College at Sleeuwijk took over the area south of the river Merwede (1986).

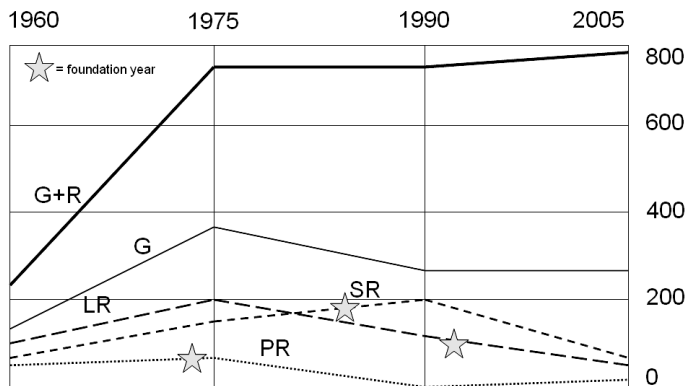
The student files of the 'Oude Hoven' school group demonstrate what these developments implied for the demand for its education.

In figure 4.9 the development of pupil numbers of the VWO department is indicated for the period from 1960 to 2005, including the numbers for 1975 and 1990.

The 'Oude Hoven' VWO catchment is divided into sub-catchments, being the parts of the catchment in which competing schools have the upper hand now and the core catchment left for 'Oude Hoven'. The Schoonhoven school catchment is not included because it is of little impact for Gorinchem. For each of the other sub-catchments the development of pupil numbers visiting the Gorinchem school is indicated.

The figure demonstrates conspicuously that there was an uninhibited growth between 1960 and 1975. From 1975 to 1990 pupil numbers show a tendency to decline, no doubt partly under the influence of declining birth rates.

The Province of South Holland made a projection of the size of the basic generation of the 12 and 13 year old in 1984. For the Alblasserwaard (excluding Papendrecht and Sliedrecht) it expected a decline from 3,700 children in 1980 via 2600 in 1985 to 2,100 in 1990, 2,100 in 1995 and 2,400 in 2000. (Gedeputeerde Staten van Zuid-Holland, 1984, annex 11).



Legend. G = city of Gorinchem, G+R = city of Gorinchem plus present regional catchment of 'Oude Hoven, LR = Leerdam regional catchment, SR = Sleeuwijk regional catchment, PR = Papendrecht regional catchment.

Figure 4.9 Development of pupil numbers of the 'Oude Hoven' school group VWO department from 1960 to 2005 from different parts of its original catchment.

The Papendrecht region decline will have been caused by the new school at P. Decline amongst pupils from the Leerdam and region is disproportionately strong though. The explanation is a reorientation of the city's primary schools towards the Culemborg school. The reason for that is not clear (personal information Mr. van Ieperen, primary school director at L and Mr. van Driel, rector at Culemborg). The distance from the city of Leerdam to the Culemborg Wilhelmina College is about the same as the Leerdam – Gorinchem distance.

The ongoing decline and the later Sleeuwijk decline after 1990 can be ascribed to the new VWO locations at Leerdam proper and at Sleeuwijk.

The 'Oude Hoven' VWO has about 900 pupils left, more than twice the 1960 number.

4.4.4 Conclusions and consequences for the hypotheses.

The outcome of this case study is surprising, even when taking the traditional religious character of the population into account. We found a remarkable and most unexpected improvement of the accessibility of particular education of two denominations.

The original Public VWO schools in Gorinchem are still existing, but two denominational schools have been added. Outside Gorinchem a series of competing PC schools acquired VWO curricula. This development went on even in the period studied for the Province of Friesland (starting 1984).

Of course this led to a considerable (but not quantified) reduction of required travel distances, although the founding of the Reformatory college no doubt increased actually travelled distances.

Hypothesis 2.5.2. The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied: a case of selective school de-concentration.

Supported by a considerable increase of the population the longer term perspective chosen for this case study demonstrates a selective de-concentration of HAVO/VWO. The hypothesis is **confirmed**.

Hypothesis 2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.

The outcome does not support hypothesis 2.5.5 at all. It postulates a logical decline of the number of religious schools and an equally logical growth of the number of Public schools.

In terms of distance the impact of school location development is self evident. For PC VWO education distances were reduced strongly before and after 1960. A reduction by 50% or more is not unlikely. The hypothesis is **rejected**.

4.5 Synthesis and general conclusions

The three regional case studies that were undertaken to get a quantitative insight into concentration processes yielded the following general and perhaps to be generalized outcomes.

In the nineteen-eighties there were a large number of *school authorities* still, being Municipalities for their public schools and associations for particular schools. The latter ones governed hardly ever more than one school as the Groningen and Friesland data demonstrate. In 2008 the number of school authorities in secondary education is one quarter of what it was 20 years before. This was not caused so much by the large scale amalgamation of Municipalities, but rather by school closures and by amalgamation of local authorities of particular schools.

The *share of Public school authorities* increased remarkably to the detriment of particular education, both of the religious and general particular types. The religious schools were presumably relatively small, while being over-represented in smaller settlements. Authorities disappeared because they had to close their schools.

There still are *hardly more school institutions than school authorities*. The authorities evidently used this geographical concentration of control to save their schools by integrating

these into regional school communities of an amalgamated authority. It required in several cases a *change of identity*

The *creation of school communities* made it possible to continue education locally, partly because of friendly minimum pupil number norms for school departments (curricula) within these and partly because of additional finance for remote locations ‘required for spreading’. This implied that *particular education is still dominant in terms of locations*, in both the Province of Groningen and that of Friesland.

In the countryside *MAVO schools were continued in several cases*, usually as satellites of urban school communities. Often these improved their market position (potential for survival) by supplying additional basic education for HAVO and VWO types of education, mitigating the increase of travel distances and of pupil numbers at central school locations. This strategy was followed more in Friesland than in Groningen, probably to strengthen the position of a satellite and of the main HAVO/VWO site at a regional education centre as well, having an outpost reducing the competitive position of other schools in the centre.

Locally, *distances to religious education* of the most affected type, being MAVO/VMBO-T, were enlarged considerably, but the 85 percentile moved only modestly from roughly ten to eleven kilometres in the Province of Friesland.

Disregarding denomination travel distances to the nearest school location supplying a curriculum of the desired type prove to have *decreased*, since only small settlements lost their school locations, while most remaining rural satellites expanded their supply with basic HAVO/VWO education. General consumer acceptance of that supply would far more than neutralise the impact of concentration in the countryside!

In *urbanizing regions* like that of the Gorinchem case the longer term development of distances appeared even more favourable, since urbanization made de-concentration of full higher level curricula for general education possible (both HAVO and Atheneum). One may even find a remarkable *emancipation of denomination related factions*, as was the case with the founding of the second and third broad school communities of the City of Gorinchem. The PC College of 1949 was one of a regional series reducing travel distances for this denomination.

These outcomes are likely to be valid for similar regions that show a certain balance between religious education and Public education. In the South of the Netherlands RC education is traditionally very strong with a rural monopoly in primary education and a dominant position in secondary education. For example, the largest school authority in secondary education is the OMO RC authority in the RC dominated Southern Province of Noord-Brabant. Its site mentions 35 schools (www.omo.nl). It may not be excluded that in these circumstances less value is put on presence in smaller settlements.

4.6 Implications for our theory

The full list of hypotheses to be discussed in this chapter and the results of the discussions in the different case studies are summarized in table 4.9.

We have seen a strong reduction of the number of *school authorities*, and a nearly equally strong reduction of *school institutions*. This indicates that the *institution* is in fact leading in the development. It is not unlikely that existing authorities amalgamated in fact schools in order to continue as many locations as possible, being of value both for local society and for regional supply.

The impact of secularisation on school closure cannot be demonstrated convincingly. One may assume that the existing schools have a more or less settled position, being part of a

network of primary and secondary schools of the same denomination that implies that a certain presence in primary education leads automatically to continuity in secondary education. Yet this does not seem to function in RC education in any of the three cases, the density and size of the primary schools being perhaps too modest. *See for primary school concentration in the Frisian case chapter 5.*

When it proves to be impossible to continue a school with a specific identity, efforts may be made to develop some kind of co-habitation with a second denomination. This is found in a few cases and will be found in primary education as well (chapter 5)

The decreasing interest in certain *curricula* is one of the causes of decline of schools and it may even threaten the continuity of satellites. Local attachment to the supply may and regional attachment to the influx of local pupils into a certain school community may incite local efforts to widen enlarge the supply, especially with advanced basic education. It should perhaps protect rural pupils from urban problems in the regional centre and the school communities in those centres from an too large masses of pupils.

Table 4.9 Assessment of the hypotheses in the cases of the Province of Groningen (4.2), the Province of Friesland (4.3.) and Gorinchem region (4.2).

Hypotheses	Sections	4.2	4.3	4.4
2.6.5. <i>The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i> This is indicated by a moderate development in amalgamation of authorities and institutions and the preservation of locations in medium sized settlements in a certain area.		++	++	
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.</i> This is indicated by a shift in the share of institutions and locations in a certain area towards public or general particular education.		±	+	—
2.6.7. <i>Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination.</i> This means that a school of certain distinct denomination, like Roman Catholic, would assume the identity of an 'interconfessional' or even of a neutral particular school.		+	+	
2.5.3. <i>The decreasing participation in less advanced secondary education causes a decrease of the number of locations where these are supplied and even a reduction of the number of school locations (selective school concentration).</i> The demand for several types of education, both general and vocational in character decreased during recent decades as demonstrated in chapter 3. Against this background the development of the number of MAVO/VMBO-T locations will be investigated without connecting this with regional change in demand, by lack of data.		++	++	
2.5.4. <i>School locations with less advanced secondary education curricula like MAVO will survive by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).</i>		+	++	
2.5.2. <i>The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied (selective school de-concentration).</i>		—	+	+

Legend: ++ = firmly confirmed, + = confirmed, ± = contrasting evidence, — = rejected

4.7 Concluding

In this chapter we have seen remarkable relationships between different types of school concentration. The concentration of institutions was in fact dominant. Once institution and location were more or less identical, this is no longer the case. There are now far more locations than institutions. Distances to education increased surprisingly little because the potential for widening the supply of curricula were utilized more than before.

In the next two chapters, school concentration in primary education is studied. The relationships between the different types of school concentration will show to be entirely different, with a spectacular concentration of authorities which is hardly related to a concentration of institutions.

A distinction will be made between regional school concentration (chapter 5) and local school concentration (chapter 6). The analysis of regional school concentration in the Province of Friesland will show considerable long terms shifts from Public education to particular (PC) education in certain rural areas, and continuity of Public education in other ones. Losses in the central period under study, being roughly 1985 to 2005, are modest because the Ministry of Education decided to reduce the numbers of schools especially in larger cities. There the number of institutions was reduced considerably indeed, but the number of locations was much less, partly because of capacity problems at the locations of the remaining institutions. There is a confusing long term parallel development though. Many Municipalities have developed the habit of assigning common locations to up to four schools, creating unnecessary larger distances to the nearest school.

Chapter 5.

Regional school concentration in primary education

5.1 Introduction

5.1.1 Purpose of this chapter

Lessons from secondary education (chapter 4). In chapter 4 we have shown that all school concentration phenomena described in the theoretical chapter 2 can be found in secondary education, including the ‘virtual’ concentration of geographical control and the remarkable introduction of parallel curricula at some locations.

Nowadays there prove to be *very large school authorities* but numerous ones are still governing a single institution only. The *number of institutions dropped spectacularly* during the period studied - and especially around the turn of the Millennium. The system change to a three-year integrated curriculum of ‘basic training’ and the introduction of a degree of administrative independence were no doubt important reasons for this, since both require large organisations.

The extensive case study of the Province of Groningen showed that *quite a few settlements which lost their own school institution still do have a school location* after amalgamation with an institution in a regional centre. This may even open the opportunity for a *de-concentration of the basic phase of a higher general curriculum like HAVO*.

The longer term regional case study of the *urbanising area* of Gorinchem even showed a remarkable *de-concentration of full curricula* of this type to local centres, thanks to the combined effect of population development and a higher degree of participation in these curricula.

The city of Gorinchem itself and the larger city of Zwijndrecht demonstrated that there is a *discrepancy between a concentration of control and one of locations*, which are often still those of former institutions.

In this chapter and the following one we will assess whether similar concentration phenomena can be found in primary education. Chapter 5 is dedicated to regional school concentration, being the redistribution of school locations over a region. Chapter 6 will discuss local school concentration, being the redistribution of school locations over a settlement. First, general developments in primary education will be summarised though, followed by a specification of research questions.

General policy developments in primary education summarized. The school system analysis in chapter 3 yielded the following results, relevant for geographical concentration studies.

Primary education was subjected to a *system change in the 1980 – 2005 period* studied, being the vertical integration of toddler school and primary school. It implied a radical reduction of the number of schools (institutions) for the children below 12 years of age in 1984, but without real consequences for locations and thus for school travel distances.

National government wanted a decrease of the numbers of primary schools by closing the smallest ones. It took the following measures:

- Founding of new schools was made very difficult by demanding high minimum pupil numbers. In the deepest countryside, in areas with the absolute minimum of 23 pupils for existing schools, a new school is financed only if it has 200 pupils at least.
- Developing a complex strategy for achieving further school concentration by imposing a degree of financial independence upon school authorities and institutions and by transferring the full responsibility for school locations (edifices) to local government without the obligation to spend the transferred funds on schools (!).
- Stimulating the (necessary) creation of larger authorities by allowing those to preserve institutions with insufficient pupil numbers but at least 23 pupils, on condition of a 10/6 overcompensation by large ones.
- Allowing formal satellites under certain conditions and tolerating informal (not financed) ones, preventing substantial national investment in new larger buildings.

The present general national policy towards primary schools may be summarized as reducing the number of school institutions without bothering about locations, probably expecting Municipalities to reduce these in due time to economize on the costs of edifices.

This policy is likely to have an impact on the continuity of school locations in the city more than in the countryside, partly because of recent urban school closures and partly because of capacity problems in remaining urban schools, rather than in rural schools (see chapter 6).

Research questions

In this chapter, like the previous one, the central question is why and how and to what degree school concentration took place and what changes in the travel distances to schools this implied. Here we are only interested in the distance to education opportunities and not in the normative and behavioural aspects of these, being the subject of chapter 7, on 'reasonable distance'.

In the analysis of primary school concentration the change of distance norms as part of economizing operations is mentioned but not discussed from a normative perspective.

The degree of complexity of school concentration in primary education is bound to be smaller than that in secondary education because there is only one curriculum in primary education, apart from special education. The latter is accommodated in the special primary school and in expertise centres, which anyhow are not to be found at the locations of primary schools.

An integration of primary education and secondary education at one location is most unlikely. It may be found incidentally at the anthroposophical 'Free school', which has a philosophy of an unbroken education for children from 2 to 18 years old (www.vrijeschoolhaarlem.nl).

The central topic of this chapter then is the relationship between demographic developments, the development of geographical control and regional school concentration, defined as settlements losing their only curriculum of a certain denomination or even the last one.

In the text the term *settlement* is used for three types of population concentrations, namely (1) a city in its ancient meaning of 'borough' with its own burgomaster, (2) the village as an acknowledged settlement marked with a name shield for instance and a delimited built-up area and (3) a certain concentration in long stretched development areas, like the Dutch 'moor colonies', laid out along canals.

In the Frisian analyses a modest degree of *local school concentration* will be found too, *that is a reduction of the number of school locations in a settlement, either by school closure or by clustering of parallel curricula at common locations.* These are the subjects of chapter 6 though.

5.1.2 Hypotheses to be addressed

The following subset of the *hypotheses developed in chapter 2* will be *addressed in this chapter*, concisely expressed as follows:

- geographical concentration of control and school concentration (hypotheses 2.4.1 and 2.4.2),
- secularisation causing a change in demand from particular (religious) education to public education (2.5.5),
- decline of birth rates causing school concentration (2.5.7),
- a bad state of public finance as a motive for school concentration (2.5.10),
- the relatively strong school concentration caused by the double freedom of providing and choosing education (2.6.1),
- the relative ease of economizing on education proper in stead of on locations, being politically less vulnerable (2.6.3),
- changing the identity of a school in order to preserve the school location (2.6.7).

In each of the three case studies to be presented the relevant hypotheses will be discussed on the basis of the evidence found, but this will not dominate the analyses which each have a value of their own, treading unbeaten paths.

Table 5.1 Hypotheses to be discussed in chapter 5

The numbers refer to the sections of chapter 2 where these were developed (2.5.5 = section 2.5)

Hypotheses	Sections	5.4	5.5	5.6
2.4.1. <i>A higher and growing geographical concentration of control will naturally lead to a higher school concentration because educational institutions then will have better opportunities to create a qualitatively more attractive and affordable supply of education.</i> This is indicated by a decrease of the numbers of authorities, and of similar ones of institutions and locations.	x			x
2.4.2.. <i>A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive.</i> This is indicated by a decrease of the number of authorities, and of lower ones for institutions and even more so for locations	x			x
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.</i> Given the process of secularisation this is indicated by an increasingly positive ratio between Public and particular schools.	x	X		x
2.5.7. <i>Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration.</i> This hypothesis was confirmed earlier but the impact on a relatively rural Province remains to be seen.				x
2.5.9. <i>A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become acute problems and is therefore a most important factor in school (re)concentration.</i> This hypothesis was confirmed earlier for the nineteen nineties, but it might have happened before, in the nineteen thirties for instance.	x	X		x
2.6.1. <i>The freedom of supplying education causes a relatively low (sectoral) school density since suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.</i> This is indicated by the presence of school institutions in larger settlements only.	x			x
2.6.3. <i>In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economizing</i>	x			x

on this cost is less vulnerable for public action on a national level since locations are affected only indirectly. This hypothesis was confirmed earlier in a general sense, but its impact on the survival of locations was not quantified.			
2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination. This is indicated by the incidence of school institutions ‘changing colours.’	x		x

5.1.3 Set-up and main findings

The research for this chapter is described in two steps in section 5.2, namely

- the choice for a set of case studies in the Province of Friesland,
- the research methods applied and sources utilised.

The empirical part of this chapter has a structure in four distinct sections (5.3 - 5.6) all dedicated to studies in the Province of Friesland:

- An introduction of the Province of Friesland as a predominantly rural area with four different landscapes, with varying characteristics regarding school development and demographic developments, confirming its fitness for dedicated case studies (section 5.3),
- A long term (1818 – 2007) case study of two north eastern, deeply rural Dongeradeel Municipalities with spectacular changes in the character and numbers of school authorities and school institutions (section 5.4). Essentially it will show a change from numerous local (village) authorities having each a single Public school institution to a few regional authorities governing a smaller supply of schools which are dominantly Protestant Christian in character. It put public education at a distance for nearly all villages. Population decline had its impact, secularisation hadn't.
- A medium term (1848 – 1933) comparative case study of the three southern Education Inspection districts of 1848, demonstrating the expected differences between three of the landscapes with regard to the shift from public education to particular education (section 5.5). In the 'Forests' landscape of the southeast, with a growing population and an early start of the secularisation process the number of Public schools appeared to increase even when a series of particular schools was founded. In the 'Clay meadow' landscape of the southwest, which was secularised later and had a stagnant population like Dongeradeel, public education was dominated already by particular education in 1933.
- A medium term study to the next period (1933 – 2006) covering the entire Province and assessing the general spatial development of school authorities and school institutions, with special attention for repeated efforts of national government to reduce the number of schools (section 5.6). The number of village schools appeared to be reduced indeed partly by depopulation, but all kinds of opportunities to maintain small country schools were grasped by enlarged school authorities in recent decades. Secularisation did not have a measurable impact.

The order of analysis in the different sections. For the presentation of the findings we will follow a standard pattern in the case studies I and III, namely:

- backgrounds of developments, in terms of the autonomous forces as identified in chapter two (section 2.5.3). These can be indicated only superficially as a rule.
- actions of the different actors distinguished, being government administrations, school authorities and institutions, and consumers (see section 2.6);
- developments in institutions;
- developments in locations and implications for distances.

Of course, both the character of the subjects studied and of the research methods applied have a major impact upon the focus on one or more of these categories.

In case study II (section 5.5) only the relationship between demographic backgrounds and institutional developments is presented.

5.2 Methodology and research approach adopted.

5.2.1 A set of historical case studies in the rural Province of Friesland

Our study is focused on developments during the 1980 to 2007 period. Yet the development of the school system after 1800 was described in chapter 3 in order to get a general idea of its changeability. The relationships between system changes and the development of school locations under the identified autonomous forces could not be made clear by the available literature though.

Therefore we decided to explore the *spatial development of the simplest system, being primary education, for a longer period* knowing or rather expecting that at least during the nineteen thirties a school closure operation had taken place. This operation initiated by Minister Marchant could not be documented other than by general indications (see Bosmans 2007).

In the biographical dictionary of the Dutch Institute for History, ING, one finds a biography of Mr. Marchant, who was Minister of Education from 1933 to 1935. One sentence is dedicated to his effort to economise on primary schools during the economic world crisis:

‘For a long time he was blamed for his action to tackle Public schools when government economising made school concentration necessary, whilst leaving particular schools alone in the beginning’ (Bosmans 2007).

This reference seems to be partly incorrect. We could find no evidence that he tackled particular schools at all, and indeed he had no real reason to do so, as will be shown in section 5.6.3. We found only one specific reference to a certain local resentment (www.oudbarradeel.nl) see ‘geschiedenis over/ Firdgum e.o.’, retrieved 270308).

The Frisian Municipality of Barradeel was summoned to close the Firdgum village school. Alderman Van der Meij stated ‘It would have been better to assign this Minister a different Department to cool his economising fury’, suggesting strongly not to comply. The school was closed though.

Textbox 5.1. Minister Marchant and school closures

The study of regional school concentration and its causation requires the *application of the case study instrument*. Only for a restricted territory or a set of territories the relationship between demographic developments and school (authority/institution/location) development can be assessed in a historical perspective.

The Province of Friesland was *selected for two reasons*, namely its suitability given its general character and the author’s knowledge of school developments in the area.

Character of the Province. School closures have an important impact in terms of the distance to school. Closure of the last village school is likely to increase the school travel distance substantially. Therefore rural school closures are of special interest for this thesis.

Friesland has distinctly rural areas, like several other Provinces. Like the Provinces of Groningen and Zeeland it moreover has suffered from a certain depopulation, relative at the level of the Province and absolute in peripheral areas.

During the 19th century, Friesland had the highest school density of the country. This implies that it was particularly sensitive for concentration tendencies or policies.

The school struggle for the freedom of education (chapter 3) was particularly fierce in the area and therefore it may show the degree of change this conflict could cause in the regional distribution of Public versus particular schools.

The Province or rather its Education Council was very active in the defence of small rural schools during the period of attacks on these, roughly the nineteen eighties (see Dykstra – Sloot etc. pp. 31 – 36). It foresaw that many might be closed to the detriment of the Frisian

language, being the official second language of the Netherlands, spoken most in the countryside and less on schools in larger settlements.

Most important though for generalisations about general tendencies is the fact that the Province shows remarkable *regional differences in historical school densities, development of secularisation and population development*. This facilitates investigating our *hypothesis*. The Province is of a size which allows for tentative general conclusions. See section 5.3.

The Province of Friesland was distinctly Protestant-Christian in religious character unlike the southern Dutch Provinces of Noord-Brabant and Limburg, which were dominantly Roman-Catholic in character. The latter part of the country resented the 'general Christian' (in fact liberal Protestant) character of the 19th century Public school no doubt even more than the Orthodox Protestant part did. It showed a more positive population development than the Northeast. This combination of factors led to near extinction of the Public school, like in Frisian Dongeradeel and a growth in the number of schools, being nearly exclusively Roman-Catholic in character. This development does not seem to be documented, perhaps because of its self evidence.

Existing knowledge and experience. An additional reason for selecting this Province was that Frisian schools have been subjects of our research on several occasions, both on assignments of the Ministry of Education and on assignments from the region (De Boer and Van der Veen 1986, De Boer and Lucas 1987 and Bartels and De Boer 1992). It guaranteed the important local knowledge and contacts.

5.2.2 Methods and sources utilised

The subjects of this chapter required the application of a variety of methods, including observations, interviews, analysis of dedicated data bases, analysis of statistics, archive research, document analysis and literature surveys.

One database deserves special attention: the *CFI database of the Ministry of Education's Financing Institute*. Information on individual schools can be found in www.cfi.nl. Authorities, institutions and locations can be found by their registration number (BRIN number), name, address or postal code or by a geographical search. Until 2007 the site mentioned only officially financed locations. On request of the Education Inspection informal non-financed locations with a complete curriculum (in primary education eight groups) were added. Who feeds a registration number like 16HJ finds a 'basisschool'. If this school has one or more satellites (and this Leeuwarden school has) one finds under a heading 'nevenvestigingen/locaties/dislocaties' (formal satellites etc) only the following indications 16HJ01 'vestiging', 16HJ02 'inspectie locatie' (retrieved 290208). The first one is a formal, financed satellite, the second one a dislocation. This is rather confusing, but it made it easier to find all locations that serve as a complete school.

In this chapter only an institution is called a school.

The *literature on spatial development of the school system* other than in numbers per region or city is extremely poor. This was in fact one of the motives for doing this general study into school concentration. There are numerous studies in regional and local school history, documented in Boekholt (1991). These are not geographically specific though.

The only thorough study with a historical geographic character is Van Dam's 'More for less' (1995). He studied 'changes of scale' (concentration tendencies) in commercial and non commercial facilities in the countryside in general and for a limited period only: 1980 – 1993 at most. This study will be used especially for the analysis of that period in section 5.6.5.

For the Friesland studies *field visits* were paid to especially the Dongeradeel case study area, but to the northwest of Friesland as well, in order to study school locations and the road network.

- *Open interviews* were made with government officials and with officials of school organisations, both authorities and institutions, and especially with those involved in school closures.

- *Data bases* were used extensively, especially the registration of the CFI institution of the Ministry of Education, both for the present situation and for that of the early nineteen nineties via the conserved data base of Van Dam used for his 1995 study. These were the backbone for the quantitative analysis starting from the comprehensive data found in de Jager (1933). Supporting data were taken from the private ‘Schoolinbeeld’ site and from the ‘HISGIS’ digital 1834 map of the Fryske Akademy.

- *Archive research* was done modestly at the Frisian ‘Tresoar’ (Leeuwarden), but extensively by Mr. Reindert Tolsma in the Dokkum regional archive, supporting the Dongeradeel case study (section 5.4, Tolsma 2007).

A 1848 list of school teachers and their stations (Archive 34 – 01, Provinciale Commissie voor Onderwijs) and a 1933 publication with proposals to close even more schools than Marchant had demanded to (De Jager 1933) provided foundations for historical analysis.

The analyses of school development in the former Municipalities East- and Westdongeradeel since 1818 by Tolsma provided indications for general development under the influence of autonomous forces as described in chapter 2 (Tolsma 2007). These unique data show the spatial development of the competition between public and particular education which is typical of the Dutch school system and which still is decisive for the pattern of school locations.

5.3 The Province of Friesland as a subject for regional case-studies into school development

5.3.1 Introduction

In this section the fitness of the Province of Friesland for a set of regional historical case studies is demonstrated.

The *development of education in Friesland as such* is discussed first because both school density and school organisation were remarkable (section 5.3.2). The early school development in Friesland is described, distinguishing urban development and rural development. Rural development will be the subject of our analysis. In the rural area of the Province two basically different types of landscape are found, namely lowlands lying hardly above sea level and higher ancient forest areas. Within the lowlands category three sub-categories may be distinguished. These four landscapes each exhibit a different school development history. It will be demonstrated that both the original situation and further development show extreme differences among Frisian regions, which make it a model for different regions in other Provinces.

We will try to explain school concentration in these regions not only by government actions like the one of Minister Marchant in 1933, but by ‘background processes’ like secularisation and population development too (see chapter 3).

Religious developments and related school developments are analysed for the different landscapes (section 5.3.3), showing that secularisation started earlier in two of the landscapes with an impact on Protestant Christian school foundations and public school closures.

Population developments prove to have reinforced this differentiation (section 5.3.4), hastening the decline of public education in later secularized areas with a stagnant population.

5.3.2 Schools in town and countryside, rich and poor, until the introduction of the 'freedom of education'.

There was no uniform Dutch school system before the 'French Era', the occupation of 1795 to 1813 by French armies.

State and church were separated in the 'Batavian Republic', later 'Kingdom of Holland'. The schools were put under national supervision and they were declared to be 'General Christian' in character, which implied that the content of education was liberated from the Dutch Reformed Church dominance. The Municipalities were made responsible for local control of education. This was formalised by the Law of 1806. It changed little in terms of finance, edifices and content of education though.

The number of Public schools in the Province of Friesland was impressive: 358 in 1847. This was surpassed only by the densely populated and rich Province of North-Holland with its 515 schools. Participation in education was higher in Friesland than in the Netherlands in general during the entire 19th century (Jensma, 1998, figure 6.5).

For our analysis we will make *a distinction between city and countryside and within the latter category between the old sea coastal zone and the former inland moors of the heart of the Province and of the southeast*. It is the coastal zone which makes Friesland most special.

The Dutch cities had a tradition of Latin schools, evidently as a status symbol, and so had the *Frisian cities*, although some had a kind of virtual Latin school with one or two students only (Inspector Wijnbeek cited by Smeding 1987, p. 253).

The Frisian cities had primary schools too of course. In the larger cities these constituted a stratified system with schools for the well-to-do, for those with modest means and for the poor respectively. Information on the general situation can be found in Jensma (1998). His tables 6.2 to 6.4 provide elegant quantitative information.

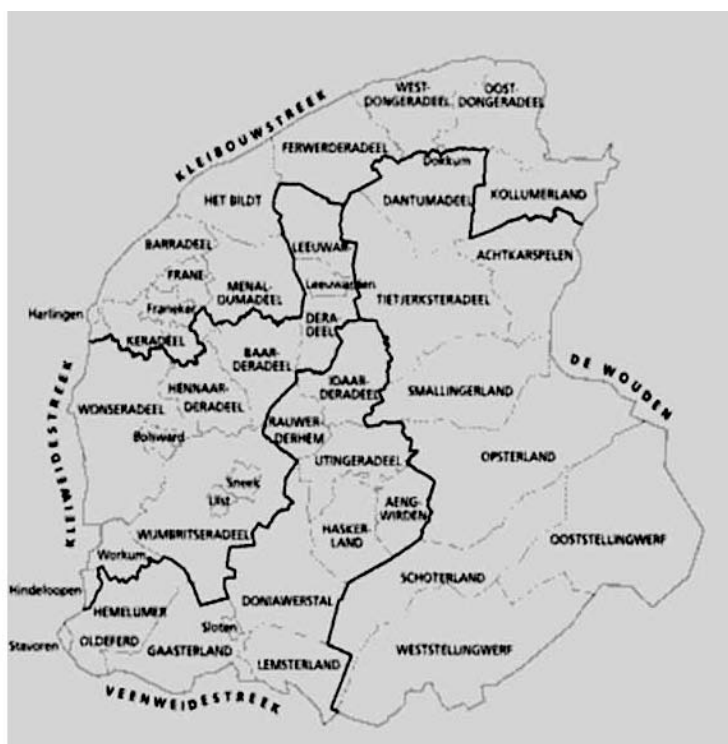
In the countryside only 57 out of 344 official villages had no school in 1799. Of those 44 had less than 100 inhabitants (Jensma 1998, p. 184). For 1850 Jensma presents data for four types of landscape or district. These are indicated at map 5.1 respectively as:

- Clay meadow district (Kleiweidestreek, coastal),
- Peat meadow district (Veenweidestreek),
- the Forests district (de Wouden),
- Clay farming district (Kleibouwstreek, coastal),

In 1850 there are a few more villages (351) but the number without a school has increased more (to 76). This was caused probably by general economic decline during the early 19th century. The Clay farming district at the northern coast has the highest percentage of villages with a school (88%), the Forests district the lowest one (75%) although its villages are slightly larger. Participation does not seem to differ much: 11% of the population of the Forests go to school against 12% of those of the Clay farming district. The schools in the Forests are the largest though and the numbers of pupils per teacher are most appalling. These are the most comfortable in the Clay meadow district (deduced from Jensma, table 6.2. who included the Municipality of Leeuwarderadeel in the Clay farming district).

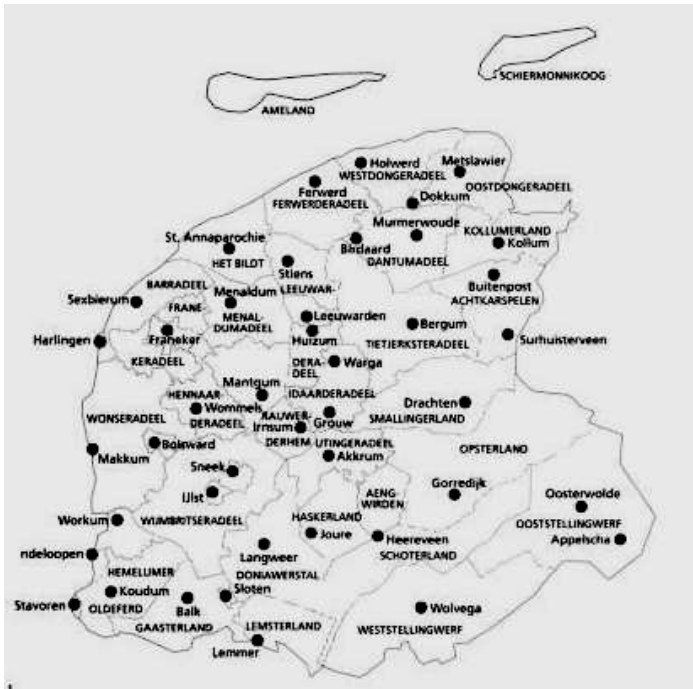
The villages in the coastal region took pride in having a church and a primary Dutch (Diets) school from the Middle Ages onward. They could afford a school and a school teacher because many possessions were left to the church or to the village in the course of their long history.

The inland, with its heath and moorlands was developed only later and development went on still in the nineteenth century. Both the villages and the churches were poor. In fact the Municipalities in that area suffered from extreme poverty. This is demonstrated by the fact that about one sixth part of national support for poor Municipalities during the late 19th century went to Frisian Municipalities like Opsterland and Weststellingwerf (Huizinga 1998, p. 166). Most important for school development in *the richer part of the province* was that local government was decentralised and that church administration and village administration were intertwined. There was in fact *no separation between public and religious administrations*, which made the Frisian school struggle exceptionally bitter (see section 5.3.3).



Map 5.1 The division of the Province of Friesland into four landscapes (Source: Spanninga 1998, p. 28).

The rural Municipalities of Friesland used to be called ‘Grietenijen’, led by a ‘Grietman’ which can be read as ‘Greeting Man’, the official who may notify, summon, being an institution dating from the 13th century. The Grietenij counted numerous ‘church villages’ which had a degree of autonomy, even after the introduction of the Law of 1851, which made the Grietman the burgomaster of a Municipality (Huizinga 1998, p. 165). Both the village and church administrations were governed by the owners of real estate, who had to pay the so called ‘Floreen’ tax (Floreen-plichtigen = Floreen taxables). Church funds were used for the school, which gave the church a degree of control on the school. This implied that public life was controlled by a liberal minority and that church and school had an ‘enlightened Christian’ climate. This climate pervaded the Education Inspection as well. The first generation of inspectors in Friesland were liberal protestant vicars (see Smeding 1987, pp. 60, 61 and 72).



Map 5.2 The 'Grietenijen' and cities of Friesland before 1851 (Source: Spanninga 1998, p. 27). The settlements mentioned are the capitals as a rule.

5.3.3 Religious developments and related school developments in the different landscapes

Smeding described the 'general Christian' school of the age as having an 'ethical irenical' signature (Smeding 1987, p.92). The *local population*, living in hardly irenical circumstances, was *often more of an orthodox protestant conviction* and both their numbers and their strength increased during the century, stimulated by a national 'Réveil' (awakening) of the Protestants. Some tried to reform the church and the school from within, other ones decided to found their own 'Christian-Reformed' churches. This 'Afscheiding' (secession) from the Dutch Reformed church started in 1834 and it was successful in parts of Friesland, especially in the Southwest and in the Northeast (Jensma 1998, p. 187). Efforts to found protestant particular schools were fruitless until 1857 though, because these were blocked by the liberal local and regional politicians until then. The constitution of 1848 guaranteed the freedom of education, but this was made effective only by the School Law of 1857.

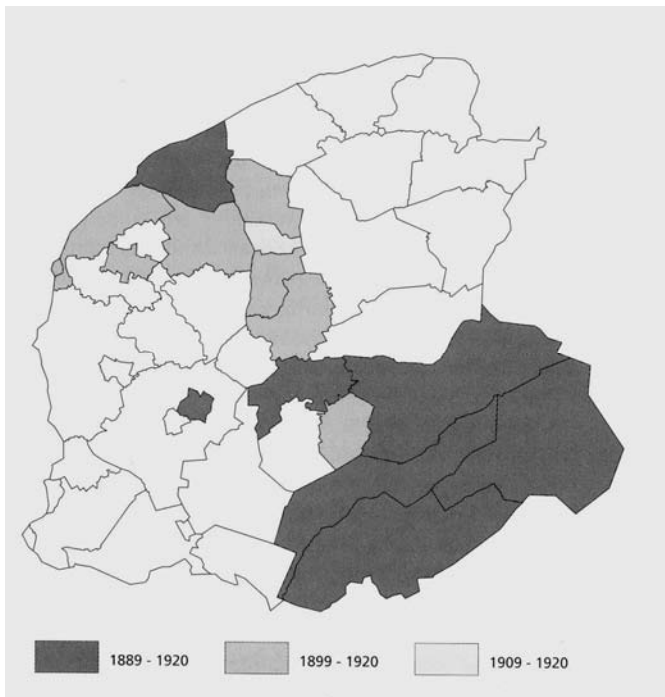
The law of 1878 fired the school struggle because it forbade Municipalities explicitly to contribute financially to particular education. In fact this was an invitation to the Frisian churches to withdraw their contributions to public education.

The power of the liberal landowners was undermined by the enlargement of the electorate with less wealthy persons and by extending the vote in church administration in 1881 to all members who received no support (Huizinga 1998, p.168).

These developments meant that from about 1880 on both the Dutch Reformed church and the Municipality could be united in their promotion of particular education, although the latter actor had to guard public education: *the tide had turned*.

In chapter 3 the case of the Wons Public school was mentioned. There church and Municipality created a remarkable conflict which was won by the church or rather by the parents (see too Jensma 1998, p.186). Huizinga mentions the case of the Jutrijp Public school around 1880. Three quarters of the parents wanted the Public school to be transformed into a particular school. The local church did so, being the owner of the building. The parents requested the Municipality (Wymbritseradeel) not to found a new Public school. The Municipality complied, having *a religious majority* by that time (Huizinga 1998, p. 168). The school struggle in Nylân, another Wymbritseradeel village, is described vividly by Ten Hoeve (1984).

This development was typical of the South-western part of the Province, belonging largely to the Clay meadow district and of the northeast, belonging to the Clay farming district (see Jensma 1998, p. 190). The Municipality of Oostdongeradeel in the orthodox northeast of the Province developed a religious majority in the municipal council around 1880 (Huizinga 1998, pp. 168-170). In sections 5.4 (Dongeradeel) and 5.5 (the south of Friesland) we will see that in some Municipalities public education nearly vanished.



Map 5.3 The start of secularisation of the people in the Frisian Municipalities from 1889 to 1920 (Source: Jensma 1998, p. 187)

In the North-western part of the Province, especially in 'Het Bildt' (roughly the present Municipality of that name), the endless rows of modest workmen's homes along the dikes, built for land reclamation before 1625, bear witness of the former presence of a large *agricultural proletariat* outside the traditional church villages.

In the Southeast, great part of the Forests district, the choice between the orthodox protestant church and the *socialist movement* was even more favourable for the latter option (See Jensma p. 190). The originally orthodox protestant population often lost its faith in the church, dependent on the character of local leaders. Nationwide the poor Municipality of Opsterland was the first one in the country to have a socialist administration (1893) as Huizinga reports (Huizinga 1998, p. 170).

Secularisation of the population, that is breaking with the church as such, is discussed by Jensma (1998, p.187) for the 1889 to 1920 period.

Jensma demonstrates that secularisation started in the Het Bildt Municipality and in the entire southeast before 1890, extending to areas connecting these nuclei around 1900 and to other areas only later on. This was bound to have an impact on school foundation in the sense that *one would expect considerably fewer Protestant Christian schools in the early secularising regions and certainly in the poor Forests landscape*.

5.3.4 Population development in the different landscapes

Where population development is positive one may expect the number of schools at least to be stable. Where it is stagnant one may expect some to be closed and maybe other ones to be founded in cases of competition between schools of different denominations.

Population development may be different in regions of a different character and even rural areas within these may show differences, especially smaller settlements versus larger ones.

In this subsection the population development of Friesland as a whole, that of the four landscapes and those within these landscapes will be indicated.

Schroor mentions a change in the demographical position of Friesland in the Netherlands after 1870 as a consequence of *an almost continuous migration deficit* (Schroor 1998, p. 213). This may be regarded as the combined effect of expulsion of labour by the agricultural sector and of a lack of opportunities for those with higher education. Birth rates have gone down strongly (by nearly 50%) after 1970, from a 22‰ in 1970 to a 12‰ in 1995.

Population development was roughly similar to other Provinces with a strong agricultural tradition extending to agricultural industries, like the Provinces of Groningen and Zeeland.

Within the Province of Friesland there is a remarkable contrast between the Forests and the other landscapes. In the 1920 – 1995 period *the Forests showed a 100% population growth* (Schroor 1998, p. 220). This was no doubt supported by its being designated to be an ‘economic development zone’ with financial support of national government in the post war period. The Clay farming landscape showed the lowest growth percentage of only 20% in the same period.

Out migration was strongest in the two Clay landscapes with Wûnseradiel and the both Dongeradeel Municipalities as extreme representatives (Schroor 1998, p. 225). These developments were felt most in the villages and especially in the small ones, which had severe restrictions for housing projects during several decades after World War II.

‘The number of villages which saw their population decline increased from 5 in the 19th century to 184 in the 20th century... The consequences for the level of facilities (like) ...education were felt after 1950’ (Schroor 1998, p. 226).

There was no noticeable 20th century influx of persons of non-western descent, who concentrated strongly in the large cities of the West and South of the Netherlands. Typical of this relative absence of allochtonous people is the total absence of Islamic schools in the Province of Friesland.

The *conclusion* must be that decline of schools may be expected especially in the small settlements at a distance of the important cities but less so in the Forests landscape which has shown a positive population development thanks to national regional industrialization policies in the post war period.

5.3.5 Conclusions: a Province fit for studies of contrasting developments

The Province of Friesland proves to be remarkable well fitting for a long term study of school concentration under the influence of autonomous forces as postulated in chapter 2.

Of the six forces mentioned (technological development, democratization, secularisation, population development, economic development and transport development) three seem to be less relevant for primary education:

- technological development, having an impact on secondary education content,
- democratization, a matter of school choice in secondary education,

In fact democratisation of local and church administrations in the latter decades of the nineteenth created the opportunity for a religious revival in the 19th century to express itself in the foundation of religious schools.

- transport development, being of less importance in the countryside, where the (only) local school tends to have the function of a common village school.

The impact of *secularisation* might be shown for the distribution of schools in the different landscapes. One might expect fewer Protestant Christian school foundations in the Forests because of the poverty of the churches and the early secularisation.

Population development showed different directions, most likely reinforcing the impact of the school struggle in stagnant areas, where local demand was likely to be too small to bear two schools.

Economic development is likely to have an impact on population development but on government finance as well. This implies that one might expect peaks in school closures during slumps like the agricultural (corn) crisis of the eighteen-eighties, and the economic world crisis of the nineteen-thirties.

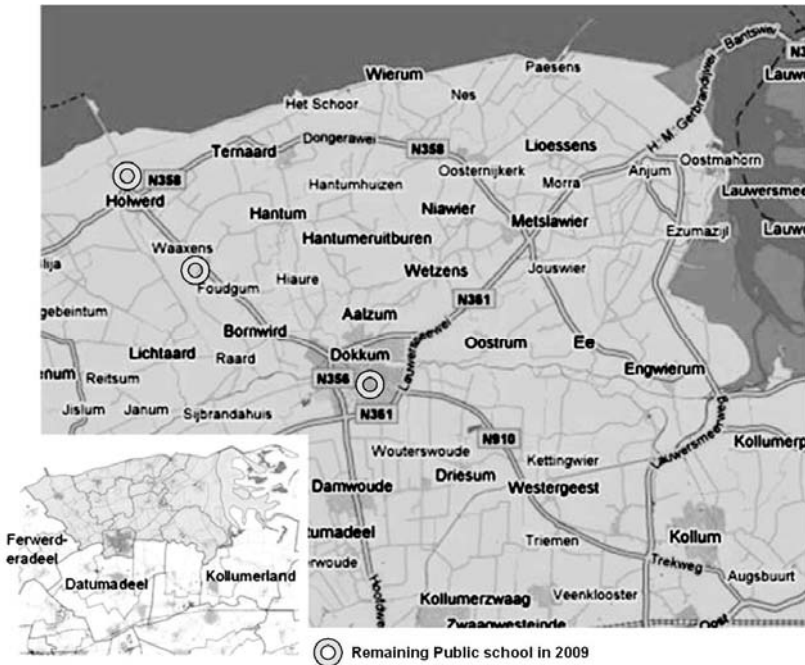
5.4 Case study I. Primary school developments in East- and West-Dongeradeel from 1818 to 2008

5.4.1 Background

The development of primary schools since 1818 is studied for one area to get a better idea of the geographical dimension of long term school concentration under the influence of general forces as described in our theoretical framework (chapter 2). In the previous section it was explained that the area in some respects is extreme in character in terms of population and religious development, which makes it likely that a substantial degree of school concentration has taken place since 1818.

The former Municipalities of East- and West-Dongeradeel were located in the north-eastern corner of the Frisian mainland. In 1984 these amalgamated with the city of Dokkum, to become 'Dongeradeel'. Only the original rural Municipalities were studied. In case we use 'Dongeradeel' the couple of rural Municipalities are indicated.

Map 5.4 shows the territory of the present Municipality from Holwerd in the northwest to Engwierum in the southeast. In the centre of the map, at the southern border, lies the municipal capital of Dokkum. A few kilometres more south lies Damwoude (Dam forest), the capital of the most northern Forests Municipality of Dantumadeel.



Map 5.4 Dongeradeel and its direct environment. Scale about 1:125.000 (Google Maps)

Dongeradeel is part of the Clay farming district with only modest job opportunities. The Municipality is lying at the coast, far from thriving centres like the capital of Leeuwarden and the Forests centre of Drachten. Therefore it suffered from a continuous out migration and from policies to concentrate housing projects in regional centres. Not even the former municipal capitals of Metslawier (E-D) and Ternaard (W-D) could expand substantially. These have nowadays roughly 850 and 1400 inhabitants respectively.

The *modest population development* makes a reduction of the number of settlements with a primary school most likely.

The Municipality is part of the north-eastern region which is traditionally orthodox protestant. Therefore the '*school struggle*', which was fought during great part of the 19th century and the first decades of the twentieth century, *is likely to have had a major impact* on the composition of the regional set of schools in terms of denomination.

Theoretically secularisation of the population during the 20th century *should* have an impact on this composition and *imply a return to public schools!*

The development of administrations and authorities is discussed in subsection 5.4.2, while the development of institutions is the subject of subsection 5.4.3. It will be demonstrated that there is a direct relationship between the two.

There is no subsection on *locations*, because these are *identical to the institutions* in this area.

5.4.2 The development of administrations and authorities: from many to few and back to more.

The distinction between a school administration and a school authority as defined in chapter 2 was not always obvious in history. Religious and secular organisations may have a common responsibility. After 1800 education was explicitly secularised. Secular government was made responsible for education in general, both as administration and authority. Thus was the situation in public education officially until recently. In Dongeradeel the Municipality terminated this union only in 2007 by transferring its authority to the ROOBOL organisation, which is the joint authority for public education of four cooperating Municipalities.

ROOBOL is an abbreviation for Regionaal Orgaan Openbaar BasisOnderwijs Lauwersland or translated: Regional Body for Public Education in Lauwersland.

In the early nineteenth century the school authority of the 'general Christian' public school was legally the village, because of the decentralized structure of the Grietenijen. Yet the church was often in control of the local school, because often it owned the building and financed education itself.

Tolsma analysed the payments in 1817 to the 12 local teachers of the Oostdongeradeel Municipality, looking at the reasons for payment and at the sources (Tolsma 2007, pp. 98-100). It showed that 10 of the teachers had a second job in the local church (sexton/precentor) and/or for local government, ranging from tax collector to village guard. The teacher's salaries were paid sometimes by the Municipality, often by the village (district) and sometimes partly by the church.

One might conclude that there were in fact 24 administrations/authorities for the 24 public schools of 1818 (see table 5.3). In the course of the time both administration and authority were centralized in the municipal capitals of Ternaard (West-D) and Metslawier (East-D) and later Dokkum only (1984).

This development implies *a formidable geographical concentration of control in public education*, ending in control from outside the Municipality (2007). The ROOBOL authority has its seat at Buitenpost, the capital of the initiating Municipality of Achtkarspelen (translated: eight parishes).

The advent of particular education from the 1860-ties on, in fact the return of church interference, *implied a formidable geographical de-concentration of control* by school founding's on the basis of local initiatives. In some cases villages founded even two schools (two school authorities) with the old Reformed church and the new Christian-reformed church as initiators.

The pressure of the Ministry of Education on school authorities and on small schools during the nineteen-nineties led to a *concentration of control in particular education*.

The general picture of geographical control in the entire Municipality of Dongeradeel in 2008 is indicated in table 5.2.

In the full 1818-2008 period that was studied the number of school authorities working in the area was reduced from 24 to 6. Three of those are external ones, having their seat elsewhere. This development is the result of a mixture of alternating concentration and de-concentration tendencies. First control of public education was centralised, then Protestant Christian local school authorities sprang up, to be subjected to concentration at the end of the period.

In 1818 there were 24 Public school authorities. In 2008 there are only two of these 'village authorities' left, but these are Protestant Christian in stead of public in character. Their schools have a common director, which might be called a peculiar kind of concentration of control: higher at the lower level!

(Source: www.schoolinbeeld.nl/friesland/dongeradeel/basisonderwijs , retrieved 280208).

Table 5.2 Number and geographical scale of primary school authorities in present Dongeradeel in 1818 and in 2008.

Between brackets the number of schools involved and (of ...) the total numbers of their schools.

	1818	2008			
Authority	Local	Local	Regional	Provincial	Total
Public	24 (ex Dokkum)	---	1 (4 of 18)	---	1
Prot. Christian	---	2 (2)	1 (16)	---	3
Liberated Ref.	---	---	---	1 (1 of 9)	1
Roman-Catholic	---	---	---	1 (1 of 30)	1
Total	24 (ex Dokkum)	2	2 (20)	2(2)	6 (22)

There are two authorities operating at a regional level, being a Protestant-Christian one at the level of the Municipality and a public one operating in 4 Municipalities. The relatively rare Liberated Reformed (of a church secession of 1947) and Roman-Catholic schools, both at Dokkum, have authorities which are operating at the scale of the Province of Friesland. All these authorities replaced former 'village authorities'.

The general change towards larger authorities, both in terms of the area covered and in the numbers of schools is fairly recent, as indicated below:

- the ROOBOL authority was created after 1992 as a cooperation of the Achtkarspelen, Dantumadeel and Kollumerland Municipalities. It is now a foundation (www.roobol-onderwijs.nl),
- PCBO-Dongeradeel dates from 1995 (www.pcbo-dongeradeel.nl). PCBO = Protestants-Christelijk BasisOnderwijs,
- the Foundation for Catholic primary Education in Friesland (now Bishop Moller Foundation) was constituted in 1996 (www.bisschopmollerstichting.nl),
- the Liberated Reformed authority was constituted in 1999 (www.vgpofryslan.nl).

We interviewed the larger authorities to find the motives for this concentration of control. Apart from minimising the risk created by budgetary responsibility, *the preservation of small schools was a major motive* for the individual authorities to amalgamate. The village school associations wanted to keep their schools and the national government arrangements of 1996 made this easier for larger school authorities (see chapter 3).

The municipal authorities, often still being the Municipalities themselves, had the same motive (preserving their networks of schools) for amalgamation.

The Municipalities of Achtkarspelen and Dongeradeel informed us that careful calculation of pupil numbers was a foundation for decision making on participation in the ROOBOL authority.

All these amalgamations of authorities (and institutions in cases like the Oudwoude school) took place in a relatively short period with the purpose of preserving small schools by using the 10/6 school size rule, which was introduced in the early nineteen nineties (see subsection 3.6.4). Only two Dongeradeel local school authorities (Anjum and Lioessens) did not participate because these were confident that their schools would survive on their own or at least together.

We conclude that the concentration of geographical control in 19th century public education may have made school closure in villages easier (see the next subsection).

The general concentration of authority in the last decade of the 20th century though was explicitly intended to save small country schools by combining them with larger ones. The small village no doubt wanted to keep this perhaps only focus of village life. The enlarged authority no doubt wanted to maintain its position on the regional education market.

The competing hypotheses 2.4.1 and 2.4.2 therefore have both some degree of validity!

5.4.3 The development of school institutions and locations: from many to even more and back to even less

5.4.3.1 General development

One may gain a clearer conception of spatial developments by looking at the fate of individual institutions, which were identical to locations, at least during the nineteenth century, as Tolsma did for former East- and West-Dongeradeel (Tolsma 2007).

Table 5.3. presents the fate of all 24 Public schools, which existed in 1818 and of those founded later on, being mostly of a Protestant-Christian denomination.

Table 5.3 Historical development of school institutions in the areas of the former Municipalities of East- and West-Dongeradeel from 1818 to 2008 (Source: Tolsma 2007, p.105, 195).

Denomination	Public		Dutch Ref.		Chr. Ref/ Ref.		CNS	
Found./Closed	Found.	Closed	Found.	Closed	Found.	Closed	Found.	Closed
Aalsum	<1818	1925						
Anjum	<1818	1969					1866	
Betterwird	1877	1924					1909	>1956
Bornwird	<1818	1881					1903	
Brantgum	<1818							
Ee	<1818	1926	1879	1967	1897	1967	1967	
Engwierum	<1818	1934	1907	1955	1909	1955	1957	
Ezumazijl	1830	1883						
Foudgum	<1818	1882						
Hantum	<1818	1934			1902	>1959		
Hantumhuizen	<1818	1913?			1915	>1959	>1959	
Hiaure	<1818	1900						
Holwerd	<1818						1865	
Lioessens	<1818	1908			1905		19??	
Metslawier	<1818	2001					1922	
Moddergat	<1854	1909			1895	1960		
Morra	<1818	1937						
Nes	<1818	1983			1908		19??	2006
Niawier	<1818	1911					1906	
Oosternijkerk	<1818	1934					1868	
Oostrum	<1818	1934						
Paesens	<1818	1918	1917	1960			1960	
Raard	<1818	1921?						
Ternaard	<1818	1995					1892	
Waaxens	<1818	1882						
Wetsens	<1818	1880						
Wierum	<1818	1931	1927	1954	1902	1954	1954	

Dutch Ref. = old church, Chr.Ref/Ref = secession churches, CNS = united Protestant <1818 = existing in 1818; Italics = Oostdongeradeel

The columns show the existence in 1818 for the Public schools (Public) and the year of closure in the next column. For the other types the year of foundation is mentioned under the type indication and the year of closure in the next column. Three types of Protestant-Christian schools are mentioned: those of individual churches (Dutch Ref. for the old Reformed church and Chr. Ref/ Ref. for 19th century secession churches) and general Protestant schools (CNS = Christian National School). In 2009 there are no 'church schools' anymore. Some were closed,

other ones were transformed in CNS or amalgamated into a CNS school in 1954 or later. In the table the latter process is shown by closure of two schools and founding of a third one. Public schools were present in 27 villages at one point in time, 24 of those from 1818 on. Protestant schools were present in 17 villages at most. In the smallest ones there was evidently no demographic and/or financial potential.

Of the Public schools in these small settlements only one survived, the Brantgum school. Its future is uncertain because only 28 pupils are left in 2009. The village counts only about 240 inhabitants. The second Public school is to be found at Holwerd, the largest of all villages with its 1800 inhabitants.

The Protestant school may loose terrain as well. The Nes school had to be closed in 2006, the Wierum school (23 pupils, being the absolute minimum) might follow in 2010.

The school system showed a monopoly of Public schools until 1865, which turned into a near monopoly of Protestant-Christian schools after 1934.

The number of settlements with a school was reduced strongly, from a maximum of 27 to 15.

The Public school closures show certain concentrations in time:

- 6 schools were closed around 1880,
- 11 schools were closed in a period from 1900 to 1931,
- 4 schools were closed in 1934.

5.4.3.2 Public school closures around 1880

The explanation of the 1880 closures lies most likely in the following three factors:

- the demand for better school buildings and higher teacher salaries presented by the School Law of 1878, causing higher cost for the Municipalities (see chapter 3, subsection 3.4.1),
- the international agricultural crisis of 1880, reducing the tax income of the Municipalities. It was especially a wheat crisis caused by massive imports from America. Therefore it hit the Clay farming district to which Dongeradeel belongs hardest,
- the political take over of the municipal council by religious parties mentioned before (subsection 5.3.3).

The populations of the villages concerned were quite small. Foudgum was the largest one with 141 inhabitants in 1880 (Provinciale Almanak van Friesland 1880). The size of these villages explains the local absence of PC schools.

The distance to the next school was modest in all cases. At Foudgum it was hardly more than 1 km to the next school at Brantgum. Those of Ezumazijl had to travel 2.5 km at most, being the longest distance.

Tolsma investigated how these closures took place. In three cases the opportunity to dispose of the local teacher was decisive for closure (Tolsma 2007, p.192). At the Ezumazijl closure reference was made to the presence of 'an art road' to the next school at Anjum.

5.4.3.3 Public school closures 1900-1934

The 1900-1931 closures no doubt had the following two backgrounds:

- the gradual depopulation of small villages by a decreasing demand for agricultural labour. This was caused by the mechanisation of farming, being the reaction on foreign competition,
- the competition from Protestant Christian schools (the cases of Hantumhuizen, Lioessens, Paesens and Wierum respectively).

The 1934 closures were requested by *Minister Marchant* during the international economic crisis of the nineteen-thirties. He indicated schools that were to be closed in a letter to the

Municipalities concerned, threatening to make a start with formal procedures (Registratuur Oostdongeradeel, 1.511.2 Onderwijs).

'I call upon You urgently to present as soon as possible a proposal for school closure to the municipal council and ... to support this proposal strongly. ... else the necessity to do so by provincial government or the Crown will be considered.'

The Crown is the national administrative court, Council of State (Raad van State).

East-Dongeradeel complied and closed three schools with together 49 pupils (30 being more or less the formal minimum).

West-Dongeradeel did not comply with closure of the Nes public school. Indeed the Province, being formally responsible, decided in 1938 that the school had to be closed.

The Municipality appealed to the Crown for two reasons: the school had 26 pupils still and it was the only one left in the north-eastern part of the Municipality, creating too long travel distances (6 km and longer) for those in for instance Moddergat preferring public education (140438 regst. WeD nr. 722). The Raad van State agreed and annihilated the decision of the Province (120838, nr 2). It thought a school bus no adequate compensation, partly because it could not be demanded from the Municipality.

The Nes Public school was closed in 1983 because only one pupil was left, which excluded the transformation into a 'basisschool' (information Municipality of Dongeradeel).

The distance to the next school was still hardly problematic before the 1934 closures, although these were approaching the traditional 4 km limit for the school duty. The 1934 closure of the Engwierum and Oostrum schools put those of the first village and of Ee beyond that limit.

5.4.3.4 Later Public school closures, deserting the countryside of 'East'

Until 1984 only a few additional schools had to be closed. The Morra (1937) and Anjum (1969) closures extended the Public education desert in the east, as did closure of the Nes school in 1983.

Later economizing operations of 1984 and 1995 made only one additional victim: the public school of Ternaard, former capital of West-Dongeradeel. This enlarged the deserted area along the coast.

The Public school of Metslawier, the former capital of 'East', had to be closed in 2001. Now 'East' was entirely devoid of public education.

The impact of the most recent closures on the distances to Public schools was considerable, since these are left only in Dokkum and in two villages in former West-Dongeradeel.

In the case of Anjum, being one of the largest villages, the distance to a Dokkum school is 11.9 km, measured from centre to centre. (ANWB fietsrouteplanner).

5.4.3.5 A few Protestant Christian school closures only

Protestant Christian schools were founded from 1865 on, several years after the introduction of the freedom of education. Competition between protestant factions in a few villages was ended after World War II by amalgamations in the cases of Ee and Engwierum.

The Protestant-Christian Prime Minister at 1933, Mr. Colijn, called upon the Protestant-Christian school authorities to stop wasting money by operating schools of different Protestant churches in the same village. It seems to have had little effect at the time. De Jager praised the Frisian village of Gaastmeer as (the only) one to take that initiative (De Jager, 1933, p. 30).

Only a few places lost their PC school, no doubt under the influence of depopulation.

Four had to close their doors: those of Betterwird, Hantum, Moddergat and Nes, the latter one being a recent closure (2006). The Wierum school has reached its minimum size of 23 pupils in 2010 (information PCBO-Dongeradeel).

Nes is the largest of the villages that lost their PC school, with about 400 inhabitants at present. Together with Moddergat it counted 1572 inhabitants before the agricultural crisis in 1880, which led to an expulsion of farm workers. In 1996 a mere 689 inhabitants were left (Provinciale Almanak van Friesland 1880 and 1996). *It demonstrates population decline to be one of the causes of a decline in the number of school institutions.*

The impact in terms of distances was modest. Nes lies only 2 km from Oosternijkerk. Wierum is not unlikely to lose its school in 2010, but there are three PC schools within a 4 km reach.

5.4.3.6 Conclusions concerning closure

In 1818 there were only Public schools to be found in 27 settlements. From 1879 on Protestant-Christian schools were founded in the largest 17 of these.

School closures of Public schools started in 1880, but without a direct relationship with PC foundations. Those that were closed from 1880 to 1883 were without local competition. Most of the later closures took place in villages with a PC school as well, which survived until now with a few exceptions. It had taken over the local market.

PC school closures were few in numbers until now. Only four villages lost their PC school until 2009, being always the last school in a small, depopulated village.

5.4.4 Conclusions concerning causation and policies

The case of the former Municipalities of East- and West-Dongeradeel demonstrates that *a combination of autonomous forces* (depopulation, religious reaction and economic problems) *considerably reduced the number of settlements with a school.* This happened largely before the school closure operations of 1984 and 1995, which made us perform the travel impact studies that constituted the starting point of this thesis (see table 5.3).

The *three levels of government involved* in primary education were all active in closing schools, although Westdongeradeel resisted with success pressure from the higher levels to close the Nes Public school in 1938.

The *school authorities* have played confusingly different roles in history, largely because responsibilities changed in the course of two centuries and because entirely new types of authority were created. In modern times both the Public school authority and the Protestant-Christian one have increased their scale of operation in order to save small schools.

The *school institutions* have changed considerably in character and numbers. The character of the changes was quite confusing. Church schools became Public 'general Christian' schools, which were to be replaced largely by fewer orthodox Protestant Christian schools, letting only a few de-Christianised public schools alive, while changing themselves into only vaguely Christian schools.

In the Municipalities studied the closures changed the character of the school distribution radically from a monopoly of Public schools to a near monopoly of Protestant-Christian schools as a consequence of developments in consumer power in the 19th and early 20th centuries. It implies that those wishing to visit a Public primary school may have to travel more than 10 kilometres.

We did not analyse the *role of the consumers* explicitly. The change to orthodox PC schools was desired no doubt by a great part of the public. It is demonstrated by the short time between the founding of a PC school and the closure of the Public school in some villages. Most remarkable is the relative indifference of the present consumers towards the school denomination. The largely secularised public brings its children to the local PC school, because it is the only village school. There were no signs of efforts to found new Public schools.

In subsection 5.1.1 eight *hypotheses* were announced to be discussed on the basis of this case study.

- A *bad state of public finance as a motive* for school concentration (hypothesis 2.5.9). From chapter 3 (development of the school system) we knew that this was the case during the nineteen eighties. In this section we have found two other occasions, which are the economic crises of the 1880 and 1930 decades respectively.

- The *relationship between geographical control and school concentration* (hypotheses 2.4.1. and 2.4.2). One might say that the growing concentration of control in 19th century education made it easier for the authority outside the individual village to close schools as in the case of Foudgum. Nowadays however large authorities are created with the explicit purpose to save small schools as essential village facilities, like the one of neighbouring Brantgum. It implies that both contrasting hypotheses are supported!

- The *reduction of demand for religious education as a consequence of secularisation* (hypothesis 2.5.5). This relationship was not found. To the contrary, of the six rural Public schools existing in 1960 only two were left in 2008. In the same period only one PC school was closed.

- The *school concentration as caused by the freedoms of providing and choosing education* (2.6.1). From this Frisian case one cannot conclude that the freedom of provision causes concentration. In the 19th and 20th century public schools were simply replaced with PC schools. We found few cases of children living in a 'school village' but visiting a school elsewhere. The last school in a village is likely to suffer though from the fact that it has no designated district including dwellings outside the villages or even at other villages.

- A *change of identity* (hypothesis 2.6.8) to save a local school was not found in the Dongeradeel Municipalities.

- There were no cases of school institution closure without location closure, making confirmation of the *economizing on education proper in stead of on locations* impossible (hypothesis 2.6.3).

Table 5.4 Assessment of the hypotheses in the Dongeradeel case

The numbers refer to the sections of chapter 2 where the hypotheses were developed. 2.6.1 = section 2.6

Hypothesis	Outcome
2.4.1. A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.	+
2.4.2. A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive	+
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools	–
2.5.9. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become an acute problem and is therefore a most important factor in school (re)concentration	++
2.6.1. The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a minimum number of pupils.	–
2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economizing on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.	x
2.6.7. Closure of a school may be prevented by changing the character of a school or of a remaining school in a common denomination	x

Legend. + = confirmed; – = rejected; x = lack of evidence

5.4.5 Reflections on the Dongeradeel findings

Most remarkable in this case study are the *contrasting developments of the religious character of school and population around 1860 and of those around 2000*.

In 1860 an orthodox protestant population hated the liberal protestant Public school, where hymns were sung, prayer was common and the Bible was used.

In 2000 a majority of the population is non religious and only about 5% does visit a Christian church at Sundays (Bijl, Boelhouwer .. 2007, pp 26, 199). Yet in rural Dongeradeel nearly all people send their children to a Protestant Christian school! It is not unlikely that more than 50% would prefer a Public school, being a school without the presentation of one specific religion. An indication is the share of Christian political parties in the municipal council. These occupy 7 out of 19 seats after 2010 elections (data CBS Statline).

Inquiries at the Municipality of Dongeradeel taught us that only few children get a transport provision for visiting a school 'of the desired denomination' at a distance of more than 6 km, which is the national threshold distance. It implies that nearly everyone visits the local PC school.

Part of the explanation will be that it is unattractive to live in a village and send one's children to a faraway school which places the children moreover outside the local (children's) community constituted by the school.

Just as important will be the 'low profile' of the PC identity of the school. Children will be accepted unless parents reject the PC identity explicitly.

The Public school of 1860 is likely to have been more explicitly Christian in character than the present PC school.

In an area like this, the religious school is a vested interest, which tends to distinguish itself by more hierarchical relationships, by more discipline than the Public school. The PC school has no reason to change its identity as long as it has a sufficient number of pupils and since it

gets all the children of the village ... The same is no doubt true of the originally Roman-Catholic southern regions of the Netherlands.

Couldn't one try to found new Public schools, turning the tide again? That would be perfectly impossible in the countryside since the introduction of a 200 pupil minimum for new schools in the nineteen nineties. But maybe this is a mystification, just like the 'school duty' discussed in chapter 3 (See the law WPO, articles 75.2 and 77).

5.5 Case study II. The changing balance between public education and particular education in the Frisian south between 1848 and 1933

5.5.1 Introduction

We have seen how the number of school institutions was reduced in the Dongeradeel Municipalities in the course of nearly two centuries and how the balance between Public schools and particular schools changed radically. This development need not be representative for the Province as a whole.

Therefore school development of a southern band of 10 Municipalities will be analysed for a crucial period between 1848 and 1933. In 1848 there was no 'freedom of education' yet (only Public schools) and in 1933 'equal treatment' had had its full effect on the founding of particular schools.

The Municipalities selected belong to other landscapes of Friesland. From west to east: the Clay meadow district, the Peat meadow district and the Forests. The first one is comparable with the Dongeradeel Municipalities in population development and religious orientation, the latter one constitutes a strong contrast because of its population increase and its early secularisation of the population.

The central research question is whether contrasting developments in these autonomous forces did cause contrasting developments in numbers of schools and in the balance between public and particular education. In stead of the hypotheses mentioned in section 5.1.1 we will discuss only the following one, although in the assessments the hypotheses 2.5.5 (secularisation) and 2.5.10 (public finance) will be scored as well.

Hypothesis 5.5.1. The different combinations of population development and of secularisation will lead to a decline of public education in the Clay meadow landscape and to a continuing dominance of public education in the southern Forests landscape, the Peat meadow district taking an intermediate position.

To that end, two sets of regional school data will be compared.

The 1848 data were compiled by the 'Provincial Education Committee', a committee of the Education Inspectors stationed in the Province. It is an exhaustive list of school teachers and their stations, classified according to the nine School Inspection districts of the time. The districts follow the division of landscapes as shown on Map 5.1. We will work from west to east, starting with the region that is comparable with Dongeradeel. The following (partly former) Municipalities are involved:

- Clay meadow: Rauwerderhem, Wymbritseradeel (district 8)
- Peat meadow: Hemelumer Oldefird, Gaasterland, Lemsterland, Doniawerstal and Haskerland (district 7)
- Forests: Schoterland, Weststellingwerf, Ooststellingwerf (district 6).

In the districts 8 and 7 several Frisian cities were included. These will be neglected because they are not unlikely to show deviant patterns. Indeed, none of the five of district 8 lost its Public school during this period!

The 1933 set is compiled from the lists of schools published in De Jager (1934).

Only school institutions will be discussed in this section since the school authorities remained formally the same during this period although the villages lost their autonomy within the Municipality. The set of Municipalities stayed as it was.

5.5.2 Analysis

The results of the comparison of the three Inspection districts are presented in table 5.5. The table indicates for each of the (parts of the) landscapes studied how the number of villages with a school of a certain type changed. It shows too how many settlements have at least one school. There was in fact hardly any settlement which lost its only school until 1933. This changed with the Marchant economising on public schools. The result of this in 1933 is indicated between brackets. This additional reduction left 6 settlements without a school.

The table does not show absolute numbers of schools. A few settlements like Heerenveen (Schoterland) and Lemmer (Lemsterland) had more than one Public school in 1848 and/or 1933. Nevertheless *a spectacular increase in the number of schools* is indicated. In 1848 there were at least 90 schools in the area. In 1933 there were at least 151, a 60% increase.

The increase is most spectacular in the part of Forests district that was studied. There the number of schools must have increased by more than 100%! This is likely to be the result of

Table 5.5 Number of rural settlements in the south of Friesland with a primary school of a certain type in 1848 (only Public) and 1933. Between brackets the numbers resulting from Marchant closures confirmed by the Municipalities in 1933.

Year	1848	1933			
Denomination	Public	Public	Protest.	Rom.C.	Total
Clay meadow	26	10 (6)	22	3	23
Peat meadow	30	22 (18)	19	5	34
Forests	34	54 (52)	14	2	55
Total	90	86 (76)	55	10	112

There is *a major shift in the denomination of the schools* though, from a monopoly of Public schools to a modest majority of 57% of Public schools. The number of settlements with a Public school declined hardly until the Marchant closures.

The three landscapes show considerable differences in this respect as might be expected on the combined basis of population development and secularisation.

The *Clay meadow district development is comparable to that in Dongeradeel*, as was to be expected. *The number of settlements with a Public school is reduced by 60%*. Settlements with Protestant-Christian schools are now dominant.

The Roman-Catholic minority had seized the financial opportunity of equal treatment to found its own schools. The school of the village of Heeg for instance dates from 1922, immediately after the introduction of equal treatment (See: R.K. Lagere ...without author, 1982). It is not unlikely that these school foundings dealt a final blow to some of the local Public schools.

Some of these schools were founded in Roman-Catholic enclaves, which had no school yet, namely Blauwhuis, Roodhuis and Wijtgaard. Most of the other ones were founded in larger settlements though (information Blauwhuis school).

In at least one case the effect on public education was clear and immediate. The Heeg RC school was opened in November 1921. In a few months the pupil number of the local Public school was reduced to 4 and closure became unavoidable (R.K. Lagere ...1982, p.12).

In the *Forests district* the development was entirely, bafflingly different. Here the number of settlements with a Public school increased by about 60%! This increase is a matter of interpretation for some schools. Especially in the Municipality of Ooststellingwerf agricultural development of moors and heath was still going on as the first topographical map of the region shows (Wolters-Noordhoff 1992). That implies that population concentrations were shifting. De Jager mentions more than one Public school for some of the villages. His map shows these to be spread though at regular mutual distances (about 4 km each) along local axes. Therefore these are counted to be additional settlements.

In this district the share of PC schools is quite modest. This may be regarded to be an impact of an early secularisation (see subsection 5.3.3).

It is most likely that these school founding activities were the result of the 1900 introduction of the school duty. The school duty could not be enforced at distances above 4 km (see chapter 3). Therefore the school had to be brought to the people. The pattern of schools in the area makes the impression of being the result of deliberate planning with this purpose (see map 5.5). The locations ensure that children living in the hinterland are within reach of the school too. Inquiries at the Municipality of Weststellingwerf (Mr. J. De Vries) taught us that in discussions on school locations the standard of 'an hour's walk' was mentioned. A search in the municipal archive yielded no proof of an explicit planning on this basis though.

The *Peat meadow district* takes an intermediate position as was expected. The numbers of Public and particular schools are more or less in balance until the Marchant closures.

5.5.3 Conclusions

The comparison of school data concerning 1848 and 1933 confirm that autonomous forces as indicated in chapter 2 may have a conspicuous impact on the school density as such and the distribution about public and religious education. Population development has a clear impact as demonstrated in the case of the *Forests district*. It implied a remarkable increase of the number of Public schools in hitherto little populated areas and a consequent reduction of school travel distances.

Successive waves of religious development in the population had their impacts too. The Protestant 'Reveil' (Awakening) leading to the school struggle, contributed to developments in the Southwest, especially the *Clay meadow district*. There a substantial number of settlements lost its Public school, but it was usually replaced with a PC school. In a number of other cases a PC school or a RC school was added (or even both). This reduced the distances for those interested in religiously oriented education enormously.

The distances to public education were affected seriously, especially in the area around Woudsend, south of the city of Sneek, as will be demonstrated in section 5.6.

The Southeast, where secularisation of the population took an early start, witnessed a less spectacular increase in the number of Public schools, as might be expected.

Table 5.6 Assessment of the hypotheses related to the analyses in section 5.5.

Hypothesis	
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools	+/-
2.5.10. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become an acute problem and is therefore a most important factor in school (re)concentration	+
5.5.1. The different combinations of population development and of secularisation will lead to a decline of public education in the <i>Clay meadow landscape</i> and to a continuing dominance of public education in the <i>southern Forests landscape</i> , the <i>Peat meadow district</i> taking an intermediate position.	+

5.6 Case study III. Developments in the entire Province from 1933 to 2008

5.6.1 Introduction

Lessons learned. We have seen (section 5.4) how the pattern of schools in the two rural Dongeradeel Municipalities developed since 1818 under the influence of demographic developments and government economizing operations, namely:

- village depopulation led to closure of schools by lack of pupils.
- religious revival caused an almost complete replacement of Public schools with religious ones. Secularisation however did not change the balance. The religious school had become the general village school
- economizing operations during the 20th century caused only a modest reduction of the number of villages with a school
- distances to the nearest schools, disregarding their identity, are still quite modest although in the case of public education these are excessive for some substantial villages, namely over 12 km!
- large school authorities have been created at a municipal or even regional level to maintain as many schools as possible, stimulated by government regulations.

We have seen (section 5.5) that developments during a crucial period from 1848 to 1933 were diverging for different Landscapes (regions) of the Province.

- in the Clay meadow landscape of the Southwest demographic developments and school developments were similar to Dongeradeel,
- in the Forests district both population and religious developments were contrasting, resulting in ongoing school foundations and a continuing dominance of public education.

Purpose of case study III. In this section we will assess what ongoing demographic developments and government economizing rounds implied for the presence of primary schools in settlements throughout the Province of Friesland and thus for distances to schools. The degree of continuity will prove to be large. Nowhere else than in the Northeast and Southwest have distances to Public schools increased that much.

We will investigate too whether the recent Dongeradeel tendency to create large school authorities in order to maintain small village schools is a general one. It will prove to be so indeed.

In the period from 1933 until present there were *three school concentration operations* (see chapter 3):

- the Marchant economizing of 1933 mentioned in case studies I and II,
- the school reform of 1984, creating the 'basisschool', and
- the operation 'Equipment and Accessibility' of 1995, both introduced in the chapter on the development of the Dutch school system.

In the Dongeradeel case study the hierarchical order of school authority, school institution and school location was applied in the analysis. In this case study the outcomes of the three economizing operations are structuring the analysis instead. In and after the 1933 and 1984 operations (subsections 5.6.3 and 5.6.4 respectively) control was still local or municipal at most (for public education). Therefore concentration of control is discussed only for the 1995 operation (subsection 5.6.5).

5.6.2 Sources utilised and outline of the analysis

Four sets of data. For a quantitative analysis of the developments in the entire Province of Friesland, there were sets of data available for 1933, 1985, 1992 and 2006.

The data for 1933 are a series of maps with a settlements legenda, indicating the settlements with one or more Public, PC en Roman Catholic schools respectively (de Jager, 1933).

The data for 1985 and 1992 are data concerning schools, acquired by Van Dam (1995) from the Ministry of Education and made available by him for this study.

The data for 2006 were taken from the site of CFI, the Central Financing Institution of the Ministry of Education (www.cfi.nl/BRIN-gegevens/zoek-instellingen). On this site authorities, institutions and locations can be found. Non-financed locations supplying a full curriculum were not included until 2007. These are now included as 'inspection location', locations being assessed by the Education Inspection. The assessments are presented on the Inspection's own site (www.onderwijsinspectie.nl).

In the analysis the *Roman-Catholic schools will be neglected*, because their low number makes those less interesting for a school concentration study in Friesland. Moreover, nowadays there are over 30 in the Province, more than in 1933. These are found mostly in larger settlements, often as a result of immigration from outside Friesland.

The 1933 decision of the Province into four Inspection districts as found at De Jager will be used for the analysis, because of its convincing presentation. The four Inspections division does not follow the borders of the four landscapes. Yet the extreme regions mentioned before, Protestant Northeast and Southwest and socialist northwest and southeast *are distributed roughly about the four Inspection districts*. It seems to be disadvantageous that a great part of the Forests is included in the Dokkum Inspection. De Jager's 1933 maps however show that indeed public education is stronger in this area than in Dongeradeel, north of Dokkum (map 5.5). Protestant-Christian education however proves to be stronger than anywhere in the Heerenveen Inspection (map 5.6). Therefore the patterns found in sections 5.4 and 5.5 should be recognisable.

Interestingly, the Education Inspection, part of the national administration, shows a continuous concentration of control. In 1848 Friesland counted 9 Inspection districts. In 1933 only 4 were left. Nowadays there is one Inspection for the three Northern Provinces only, residing in the northern metropolis of Groningen.

A chronological order of analysis. First the Frisian school map of 1933 as drawn by De Jager will be presented and discussed (section 5.6.3). The general effect of the Minister *Marchant closure demand* of 1933 is presented in section 5.6.4. It will show that the degree of compliance varied per Inspection district!

The two *waves of closures of 'lower schools'* (lagere scholen) that were too small to become 'basisschool' namely those of 1984 and, after a missed chance, those of 1987, are the subject of section 5.6.5. This operation was in fact a cleansing of the school supply from schools which had been too small before. The section will open with additional demographic information for the period, demonstrating an ongoing decline of small villages.

The first real economising operation after 1933 was '*Equipment and accessibility*' of 1995. It was called like that to express the reluctant Ministry of Education compliance with political pressure to save the small school in the countryside and to close larger schools in the cities instead (see chapter 3). Indeed, now many victims fell in the Frisian cities (subsection 5.6.6).

The general conclusion of subsection 5.6.7 is that there still exists a dense network of country schools which restricts travel distances to either Public schools or Protestant-Christian schools.

The latter category tends to be more ‘neutral’ or ‘without the Bible’ than the 19th century monopolist Public schools!

5.6.3 The Frisian primary school map of 1933

De Jager mapped the Frisian settlements with primary schools in 1933, using separate maps for public education and Protestant-Christian education. These maps are included in this subsection in their original hand made version with accompanying legend in Dutch. The maps have a background of the railway network of the time. Only the settlements with a school of the presented kind are included on the respective maps. The numbers refer to a list of settlement names (not included here).

Around each settlement a circle with a radius of 3 km is drawn to indicate a potential catchment area which could do without pupil transport. The threshold of 4 km by road had been increased to 5 km by Marchant for reasons of economy (De Jager 1933, p. 4). Later it was restored to 4 km again. The map for PC schools shows a number of settlements with a double circle. These indicate the presence of schools of more than one church.

The 1933 maps and corresponding school lists of De Jager (1933) show a *division of the Province into four regions*, being the Education Inspection districts of that time:

- **D**, the *Dokkum Inspection*: the eastern section of the Clay farming landscape and the northern Forests Municipalities,
 - **L**, the *Leeuwarden Inspection*: the western section of the Clay farming landscape and the northern part of the Clay meadow landscape,
 - **S**, the *Sneek Inspection*: the southern part of the Clay meadow landscape and part of the Peat meadow landscape,
 - **H**, the *Heerenveen Inspection*: the southern part of the Forests and another part of the Peat meadow landscape.
- (see maps 5.5. and 5.6).

The maps are most effective in showing how much variation there is in school density.

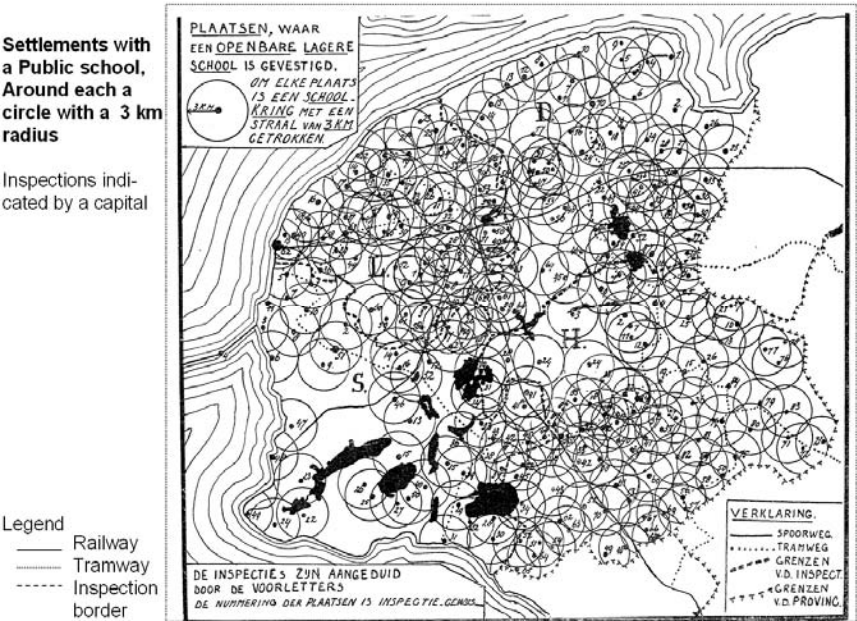
Public education shows concentrations of overlapping circles in the following areas:

- the southeast of the Dokkum Inspection, belonging to the Forests,
- most of the Leeuwarden Inspection, but especially the Southeast with many ancient small villages, and,
- the midwest of the Heerenveen Inspection,

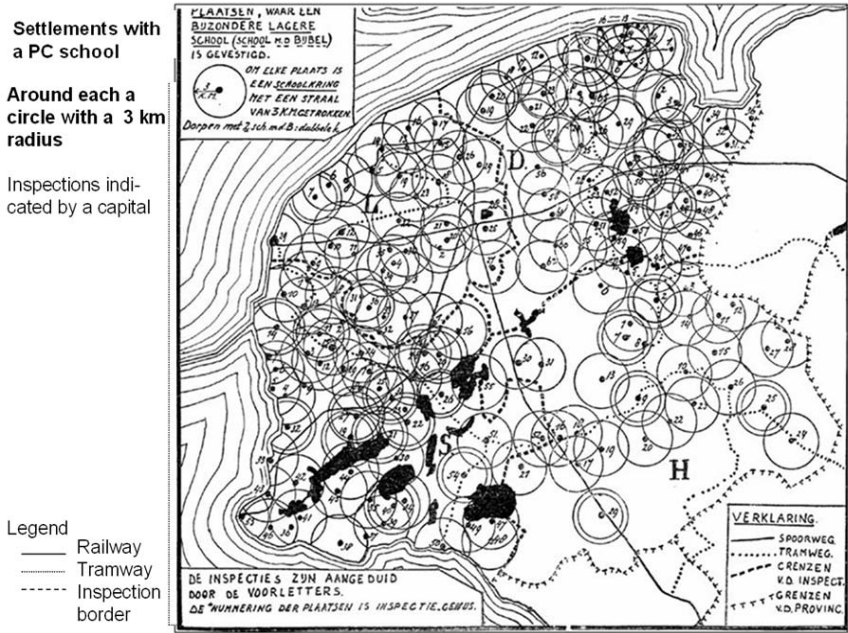
Areas outside the 3 km circles are to be found in some degree in the empty lands of the Peat meadow landscape in the heart of the Province and at the Heerenveen H, but substantially in the Southwest, where only part of the area south of the Sneek S is relatively desolate.

Protestant-Christian education shows a somewhat lower density, because no schools could be founded in the smallest villages. The largest concentrations of overlapping circles are found in the Dokkum Inspection, including its Forests part and in the northern part of the Sneek Inspection. In the Heerenveen Inspection the density is low. It is in fact the early secularised part of the Forests (see section 5.5).

The maps are quite effective in conveying De Jager’s idea that the school density in some areas was in fact higher than necessary.



Map 5.5 The settlements with at least one Public school in the Province of Friesland in 1933
(Source: De Jager 1933)



Map 5.6 The settlements with at least one Protestant-Christian school in Friesland in 1933.

5.6.4 Closure of Public schools 1934 upon demand of Minister Marchant

In the Dongeradeel Municipalities four Public schools were closed in one year, upon request of the national Minister of Education (subsection 5.3.3.). This was part of a national programme of economizing on education. From 1930 to 1939 the Education budget was reduced in relative and absolute terms. The share of Education in the national budget was reduced from 20.3% in 1930 to 12% in 1939 (Dodde 1983, pp. 166, 167). This was achieved by lowering teacher salaries, increasing the pupil/teacher ratio and closing small schools. Of the school closure operation no reports could be found, except in De Jager's 'School concentration ...' of 1933. This is perhaps typical of the lack of geographical analysis in education. Dodde mentions the economizing programme, but not the closure operation (Dodde 1983, p. 65).

Table 5.7 Number of primary schools and of their pupils in 1919 and 1929 for The Netherlands and for Friesland, and the number of small schools in 1929.
(after De Jager, 1933, tables 1, 2 and 5).

		Netherlands				Friesland			
School type		Public		Particular		Public		Particular	
Year		1919	1929	1919	1929	1919	1929	1919	1929
Schools		3473	3610	2510	4452	331	337	229	292
Pupils (x 1000)		570	480	461	737	33	30	25	32
School Size	1- 20		102		10		16		1
	21 – 40		243		73		60		14

The number of schools had risen enormously since the 1919 introduction of equal treatment, i.e. equal finance of Public and particular schools. This in contrast to what we have seen in Dongeradeel (section 5.4).

On a national scale the increase was about 25% in the decade from 1919 to 1929, from 5,983 to 8,062 schools. The number of pupils had risen by about 18% only (see Table 5.7).

In Friesland the number of schools increased by 13% only, and the number of pupils by about 5%.

The increase of the number of schools took place almost entirely in the particular sector, comprising almost exclusively religious schools, namely from a 2,510 nationwide to 4,452, an increase by 63%! In Friesland the increase of this sector was much less: a 27%. The shift towards religious education implied that the relative use of Public schools declined.

Mr. Marchant was reproached of partiality because he took the initiative for closure of small public primary schools, leaving particular ones alone (Bosmans 2008). There were far more small Public schools though than religious ones: nationwide 102 with at most 20 pupils and another 243 with 21 – 40 pupils. For the religious sector these figures were only 10 and 73 respectively (see table 5.7). These figures demonstrate that there was much *more reason to close Public schools than religious ones*. In Friesland the figures were even more extreme: 16 and 60 for Public schools versus only 1 and 14 for particular schools respectively.

Friesland, being one of eleven Dutch Provinces, had much more than its 1/11th share of small schools. De Jager mentions 76 Public schools to have 40 pupils or less. The likely 30 pupil threshold may explain the fact that Marchant demanded closure of 58 Frisian schools only. Yet this was more than 15% of the regional supply of Public schools.

The Municipalities did not have to comply, since only provincial government could make them close Public schools. It had to respect justified objections referring to 'sufficient public education' though, as the Nes case demonstrated (see subsection 5.4.3.3).

Table 5.8 Closure of Frisian Public schools in 1934 per Education Inspection district. Indicated in successive columns are the numbers of settlements with a Public school, the number of closures demanded, the numbers closed in actual fact, the distance to the next Public school and whether the school was the only one in the settlement (last column).

Inspection \ Closures	Existing	To be closed	Actual closures				
	Total	Total	Total	<2 km	<4 km	>4 km	Only
Dokkum	70	15	11 (73%)	4	4	3	2
Leeuwarden	64	20	5 (25%)	1	4	-	3
Sneek	52	15	10 (67%)	3	1	6	8
Heerenveen	87	8	3 (38%)	1	1	1	1
Total	273	58	29 (50%)	9	10	10	14

Table 5.8 presents the numbers of schools per Inspection district which Minister Marchant demanded to be closed and the numbers closed in actual fact, as reported by De Jager (1933). There is quite a discrepancy between these. Marchant wanted 58 Frisian schools to be closed, but the harvest was only 29. The Municipalities involved must have known perfectly well what the formal status of the letter of the Minister was: none whatsoever. We have no quantitative information on the actions of the Province towards closure of additional schools as was undertaken in the case of the Nes school. The Annex Table 5.8 presents the individual closures per Inspection district.

There were 273 settlements with at least one Public school at the time, following De Jager. Closures were restricted to small schools in the countryside. Urban schools were much larger as a rule.

The *Heerenveen Inspection* counted the highest number of settlements with a Public school and lowest number that had to be closed. That is quite understandable, given its population increase and the dominant position of public education (see subsection 5.3.4).

In the *Leeuwarden Inspection* the highest number and portion of closures was demanded. This is not surprising either, because the area had suffered from population decline and because it counted a great number of small ancient villages like Firdgum. It is the explanation of the large school density to the south of the city of Leeuwarden.

In these areas the Municipalities were reluctant to comply with closure demands and more so than those in the Protestant-Christian dominated Inspections of Dokkum and Sneek. In the latter one Municipalities like Wonseradeel and Wymbritseradeel were amongst the earliest to promote particular education (see subsection 5.3.3).

The *Sneek Inspection* with its low Public school density in the Southwest lost nearly 20% of its Public schools. For more than half of those the next Public school was more than 4 km away, being the threshold for pupil transport and for school duty! In most of the Sneek Inspection cases the school was the only one in the village. The settlements losing their only school were as a rule very small.

The closures lead to an *increasingly large regional public education vacuum* in the Southwest.

De Jager's 'School concentration: possible, desirable, feasible?' of 1933

After the crash of the Wall Street stock exchange the world economy fell into a deep and long lasting slump. Dutch government had to economise strongly and it tried to reduce the number of schools for that reason. Public schools that were considered too small, most likely those with less than 30 pupils, were identified by the Ministry of Education and Municipalities were suggested strongly to close these.

De Jager thought this approach to be too narrow. He argued as follows.

Further economising on education is unavoidable. In stead of cutting the teachers' salaries the number of teachers might be reduced by closing small schools.

Each school should have at least three teachers, i.e. two age groups per teacher/classroom, in order to guarantee a

sufficient quality of education.

The school density is such that in parts of the Province schools could be closed without creating school travel distances requiring (costly) pupil transport. See the maps 5.5 and 5.6.

Dependent on the geographical situation different planning principles should be applied:

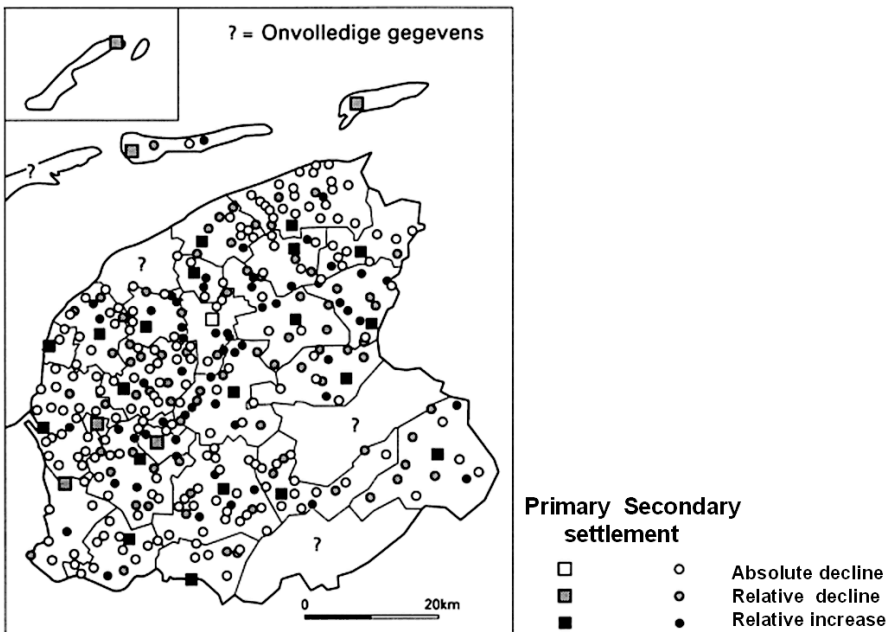
- local concentration: combining local schools unless these have more than 200 pupils,
- settlement concentration: reducing the number of settlements with a school, without sending village children to an urban school, because 'the strength of the people is to be found in the countryside',
- fringe concentration: protecting schools at the outskirts of an area, to the detriment of more centrally located schools, or closing two larger schools within reach of a small school in between.

His proposal for restructuring systematically the supply of education on this basis was and is without a parallel in Dutch history.

Minister Marchant demanded closure of 58 Public schools, whereas De Jager argued that 122 schools might be closed (of 629), including 52 PC schools, disregarding the size of these.

His proposals would have implied in some cases an enormous increase in school travel and construction of new school buildings, making it totally unfeasible.

Text box 5.2. A Leeuwarden school director's perspective on primary school planning



Map 5.7 Population development in Frisian municipal capitals (□) and in other settlements (○) from 1970 to 1981 (Source: Van Dam, 1995, p. 73).

5.6.5 Closure of schools at the introduction of the basisschool in 1984, the 'HOB'operations

5.6.5.1 A Province both promoting large villages and defending small schools

Population decline was an important factor in rural Frisian school closures during the late 19th and early 20th centuries. Villages lost inhabitants because of the losses in local employment caused by the mechanization in agriculture. Local centres could flourish because of agricultural industries like dairy factories. These were subjected to regional concentration in the latter decades of the 20th century though. The Heeg (Lytsuizen) and Woudsend factories for instance did not survive.

During the nineteen seventies and eighties the Province of Friesland had a strict policy for the concentration of population increase in regional centres like municipal capitals (see Van Dam pp. 71-74)). The motives were maintenance of a regional supply of facilities and protection of the landscape from suburbanisation.

Map 5.7 shows that *population decline* was the result for *many villages in the 1970 -1981 decade*. Only one capital, the provincial capital of Leeuwarden is white, losing population. Of the other settlements the most ones are losing population, especially those in the North-eastern and South-western periphery.

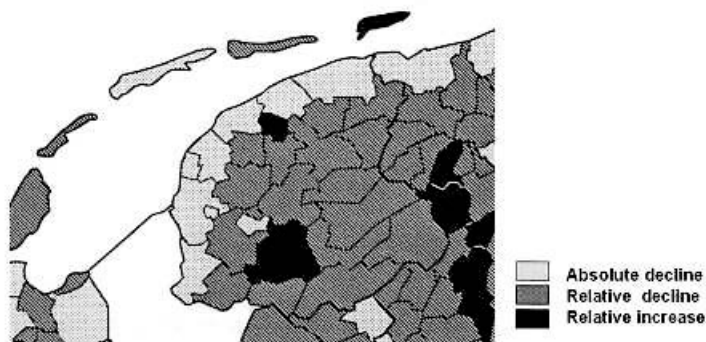
In Dongeradeel for instance 27 settlements are mapped. Of those only the present capital of Dokkum and the former Oost-Dongeradeel capital of Metslawier showed a population increase of more than the Frisian average. Three other ones showed an increase being less than the provincial average.

The relaxation of provincial restrictions for rural urbanisation made this development less outspoken during recent decades.

During the next decade population development at the municipal level was negative in the whole northern and western periphery as shown by map 5.8. Only two Municipalities showed a population increase higher than the national average.

Evidently schools came under pressure in the face of a declining population and declining birth rates in general.

Therefore the *Frisian Provincial Education Council* (Provinsiale Underwiisried fan Fryslân) started a working party for the small school in 1972. The Council had the improvement of education in the Frisian language as a central task. Since the language was and is spoken largely in the countryside, its interest in survival of *the small school* was self evident. The working party concluded that the 'lytse skoalle', as it is called in Frisian, *should be protected from closure* and that it deserved to stay as an independent and complete educational unit.



Map 5.8 Population development in the Frisian Municipalities in the period 1981- 1992 (Source: Van Dam 1995, p. 58).

The arguments supporting the continued existence of small and therefore relatively small schools are summarised in a 1983 report of a study into 'small schools in Friesland'.

A. the school community and the small school

1. The home and school environments are identical, making an integration of both in education possible,
2. In small groups (classes) children may learn to work together and can be given individual care,
3. The involvement of the parents is large,
4. Renewal in education may involve even other inhabitants,

5. More and more people in the local community are involved in the school and its activities.
 B. the village community and the small school
1. Expanding and changing school activities have increased the function of the school as a local meeting place,
 2. The activities of the school are a stimulus for village activities,
 3. The school may accommodate activities of the village for which there is no other accommodation,
 4. The facilities of the school, like copying and printing are important for local activities
 5. The school is because of these functions the symbol of the village community

Textbox 5.3. Arguments in favour of small (country) schools (ISP 1983, p.67).

This *movement became nationwide* and deployed political activities, including meetings with the character of political demonstrations, such as:

- a 1978 Frisian ‘action day’ in theatre of the Frisian Capital of Leeuwarden, demanding a 25 minimum threshold for small schools, 30 being the traditional norm,
- a 1987 northern, three Province ‘protest manifestation’ in the theatre of the city of Drachten, against proposals to increase minimum pupil standards for the small basic school. The proposals were withdrawn.
- a 1989 northern ‘central education protest’ in the ‘event hall’ of the city of Groningen (the Province of Groningen capital) against the intent of the Ministry of Education to economize 25 million guilders on small schools. In other Dutch regions there were similar protests. The proposal was withdrawn. (Dykstra-Sloot a.o. 1990, pp. 31-36).

The *movement was successful*. For successive closure operations a 23 pupil minimum was negotiated (see De Boer and Van der Veen 1986).

5.6.5.2 *The first round of the HOB operation, a 1934 – 1985 comparison*

As we have seen in *Dongeradeel* (section 5.4), the decline in the number of schools went on after 1934, but now the religious schools were involved more. In *Dongeradeel* all ‘double schools’ of Protestant Christian churches amalgamated (those in Wierum for instance) and in a few cases schools of different villages amalgamated before closing one location (Hantum and Paesens/Moddergat).

The school system was changed substantially in 1984, integrating the ‘lower school’ (lagere school) and the ‘toddler school’ (kleuterschool) into the ‘basisschool’. In the years before the Ministry of Education had left schools with insufficient pupil numbers alone, as mentioned before. In order to avoid conflicts around the introduction of the new school type, friendly minimum pupil norms were developed for existing schools. For the expansion from six classes/groups to eight classes minimum pupil norms might have been increased by one-third. National government did not to do so.

In 1983 The Netherlands counted 8,607 lower schools (Blank etc. 1990, p. 13). A number of 421 lower schools were closed nationally in the Restructuring Operation Basic Education HOB (HerstructureringsOperatie Basisonderwijs) of 1984. In a second round of 1987 another 186 were closed. The total effect of the HOB rounds was therefore a reduction of the number of schools by about 7%.

The effect of *the 1984 operation* in Friesland has been estimated, using data of De Jager (1934) and Van Dam (1985).

De Jager mentioned the existence of one or more schools of different types in the Frisian settlements except for a few of the large ones. These were not relevant for him because the small schools were to be found in the countryside. The De Jager data per settlement were compared with the Ministry of Education’s data, provided by Van Dam.

The outcome (see table 5.9) is quite surprising: *the number of schools in 1985 was higher than that in 1933* in spite of the two operations! The number of schools had increased by

about 5%, from 554 to 577. It is the result of much larger numbers of both closures and foundations though, being 147 altogether!

Two third of the *growth was caused by religious schools*. An important factor was the creation of a new Protestant Church, the 'Liberated Reformed Church' (1944) which founded new schools after the Second World War. At present there are 9 schools of the school association VGPO Fryslân (www.vgpofryslan.nl).

For the *Public schools* it is known that 29 had been closed in 1934. It proved that only 3 additional ones were gone. Evidently the Province of Friesland had accepted most of the municipal decisions not to close Public schools!

Provincial Government mentioned that only a few schools had been closed in 1985, partly because of its efforts to prevent worse (Gedeputeerde Staten, 1985, p 72).

Table 5.9 shows the result of the second HOB operation round of 1987 as well (see subsection 5.6.5.3). The total result of the three operations is shown in the central column for reasons of readability.

The large numbers of both closures and school foundations involved *a shift from the deep countryside to cities and to suburbia*. National government developed an industrialization policy during the post-war decades, concentrating on regions with a high level of unemployment. These were to be found especially in the Frisian southeast. Drachten and Heerenveen, both 18th century moor colonies, developed to become the second and the third largest cities of Friesland. This population growth, found in old towns like Leeuwarden (the capital), Sneek (4th) and Harlingen as well, led to the foundation of dozens of schools.

In 2008 the numbers of primary schools (institutions) in the cities of Leeuwarden, Drachten, Heerenveen and Sneek were respectively 28, 15, 14 and 10. Before 1996 these were substantially higher even!

Table 5.9 School closures and school foundations in the Province of Friesland 1933 – 1992

Period	1933 – 1985				1986 – 1992		
Type	Public	Particular	Total period	Total general	Total period	Public	Particular
Closures	32	3	35	50	15	7	8
Amalg. Clos.	--	27	27	31	4	--	4
Foundation	36	49	85	88	3	--	3
Net result	+ 4	+19	+23	+7	-16	- 7	-9

Of the *religious schools* it is not known when closures took place. Checking the double circles of De Jager, it proved that all the villages concerned, like Heeg and Hommerts, had only one left. The only exception is Wouterswoude (former Dokkum Inspection). It has schools of authorities belonging to different acknowledged religious (sub-)directions and their associations.

We may assume that all these closures were amalgamations, bringing the one school left under a common authority of both the 'Hervormde' and 'Gereformeerde' church. Here too we find quite a number of foundations, amply compensating for the closures.

In the *first round of the HOB operation* (1985) only six 'regular' (non amalgamation) closures took place in Friesland. Four of these were analysed by the present author for potential travel problems, as part of a Ministry of Education effort to have these problems objectified. The cases are discussed in textbox 5.3 in order to show how different in character problems were.

Three of the cases were rural in character the other one was urban. The declining pupil numbers presented will have been caused partly by the sharp decline (- 18%) of the basisschool population from 1980 to 1985 (see Van Dam 1995, p. 112).

The Birdaard Public school had 29 pupils in 1976. A number of 23 were required. A conflict between parents and staff made that in 1983 only 7 were left.

The Wanswerd PC school had 32 pupils in 1980. It had to count 50, because of a second PC school in nearby Birdaard. The pupil numbers went down only to 27 in 1984.

The Hidaard PC school had just enough pupils in 1981 (24), but went down to 14 in 1984. This is likely to have been a case of expected closure, leading to factual closure.

The urban Heerenveen PC 'Petra school' needed 75 pupils. It suffered from the ageing of the neighbourhood population. In 1980 there were 113 pupils still (including toddlers) in 1984 56 only. A decline this fast is likely to have been partly caused by expected closure too!

In two of the PC cases we found both the road to the next school and available public transport worryingly bad (De Boer and Van der Veen 1986, p. 2.0)

Textbox 5.4. School closures by loss of pupils for various reasons

The 23 pupil minimum (see subsection 5.6.5.1) was *not always decisive* for the transformation into a basisschool. Arguments for this were growth potential, 'sufficient public education' and exceptional traffic conditions. This is demonstrated by a report on decisions taken by the Council of State upon appeals against closures (Under Minister 1986, pp.10–15).

The 1985 national list of schools with less than 23 pupils counts 33 cases for the whole country, 27 of those being public in character. The smallest one, the Public school of Ellewoutsdijk (Province of Zeeland), counted 12 pupils only. It survived as a formal satellite of a school elsewhere.

The *conclusion for the 1935 – 1985 period* is, in terms of accessibility, that fairly little happened and that the modest concentration, which took place in the countryside, cannot have had substantial effects on the distances from home to school.

According to the 1990 SCP 'school and scale' study only 7% of the population of the three northern Provinces (Friesland, Groningen and Drenthe) lived in a settlement without a public school at a distance of >3 km to a Public school in the next settlement (Blank and Boef 1990, p. 55).

5.6.5.3 The second round of the HOB operation

The second HOB round of 1987 was intended to see which of the new basic schools had managed to attract sufficient numbers of pupils.

The result was closure of 186 of 8,607 schools nationwide. We will assess the impact on Frisian schools by comparing the van Dam data for 1985 and 1992. These data include the addresses of the schools, enabling registration of school relocations.

The second HOB operation did reduce the number of schools in the Province, but only by 16: from 577 to 561, a reduction of less than 3% (see Table 5.8). For the small settlements of Gaast, Nyeberkoop and Warfstermolen it meant the loss of the only local school. For the first time more particular schools were closed than public ones. The decline of birth rates had taken its toll.

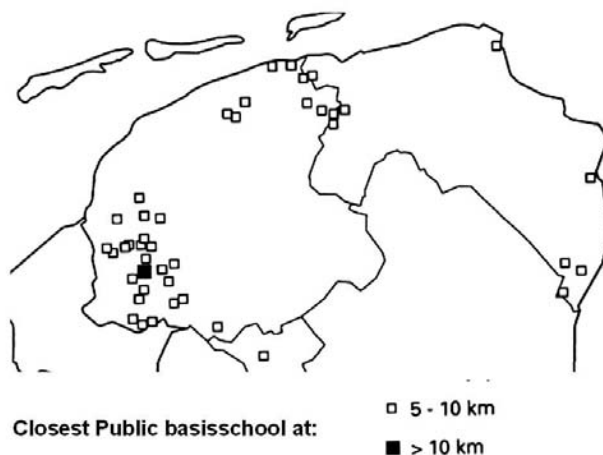
A remarkable outcome was that 43 schools were relocated. There were hardly signs of the creation of common locations, called school islands though (see chapter 6).

As in the first round of HOB the *impacts for Frisian schools and pupils were modest*. For the inhabitants of the three settlements which lost their school an alternative was available within 4 km. travel distance. This does not guarantee a safe journey though, especially because at such a distance there is no school transport provision.

Van Dam identified in 1992 two Frisian regions with a relative lack of Public schools, being roughly Dongeradeel (northeast) and Wûnseradiel/Wymbritseradiel (southwest), being both Municipalities with a history of shifting from public education to particular education. See

map 5.9. The map shows too that public education is considerably stronger in neighbouring Provinces.

The map does not show the present situation for Dongeradeel, being much worse after the 1995 closure of the Ternaard school and especially the 2001 closure of the Metslawier school. The only black 'spot' is the village of Gaastmeer (see subsection 5.6.5.5).



Map 5.9 Settlements in the north-eastern part of the country with a Public school at a distance of more than 5 and 10 km respectively in 1993. Source: Van Dam 1995, p. 118.

5.6.5.4 Summarising: modest losses for villages having improved perspectives

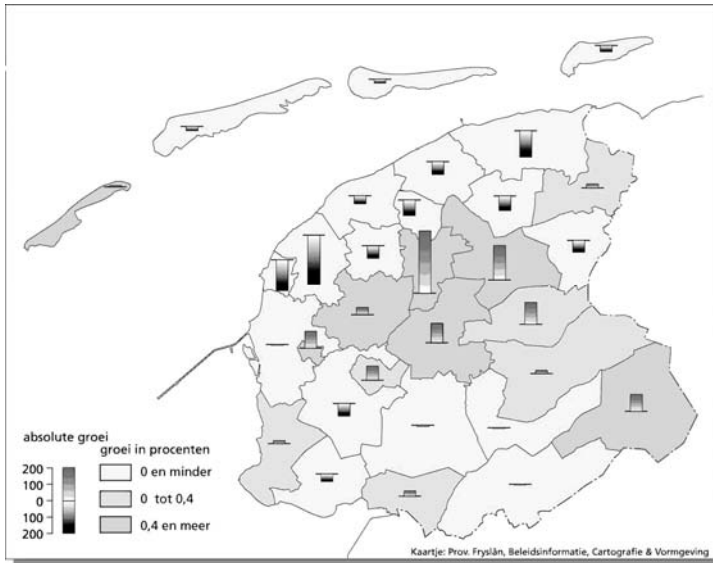
The impact of general developments since 1934 and of the HOB economizing operations was such, that the school density of the Province of Friesland was not substantially affected, either by decline or by active closure operations.

Population development being directed by the Province towards regional centres, these developed larger numbers of schools, whereas the common villages witnessed losses, both in population and in numbers of schools. Nevertheless the 1933 to 1992 period exhibited only a modest increase in the numbers of schools.

In the countryside the school density decreased. The distances to the nearest school remained less than 5 km. though for all settlements with more than a few hundred inhabitants. Only in some areas public education came outside this reach.

Bonnerman and Huigen calculated that only 4% of the Frisian population had to do without a local school. For only 1% the distance to the school elsewhere was over 3 km (cited by Blank etc. 1990, p. 54).

Since the nineteen eighties the villages have better perspectives for continuity of their schools because modest housing development is allowed. Yet the process of population decline is continuing, especially for the Municipalities at the northern periphery of the Province. See Map 5.10.



Map 5.10 Population development in the Municipalities of Friesland during the year 2006 (Source: website Province of Friesland www.fryslan.nl).

A distinction is made between absolute growth (and decline) and growth (and ...) in percentages.

5.6.6 The 'Equipment and accessibility' operation of 1996: changes at the levels of authorities, institutions and locations

5.6.6.1 The character of the operation

Although officials of the Ministry of Education launched a frontal attack on the rural school, the responsible Under Minister followed the agreement for the government coalition to protect rural schools (see subsection 5.3.2). Given the demand to economise, urban schools had to be closed instead. Indeed urban schools often did not comply with minimum pupil number standards. Blank and Boef stated that 18% of the schools in Municipalities with over 100,000 inhabitants were sub-standard with regard to pupil numbers, having less than the required 125 pupils (Blank and Boef 1990, pp. 110 and 47 respectively).

The approach followed in 'Equipment and accessibility' was based on an agreement with the national associations of school authorities on the principles and quantitative standards for the foundation of new schools and continuance of existing schools.

The following list of *characteristics* is typical of this operation, being valid still in 2009:

- enhancing the creation of large school authorities, being able to manage an increased financial responsibility,
- introducing population density as the basis for minimum school size of a Municipality, (the minimum being 23 pupils), as a better proxy for school distance than population size,
- allowing division of the municipal territory in parts having different population densities and, by means of that, allowing different pupil minima, higher than the municipal norm in more densely populated areas and lower than the norm in less densely populated areas,
- allowing continuance of too small schools (having 23 pupils at least) on condition of an average school size of the school authority concerned of 10/6th of the minimum size (a stimulus to create large authorities),

- allowing too small schools (50 pupils) to continue as a satellite if the next school of the same denomination lies at a distance of 5 km. as the crow flies, the distance being a proxy of the 6 km. threshold for pupil transport accepted by the Council of State, the highest administrative court,
- allowing school locations to be continued informally as non-financed satellites of other schools, opening the opportunity for continuing local education without additional cost for the Ministry,
- introducing a minimum pupil number of 200 for foundation of schools, with higher minima for densely populated Municipalities, to restrict the foundation of new schools,
- transferring both funds and budgetary responsibility for edifices to school authorities (daily maintenance) and Municipalities (structural maintenance and construction of new buildings), to put an end to yearly budget overrunning.

The approach is a fascinating marriage of school concentration ambitions and protection of rural schools with the predictable effect of a gradual reduction of the number of schools which was shown indeed in chapter 3.

There are some peculiar elements in the approach though, such as:

- the (ab)use of the 23 minimum, as fixed in regulations. There is a possibility to (negatively) exceed the minimum of 23 pupils in two out of three cases but not in the case of average school size. This is not logical, there is no warning for it and therefore it functions like a trap for the latter case. In Fryslân at least two schools were caught in it: the PC Hemrik school (2006) and the Public Goingaryp school (2008).
- the loss of privileges for public education as a basic provision. In cases where a 20th century monopoly of religious schools reigns it should be possible to found at least one public school complying with the minimum size of existing schools. The letter of the relevant regulation seems to offer the opportunity for such. See subsection 5.4.5.

Text box 5.5. Unsatisfactory elements in the present regulations for founding and continuing primary schools.

The new approach of working with population density in stead of population numbers as the foundation for minimum school size, and the new opportunity to apply a different threshold for an urban centre of a Municipality was explained by the Under Minister using the Frisian example of Smallerland. Given the relatively high population density of the Municipality the threshold is relatively high (100 pupils in 2003, 102 in 2008), but by using the possibility of dividing the municipal territory in two parts with different thresholds, based on the municipal threshold, relatively small country schools might be saved (Under Minister of Education 1991, p.25).

Smallerland has a relatively large territory with the substantial central town of Drachten. By dividing the territory in an urban part and a rural part, the threshold is increased a little for Drachten but lowered enormously for country schools like those of Houtgehage and Drachtstercompagnie. The Municipality does not use this opportunity to maintain small schools, but other ones in fact.

Developments as caused by changes in government policies will be discussed in the following *three subsections*:

- the development of *school authorities* according to size and scale of operation in 2007 (subsection 5.6.6.2), and the motives for this development,
- the development of the number of *settlements with primary schools*, being public or particular in character from 1933 to 2007 (subsection 5.6.6.3),
- The incidence of a *local discrepancy between the number of institutions and locations* (subsection 5.6.6.4).

For the first and the second subsections quantitative results will be presented following the distinction of Friesland in the Inspection districts of 1933 in order to assess whether the old divisions between public and particular are still visible.

Table 5.10 The numbers of school authorities per former Inspection district and denomination and the numbers of schools governed by these in the Province of Friesland 2006.

Authorities crossing the old Inspection borders (only few and insubstantially so) are mentioned in their core area. Authorities covering the entire Province (2) or operating dominantly outside the Province (1) are not included. These govern 40 schools altogether.

	Insp.	Dokkum	Leeu- arden	Sneek.	Heeren- veen	Total
Denomination	School nrs					
Public	1	2	2	3	1	8
	2 – 5	-	3	3	-	6
	6 – 10	-	2	1	-	3
	11 – 15	1	1	2	4	8
	15+	1	1	-	2	4
Subtotal		4	9	9	7	29
Protestant. Chr.	1	5	-	1	10	16
	2 – 5	-	3	1	3	7
	6 – 10	2	4	1	1	8
	11 – 15	2	-	3	1	6
	15+	1	-	-	-	1
Subtotal		10	7	6	15	38
Other	1	-	1	1	2	4
	2 – 5	-	-	1	-	1
	6 – 10	-	-	-	-	-
	11 – 15	-	-	-	-	-
	15+	-	-	-	-	-
Subtotal		-	1	2	2	5
Total		14	17	17	24	72

5.6.6.2 *Reduction of the number of authorities, an opportunity to close schools or perhaps to continue some?*

In Dongeradeel we have seen a spectacular reduction of the number of school authorities working in the area and the introduction of authorities working on a higher spatial level than that of the Municipality. Two of the latter authorities were operating even at a provincial level, being those of the Roman Catholic and the Liberated Reformed schools.

The picture is roughly the same for the Province as a whole, but for different Municipalities it is in different stages of development.

Table 5.10 shows the number of school authorities of small and large sizes per former Inspection district for the most important denominations, PC and Public, allowing for quantitative comparison.

PC schools used to be organized at the level of the individual village, having single school authorities in the countryside. Public schools were organized at the municipal level, mostly governing a number of schools, but in some small cities and on little populated islands only a single one.

A division about the former Inspection districts is chosen to see whether the old contrasts between dominantly PC and Public school areas are still visible. Given developments in Dongeradeel, it might be expected that:

- PC authorities have become comparable in numbers and/or size to public authorities and that
- numbers are reduced where the respective types of school are relatively weak: public education in the Dokkum and Sneek Inspection districts and PC education in the Leeuwarden and Heerenveen Inspection districts.

It is clear that the *PC authorities* still are a very mixed company. Yet only about 10% of the schools have still their own authority. In the former Heerenveen Inspection district one finds 11 village authorities though, nearly all of those located in Opsterland, once the poorest and most socialist Municipalities of all. A matter of a slightly anarchist Christian population? Elsewhere larger authorities have been created, often on a municipal basis. The largest one is the Dongeradeel PC authority with 16 schools.

The *Public school authorities* have become a mixed company too, both in formal status and in size. For status see textbox 5.6. Traditionally municipal government bore full responsibility for public education. In some cases (incorporation of a particular school in a public one) this was delegated to a 'special administrative committee'. Some Municipalities, like the small city of Bolsward are still governing single schools. There are two four Municipality authorities, one with 18 schools (Northwest Friesland), one less than the Municipality of Heerenveen authority.

The *Roman-Catholic provincial school authority* proves to be the largest one with its 30 schools.

Amalgamations of Public school authorities have taken place at a modest scale only. The present number of Municipalities is 31, the number of authorities included amounts to 25, which implies that only a few amalgamated. Yet the authorities of Public schools are still larger than the PC ones as a rule. The small Public school authorities are those Municipalities with just a single Public school, like the islands along the North Sea.

Typical for the traditionally strong position of public education in the Heerenveen district is the presence of 5 municipal school authorities with each over 15 schools. Those of Oost-Stellingwerf and West-Stellingwerf amalgamated in 2009.

In Dongeradeel we found (see section 5.4) that both the PC and the Public school authority amalgamations were undertaken to keep small schools from closing.

Several other amalgamated school authorities stated that *the opportunity to save small schools by applying the 10/6th rule for mean school size was an argument to create larger units.*

Municipal government was traditionally fully responsible for Public schools. If for instance a new school teacher had to be hired the Municipality made the decision to do so. In the latter decades of the 20th century some village schools were saved by incorporating a particular school into a Public school. In order to protect its (partly) particular character a municipal 'administrative committee' (bestuurscommissie) with representatives from both sides was made responsible for the school. This formula is used nowadays too to take some political and administrative distance from public education. In Friesland the capital of Leeuwarden and the rural Municipality of Boarnsterhim have chosen for this model. Public education may be separated completely from public administration by the creation of a foundation for public education, with can develop its own policies. The Municipality is likely to have two responsibilities left: approbation of the budget and school (location) planning, being both legal duties. This approach is gaining field in Friesland. In 2008 eight different Foundations were governing public education of 14 Municipalities with 122 schools.

Textbox 5.6. Three types of Public school authorities

Apart from 24 single PC or Public school authorities shown in Table 5.10 there are a number of authorities governing a school of a different signature, 'neutral particular', which often are co-operations of former Public and PC schools, as in the case of Hindeloopen.

The 'Equipment and accessibility' operation threatened the continuity of public or particular education in some villages and even the continuity of both. Therefore both parties agreed to cooperate in the school that had the best chances to survive.

The approach is found amongst particular schools too. The Roman Catholic school of Bakhuizen expresses the presence of an explicit Protestant Christian contribution in the name of its internet site: 'rkpcfuture' (www.rkpctoeekomst.nl).

There are *only a few single school authorities with a different background*. In the largest city (Leeuwarden) one might expect the largest diversity, but of the 26 official, government financed schools only three are from other authorities than Public, PC, RC and Liberated Reformed.

The present spatial distribution of public and particular school authorities about the four old Inspection districts can be related with some difficulty only to the old pattern, namely PC strongholds in northeast and southwest and public strongholds in the northwest and the southeast.

The familiar pattern in the northeast (former *Dokkum Inspection*, see section 5.4) confirms the expectation of a geographically substantial amalgamation of Public school authorities: a four Municipality amalgamation. The four PC authorities in the same area are operating at a municipal level now.

In the southwest (*Sneek Inspection*) the original number of Municipalities was reduced, but public education is operating at the municipal level only. There is a degree of cooperation though which might lead to a Public school authority covering six Municipalities, and absorbing five administrative committees of individual schools including 30 schools (Administrative Office Gearhing, www.gearhing.nl).

PC authorities have amalgamated in a considerable degree, in spite of their strong position. There are two authorities which each cover two Municipalities.

In the northwest (*Leeuwarden Inspection*) four Municipalities created on common Public school authority at 01-01-08 in spite of the relative strength of public education, whereas PC education organized itself only in two Municipalities (Franekeradeel and Harlingen) at a common level.

The southeast (*Heerenveen Inspection*) was likely to show large school authorities in PC education, because of its relative weakness, and a continuing organisation in individual Municipalities. The latter supposition proves to be correct, but the former proves to be incorrect. There is a startling number of single school authorities in the area. There is no trace of larger school authorities in the Municipality of Opsterland and only a slow development in the three southern Municipalities: the 'Tjongerwerven' authority with 11 schools (www.tjongerwerven.nl).

Conclusions. In Dongeradeel (section 5.4) we have found a distinct increase in the size of school authorities, both public and PC.

The analysis of the present set of school authorities shows that this tendency can be found in the entire Province. Public education is often organized on a higher level than that of individual Municipalities: 25 authorities for 31 Municipalities. PC education follows this tendency. The concentration tendency is likely to continue, for instance by amalgamation of Municipalities as being prepared in the southwest for 2010. Involved are Bolsward, Littenseradeel, Nijefurd, Sneek, Wûnseradiel and Wymbritseradiel, covering the entire Clay meadow landscape.

There are large regional differences still, being only weakly related to the traditional differences between the four landscapes/Inspections.

Personal contacts with several school authorities produced no other arguments for enlarging authorities than protecting small schools.

5.6.6.3 Reduction of the number of institutions

The concentration of school authorities is a background variable for school concentration, being the reduction of the number of institutions. Its impact on travel distance may be mitigated though by preserving locations (subsection 5.6.5.4).

For this analysis an ex ante study was available, making a comparison of scientific expectations and factual development possible.

A 1991 estimate of coming closures of institutions, made for the Governmental Committee for the North of the country (BCN), shows the character of the expected closures in the Province of Fryslân:

- In three urban Frisian Municipalities a total number of 18 schools would have to be closed, three of those in small settlements outside a town.
- The dominantly rural Municipality of Achtkarspelen (= eight parishes), with a number of substantial settlements, was likely to lose another four schools, all public ones in villages with a larger PC school.
- Six settlements were expected to lose their last school. See Pattje a.o, 1991, map a1.

Twelve schools outside the urban municipalities were thought to be able to survive as satellites.

The result was expected to be the loss of 47 schools, 14 of which might survive as satellites. It would imply the loss of 34 school locations.

For the before and after comparison we used the Van Dam data of 1992 and the 2006 data provided by the sites www.bri.cfi.nl , now integrated into www.cfi.nl, and www.schoolinbeeld.nl.

The number of independent schools proved to be reduced by 84, from 561 to 477, being a much stronger reduction than the 1991 estimate. There are at least three possible explanations:

- spontaneous amalgamations of schools, stimulated by favourable financial arrangements of the Ministry,
- semi-spontaneous amalgamations in larger settlements in order to be able to maintain smaller schools in the countryside,
- ongoing population decline.

Amalgamation of schools is uniting one institution (a legal person or body) with another one.

After the amalgamation one of the locations may be closed, but it might be continued too as a satellite or a dislocation. The formal result of the amalgamation may be a new institution with a different (mixed) identity or the factual continuance of an old one. The PC school of Nes (Dongeradeel) was amalgamated with the PC school of Oosternijkerk one day before the closure of the school location on August 1st 2006, without any implication for the Oosternijkerk school status, but with substantial means from the Ministry for the transfer of staff and pupils. This is general practice in school closures.

Spontaneous amalgamations, being amalgamations without any relation to insufficient pupil numbers were found in some cases, and there were probably more.

In the Municipality of Tytsjerksteradiel for instance PC schools at Burgum and Hurdegaryp were amalgamated with other ones in the same settlement, to create schools with greater quality (information from the Municipality PC administration).

At Drogeham (Achtkarspelen) and Kollumerzwaag (Kollumerland) the local 'Hervormde' and 'Gereformeerde' PC schools amalgamated. These were in fact the last remaining candidates for spontaneous amalgamations urged for during the 1930 decade by de Jager! (see subsection 5.6.3).

Semi-spontaneous amalgamations are those which are inspired by a shortage of pupils in some schools, being solved by closure of other ones. These caused a remarkable discrepancy between predictions and actual closures for Smallingerland, being one versus six!

This Municipality was mentioned by the Under Minister, as having potential for creating satellites, and indeed Pattje foresaw four satellites and only one closure (Pattje, 1991, map 1a). In fact only one satellite was created at the hamlet of Veenhoop (Moor hope). The PC and the Public school administrations preferred to close each three schools in the city of Drachten, in order to comply with the 10/6 rule, which allows for continuing too small schools. Evidently the Drachten schools were not thought to be indispensable from the point of view of accessibility.

Ongoing decline was reason for closure, amalgamations and quasi-amalgamations before and after 1996. The 1996 'Equipment and accessibility' operation was not intended to terminate the existence of country schools. Yet quite a few had to be given up.

Three small settlements lost their only school: Hempens, Peins and Zurich. In 2006 and 2007 Nes (Dongeradeel) and Westhoek (Het Bildt) followed. Two other ones lost their second school: Hemrik its PC school (2005) and Stavoren, one of the 11 ancient Frisian towns, its Public school. The Wartena and Wierum schools are unlikely to survive until 2011.

In five cases Public village schools amalgamated with larger counterparts to become *satellites*: Augustinusga, Herbaijum, Oudwoude, Veenhoop and Wyns. The Wyns satellite closed 2007.

Table 5.11 shows the net result of the operation until 2008. The satellites are counted as closures, because these disappeared as institutions while being continued as a government subsidized locations.

Table 5.11 Net result of school institution foundation and school amalgamation in the Province of Friesland 1992 – 2007

	founding	satellite	closure	net res.
Public	+ 4	- 5	- 38	- 39
Part Religious	+ 1	--	- 47	- 46
Part Neutral	+ 1	--	--	+ 1
Total	+ 6	- 5	- 85	- 84

5.6.6.4 Various ways to change the one-to-one relationship between institution and location

The 1996 round of school closures was the first one not to demand closure of school locations, making it possible to economize on staff, without having to invest in new school buildings.

Subsidized satellites were introduced, but it was observed that this concept was not popular. School authorities preferred dissolution of institutions in order to maintain small institutions on the basis of the 10/6th school size rule. They even closed urban schools to comply with this rule.

Former schools could still function as school locations though, qualified officially as 'dislocations'. In that way neither the density nor the spatial distribution of supply was changed. In this subsection we will assess how common this practice was.

The number of school locations may be reduced too without a reduction of the number of institutions. This may be achieved by *assigning two or more schools the same location*,

creating locations with parallel curricula, a case of local school concentration by relocation. This is the subject of *chapter 6*. The occurrence of this practice in Friesland will be assessed in this subsection though, to complete the provincial picture of spatial changes in primary education.

Location responses to institution closure. Closure of a school institution usually is the result of amalgamating one institution with another one. Upon the amalgamation different strategies may be followed for the accommodation of the pupil populations, such as:

- both locations may continue to be used, because each location has insufficient capacity to house the complete population of both schools (the dislocation strategy),
- the population of one location might be divided about two schools,
- part of the pupils may be housed at a temporary location at a maximum distance of 2 km (according to government regulations),
- the remaining location may be reconstructed to create sufficient capacity.
- a new location may be developed, most likely between the two former ones (a relocation strategy).

The *dislocation strategy* is a *most unlikely* approach for closure of a *small rural school*, because it is quite costly. A primary school location of 20 pupils, distributed about 8 groups (year levels) cannot do with one teacher. The differences between the respective levels require 3 teachers at least (information from school authorities). The cost involved cannot possibly be born by an individual school institution.

Indeed we found only single case amongst rural school closures: the 2008 forced closure of 't Slúske' Public school at Goingarip, by lack of the minimum number of pupils, being 23. There the responsible Municipality decided to take over the cost of education for some years (<http://www.skarsterlan.nl/persberichten/14-05-08>). In the meantime it was transformed into a satellite of a Joure school and the responsible Under Minister Dijksma decided to continue financing it for reason of an expected increase of pupil numbers as a result of a local housing project. September 2009 national governments (the national Council of Ministers) decided to give the Under Minister the competence to do so in general. ([www.minocw.nl/actueel/nieuws/35794/Discretionaire-bevoegdheid- ...](http://www.minocw.nl/actueel/nieuws/35794/Discretionaire-bevoegdheid-...))

On the basis of the 1996 closures in *larger settlements* a number of at least 25 *dislocations* could be expected for the Province as a whole on the basis of a likely shortage in classrooms at the remaining schools' locations. A considerable portion of these might be expected in the capital of Leeuwarden.

The real number proved to be much less: in 2008 only 15 dislocations were found by scanning the CFI registration for 'Inspection locations' indicating a dislocation supplying a full curriculum, of which eight were found in Leeuwarden indeed. Drachten and Sneek each counted three, Heerenveen one only.

The Municipality of Leeuwarden proved to have the outspoken policy to maintain all old locations for reasons of accessibility and to provide these with modern facilities. At Sneek a certain over capacity was utilised for 'broad school' facilities, giving the school (location) a wider function by housing more or less related neighbourhood facilities (information local school authorities).

In chapter 6 a regional Province of South-Holland case study of this phenomenon and a general study of school clusters or school islands are presented.

Assigning a common location to two or more schools. This strategy may have been chosen in a number of cases. Indeed quite a few relocations occurred in the 1987 – 2007 period, as mentioned before. Part of these movements might be explained by the creation of *school clusters*, maybe with the ‘broad school’ motive. The solution does not seem to have been chosen to solve problems caused by the 1996 closures.

Some schools prove have nearly the same address. These situations traditionally are referred to as ‘*school islands*’, a complex of two or three schools within a pedestrian precinct. The simplest version is two schools built next to one another. In Friesland a few cases were identified in villages like Wirdum and Woudsend. The PC and RC schools of the village of Heeg were located to a new common building in 2007. See for Heeg www.wraldfinster.nl. A quantitative study of the phenomenon based on a national sample is presented in chapter 6.

The ‘*broad school*’ concept inspires several relocation operations, intended to house one or two schools and other facilities in one new edifice. The village of Oostermeer (Municipality of Tytsjerksteradiel) is only one example. The incidence of school clustering in creating broad schools is explored in chapter 6 as well.

5.6.6.5 Development of school travel distances, highlighting part of the southwest region

The school closures of 1996 and later had (again) only a modest impact on school travel distances. The ‘Equipment and Accessibility’ operation, introducing new norms for ‘maintenance’ of primary schools was not intended to get rid of country schools.

Enforced closures occurred in a number of larger settlements. Since these are built relatively densely, the distance to the nearest school will be hardly more than 500m. In a number of cases closed institutions were maintained as school locations, leaving school distances unchanged. At the provincial capital of Leeuwarden, theoretically the worst case, this was explicit municipal policy.

Some rural closures did cause larger distances to the next school of the same identity though. The Van Dam map 5.8 shows only two settlements at a distance of more than 10 km from a Public school. At least in the northeast of the Province this number has increased, because of the Metslawier closure, putting about 10 villages at over 10 km from a Public school.

To produce somewhat more tangible results with regard to travel, *the area identified as a Public school desert in section 5.6.3 (IJlst – Balk – St Nicolaasga) in the southwest is highlighted.*

Map 5.1.1 shows a part of the South-western lake-district. Included are sections of the Municipalities of Gaasterlân-Sleat (with Balk as a capital), Skarsterlân (Joure, to the east of the map) en Wymbritseradiel (IJlst).

On the map nearly 30 locations in the three Municipalities are indicated to be settlements. A few of those are not listed as such by the Province of Fryslân.

Of these settlements only about half (17) had a school in 2008. Public education has become rare as indicated before. There are Public schools only at IJlst, Balk, Langweer and St Nicolaasga. In three of these villages there is a PC school too.

Of course the settlements without a school are relatively small. Harich, the largest one of those, counts 499 inhabitants, according to data of the Province. The smallest village with a school in these Municipalities is Abbega (just outside the map) with 273 inhabitants 2007 (Source: www.fryslan.nl/ page Fryslân in cijfers / Bevolking, inwoners per dorp).



Map 5.11 The south-western Frisian public education desert with the villages of Heeg and Woudsend in the centre. Schools indicated with concentric circles. Source: Google maps.
The Langweer school is not indicated, because waterways make it inaccessible from the west.

Over 90% of the pupils appear to live in a settlement with a school. For some of the largest villages without a school (Harich and Uitwellingerga) the distance to the nearest school is less than 2 km.

Distances to public education are unusually large for substantial villages like Heeg and Woudsend, having a total population of 3,500. Both are now at a distance of over 6 km from a Public school at IJlst and Balk respectively. The smaller village of Gaastmeer (280 inhabitants), west of Heeg, lies even at a distance of over 11 km from the nearest Public school at IJlst.

5.6.6.6 Conclusions for the 1992 – 2007 period.

In the period studied in this section one revolutionary change took place in the structure of Frisian primary education, namely a considerable concentration of school authority. Until this period school authorities were operating either at the level of the Municipality (public education) or at the level of individual villages (particular education). The latter type of authority has become relatively rare except in one Municipality, Schoterland. Both public and particular school authorities are now operating mostly at a much larger spatial scale, in some cases even that of the Province. An important motive for increasing the size of authorities was

the perspective of being able to maintain small schools on the basis of a higher than required average school size.

The number of school institutions declined by about 15%, especially at larger settlements.

Terminating a school institution no longer implied automatically closing the school location. Many of the amalgamated schools in larger settlements continued to exist at two or even three locations. Therefore the increase of the distance to the nearest school was quite modest as a rule. In the case of rural school closure however it could be considerable when taking the identity of the school into account. This was the case especially in a few Municipalities in the north-eastern and the south-western parts of the Province.

One of the *autonomous forces* stimulating school concentration, namely population decline, proves to be still active, especially in the northern fringe of the Province.

5.6.7 Overseeing three quarters of a century of school closures

5.6.7.1 Developments

During about 75 years, demographic changes and a succession of economizing operations have reduced the number of schools, especially in the countryside. For a long time this was compensated to a certain extent with an increase in the cities.

For the development of school travel demand the presence of at least one school or a satellite in a settlement is most important. Table 5.12 presents the development of the numbers of settlements with a school/satellite (irrespective of denomination) and of those with PC schools and with Public schools respectively for the 1932 – 2007 period.

Nowadays the three Northern Provinces constitute one single Education Inspection district only. The division into the old Education Inspection districts is used here to make comparison easier.

The number of settlements with at least one school is decreased by 71 or 22%. Only in a few cases a settlement lost both its schools. The only real example is the Dongeradeel village of Nes, losing its public school in 1983 and its PC school in 2006.

The losses are unequally distributed about the four Inspections and about Public and PC schools.

The Dokkum Inspection counts relatively few complete losses (16%), the Leeuwarden Inspection the most (28%). The cause of this difference may be partly demographic (smaller settlements in the Leeuwarden Inspection district) and partly political, the Dokkum Inspection Municipalities having been more active in closing Public schools before 1934. As we have seen the Municipalities of East- and Westdongeradeel closed quite a few of those before the Marchant operation.

Public education was hit much harder with a reduction to 65% of the settlements it served in 1932, and it was not only caused by Marchant's action (11 of 35%). The overall loss for PC education was only 8%!

In 1932 public education was present in 82% of the 326 settlements with a school, but in 2007 only in 69% of the 255 with a school.

Protestant-Christian education had a more modest presence with 58% in 1932, but nowadays a comparable one with 68%!

Public education was relatively strongest the Heerenveen en Leeuwarden Inspections and it still is: for Heerenveen an 80:30 and a 59:29 ratio in the respective years.

Protestant-Christian education was relatively strong in the Sneek en Dokkum Inspections (56:54, 66:70) and nowadays it is distinctly dominant in those areas 50:30 for Sneek and 63:33 for Dokkum.

Of course these changes have no one-to-one relationship with pupil numbers. In the cities public education tends to dominate and their schools are larger, like they were in 1932. Leeuwarden for instance counts 16 Public schools and only 10 PC ones. In the cities of Drachten, Heerenveen and Harlingen Public schools outnumber PC ones too. Only at Sneek the division is more or less equal.

Table 5.12 Number of Frisian settlements with a primary school, with a primary Public school and with a primary PC school, compared for 1932 en 2007, per Education Inspection district of 1933.

NB Individual settlements may appear in each column: having school(s) as such, specified as Public and/or PC.

Settlements with Inspections	School		Public school		Protest. Chr. school		School	Public	Protest. Christ.
	1932	2007	1932	2007	1932	2007	2007 %1932	2007 %1932	2007 %1932
Dokkum	89	75	70	44	66	63	84	63	95
Leeuwarden	71	51	64	42	36	32	72	66	89
Sneek	82	64	54	30	56	50	78	56	89
Heerenveen	84	65	80	59	30	29	79	74	97
Total	326	255	268	175	188	174	78	65	92

5.6.7.2 Implications of developments for the hypotheses

With regard to our hypotheses the following conclusions seem to be justified:

- the *state of public finance* (hypothesis 2.5.10) was no doubt *a motive for the succession of school closure operations*. The most recent one is likely to have a permanent stabilizing effect on the number of schools by the introduction of high pupil number norms for school foundation.
- the *geographical concentration of control* increased only substantially during the last decade of the 20th century (hypotheses 2.4.1 and 2.4.2). A major motive for this concentration was clearly the opportunity for large school authorities to preserve small schools by achieving a large average school size. Therefore there is no sign that these large authorities tend to reduce their numbers of schools and/or locations.
- the relatively strong *school concentration, caused by the double freedom of providing and choosing education* (hypothesis 2.6.1). The study of school closures since 1932 produced little evidence for this supposition. School founding is no doubt more difficult given these freedoms, but the introduction of high founding norms during the nineteen nineties is likely to be of more importance. Of course, a school with a monopoly in its settlement is likely to be able to survive easier than a school which has to attract pupils in competition with other ones inside and outside the same settlement. School closure operations did not introduce unfavourable minimum pupil norms for rural schools though. This implied that in case of a presence of two schools in a small village, closure of one of these might save the other one, because it could attract pupils of the closed one. We have seen that in several cases initiatives were taken to transform the remaining school into a 'village school for all denominations'. Apart from that the tendency to resort to the last local school, irrespective of its identity could be perceived too. This implies that the hypothesis is not supported by evidence.
- the decline in *religiously oriented education as a result of general secularisation* (2.5.5) is not found at all. In fact the contrary development was found, even in areas dominated by public education. The latter declined more in numbers of schools!
- *declining birth rates* were not found to be an explicit factor in school closures. A concentration of population development was.

- the next hypothesis on '*changing the identity of a school*' (2.6.7) *to save the school location* was conformed therefore, although the easiest ways to do so were blocked by national government in the course of time.
- in the most recent economising operation different opportunities were created to continue education at locations where no longer a separate school institution resides. The loss of this status implied a reduction of the budget for staff (director, janitor) but less so for teaching proper. Therefore it was no doubt accepted sooner than a blunt location closure approach (hypothesis 2.6.3, *economizing on education proper instead of on locations*).

Table 5.13 The assessment of the hypotheses related to the analyses in section 5.6.
The numbers of the hypotheses refer to the sections where these were developed. 2.5.5 = section 2.5

Hypothesis	
2.4.1. A higher and growing geographical concentration of control will naturally lead to a higher school concentration because educational institutions then will have better opportunities to create a qualitatively more attractive and affordable supply of education	–
2.4.2. A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive	+
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools	–
2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration	x
2.5.9. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become an acute problem and is therefore a most important factor in school (re)concentration	+
2.6.1. The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a minimum number of pupils.	–
2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economizing on this cost is less vulnerable for public action on a national level since locations are affected only indirectly	+
2.6.7. Closure of a school may be prevented by changing the character of a school or of a remaining school in a common denomination	+

Legend. – = not confirmed; + = confirmed; x = evidence lacking

5.7 Summary and general conclusions

In this chapter regional school concentration has been studied by three case studies in the Province of Friesland. The Province was selected because it has rural areas which we regard to be representative for rural areas elsewhere.

The outcomes of the three case studies will be summarized separately in terms of general developments and integrated in terms of the hypotheses relevant for those.

A long term (1818 – 2008) case study of the north eastern, deeply rural East- and West-Dongeradeel Municipalities with spectacular changes in the character and numbers of school authorities and school institutions (section 5.4).

During this period of nearly two centuries considerable changes in the numbers and character of school authorities, school institutions and school locations took place.

The number of school authorities changed from (factually) a multitude of village authorities with each one public school to central municipal authorities with only few Public schools, amalgamating to a regional public school authority covering four present Municipalities.

From the second half of the 19th century on newly created village authorities supported by local churches and their numerous members founded Protestant-Christian schools in the larger villages causing closure of several public schools, having lost most of their pupils. This development was caused by a religious revival and a political take-over by religious parties. The introduction of school duty in 1909 and the consequent increase in participation seems to have been of little compensating effect since it was relatively high already before.

Population decline in the countryside, caused by a lack of job opportunities in a mechanizing agriculture industry and by restrictions on suburbanisation, led to a reduction of the number of schools and a near monopoly of the PC schools, in spite of the secularisation of the population. Their authorities too have amalgamated into a regional body covering the present united Municipality of Dongeradeel.

Nearly half of the settlements lost their schools, reducing the school density in terms of schools per km², but, given a rural depopulation, no doubt less so in terms of density per 1000 inhabitants. Only two settlements have a public school left. The distance to the next Public school reaches in some cases 15 km. Of course this requires motorised transport. Hardly anyone takes the trouble. The PC school has become a village school, probably less Christian in character than the original public 'general Christian' school.

A medium term (1848 – 1933) comparative case study of the three southern Education Inspection districts of 1848, investigating the potential demographic explanation of differences between three of the Frisian landscapes with regard to the shift from public education to particular education (section 5.5).

Knowing that demographic developments both with regard to population development and to secularisation were different for the various landscapes, a southern band of Municipalities with representatives from three contrasting landscapes was investigated for school development during the period which showed the major part of PC school foundations and Public school closures.

In the 'Forests' landscape of the southeast, with a growing population and an early start of the secularisation process the overwhelming number of public schools increased even when a series of particular schools was founded. In the 'Clay meadow' landscape of the southwest, which was secularised later and had a stagnant population, public education was dominated already by particular education at the end of the period, as was the case in the Dongeradeel Municipalities.

A relatively short term study (1933 – 2006) of the entire Province, assessing the general spatial development of school authorities and school institutions with special attention for repeated efforts of national government to reduce the number of schools (1933, 1984, 1995; section 5.6).

In the 1933 operation national government sought for financial reasons to have small rural closed, without it being formally responsible. The number of village schools was reduced indeed, but proportionally less in the more secularised landscapes where socialist dominated Municipalities opposed the development. During later economizing operations rural schools enjoyed a degree of protection, allowing for a minimum school size of 23 pupils under certain conditions. Ongoing rural population decline, especially in the northern and western fringe of the Province took its toll in country schools though. Apart from the Dongeradeel 'Public school desert' a second one developed in the Southwest, having a similar religious orientation.

The overall conclusion is that in general the school density was protected remarkably well, in spite of three successive economizing operations. In 1932 a number of 326, often very small settlements had a school. In 2007 255 settlements (78%) had one still. Public education

though was reduced to 65% of the original number of settlements where it was represented (a reduction from 268 to 175). It means that in 2007 *public education is present in hardly more than 50% of the 326 settlements of 1933. It implies that roughly 10% of the pupils live outside of the 4 km range of a Public school. In some regions in the PC dominated southwest and northeast of the Province public education deserts are found with distances of up to 15 km to a Public school.*

Table 5.14 The overall assessment of the hypotheses discussed in chapter 4
The numbers of the hypotheses refer to the sections where these were developed. 2.5.5 = section 2.5.

Hypotheses	Sections	5.4	5.5	5.6
2.4.1. <i>A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.</i> This is indicated by a decrease of the numbers of authorities, and of similar ones of institutions and locations.		+		–
2.4.2. <i>A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive.</i> This is indicated by a decrease of the number of authorities, and of lower ones for institutions and even more so for locations		+		+
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.</i> Given the process of secularisation this is indicated by an in increasingly positive ratio between Public and particular schools.		–	+/-	–
2.5.7. <i>Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration.</i> This hypothesis was confirmed earlier but the impact on a relatively rural Province remained to be seen.				x
2.5.9. <i>A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become acute problems and is therefore a most important factor in school (re)concentration.</i> This hypothesis was confirmed earlier for the nineteen nineties, but it might have happened before, in the nineteen thirties for instance.		+	+	+
2.6.1. <i>The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.</i> This is indicated by the presence of school institutions in larger settlements only.		–		–
2.6.3. <i>In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economising on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.</i> This hypothesis was confirmed earlier in a general sense, but its impact on the survival of locations was not quantified.		x		+
2.6.7. <i>Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination.</i> This is indicated by the incidence of school institutions ‘changing colours.’		x		+

Legend. – = not confirmed; + = confirmed; x = evidence lacking

Discussing the hypotheses. A number of hypotheses were discussed in sections 5.4, 5.5 and 5.6. The outcomes are summarised below.

- *The state of public finance as a motive for school concentration* (hypothesis 2.5.10) was no doubt a motive for the succession of school closure operations, and not only during the 1980 –

2005 period which is our focus. The oldest one found was the municipal economizing of the eighteen-eighties during the agricultural crisis of the decade. The most recent one is likely to have a permanent stabilizing effect on the number of schools by the introduction of high pupil number norms for school foundation.

- *The relationship between geographical concentration of control and school concentration* (hypotheses 2.4.1. and 2.4.2). A certain concentration of municipal control during the 19th century no doubt made it easier to close schools in the 1880's. The geographical concentration of control increased substantially only during the last decade of the 20th century. A major motive for this concentration was preventing school closures. Large school authorities were created to seize the opportunity to maintain small schools by achieving a large average school size. Therefore there is no sign that these large authorities tend to reduce their numbers of schools and/or locations.

- *School concentration caused by the freedom of providing education* (hypothesis 2.6.1). In the 19th and early 20th century (Public) school closures were caused by particular school foundations. School closure operations after 1932 did not introduce unfavourable minimum pupil norms for rural schools. This implied that in case of a presence of two schools in a small village, closure of one of these might save the other one, because it could attract pupils of the closed one. Indeed a tendency to resort to the last local school, irrespective of its identity could be noted. A 'Let die and live' strategy, based on that notion was followed in some cases therefore. This implies that the hypothesis is not supported by evidence.

- The next hypothesis on '*changing the identity of a school*' (2.6.7) to save the school location was confirmed. In several cases initiatives were taken to transform the remaining school into a 'village school for all denominations'. The easiest ways to do so were blocked by national government in the course of time. Nowadays special committees are created to safeguard the multi denominational character of school with a uni-denominational formal status.

- In the most recent economizing operation different opportunities were created to continue education at locations where no longer a separate school institution resides. The loss of this status implied a reduction of the budget for staff (director, janitor) but less so for teaching proper. Therefore it was no doubt accepted sooner than a blunt location closure approach. Hypothesis 2.6.3, *economizing on education proper in stead of on locations* found support in data collected.

Two school concentration phenomena deserving scrutiny

In the 1933 – 2006 case study we found a discrepancy between the number of institutions and that of locations in several cities after the school closure operation of the nineteen nineties. The provincial capital of Leeuwarden counts 34 institutions but 8 more locations with a complete curriculum, which was hitherto unheard of. The urban Municipality of Sneek has 11 schools and 3 additional locations (www.cfi.nl, see section 5.2).

This was reason to do a detailed case study into this phenomenon (section 6.2).

A most remarkable phenomenon found in a few Frisian cases, is the *clustering of identical curricula at one location*, supplied by institutions of different denominations. This phenomenon is studied for the Netherlands as a whole (section 6.3).

Distance a problem as such?

Closures of Public schools did put this basic provision at considerable distances in some cases. Distances are likely to increase further in the near future. The Municipality of Heerenveen, that is the Burgomaster and the responsible alderman, recently stated that Municipalities cannot afford anymore to maintain (all) schools with less than 125 pupils (Friesch Dagblad 09-10-09).

This may seem reasonable from a financial perspective, a basic question though is whether the resulting larger distances can be called reasonable (chapter 7).

Table 5.15 Marchant closures in Friesland and the travel distance to the next public school per school and per Inspection District.

	Only school	Publ. < 2km	Publ. < 4km	Publ. > 4km
Dokkum				
Drogeham	-		+	
Engwierum	-			+
Hantum	-		+	
Kollumerpomp	-			+
Marrum	-		+	
Murmerwoude	-	+		
Oenkerk	-	+		
O-nijkerk	-		+	
Oostrum	X			+
Roodkerk	X	+		
Suameer	-	+		
Heerenveen				
Nijega	-		+	
Slijkenburg	X			+
St. Johannisga	-	+		
Leeuwarden				
Engelum	X		+	
Firdgum	X		+	
Hijlaard	-		+	
Lutkewierum	X	+		
Oosterend	-		+	
Sneek				
Broek	X	+		
Cornwerd	X			+
Cornwerdznd	X			+
Follega	X			+
Goenga	X	+		
Hemelum	-			+
Hommerts	-			+
Idskenhuizen	X	+		
Tirns	X		+	
Woudsend	-			+
29	14	9	10	10

Chapter 6.

Local school concentration

6.1 Introduction. Regional case studies and generalising national studies of contrasting phenomena

6.1.1 Background and purpose

Regional school concentration in primary education, i.e. a reduction of the number of settlements with a supply of schools of certain denominations or even of schools as such, was regarded to be politically undesirable by regional government and national associations of school authorities around 1990 (see subsection 3.5.2). It would have caused long school journeys with inherent traffic safety problems for the pupils.

In order to stabilize the number of primary schools (a confessed financial goal) *urban schools were closed* instead. Urban school density was thought to be such that the next school, be it public or particular, would be still within acceptable walking distance.

In chapter 5 we have seen indeed that the number of settlements without a school increased only modestly during recent decades, forcing only modest numbers of children to travel to a school elsewhere, but that relatively large areas had lost their Public schools in the course of time.

It was noted however that *urban school closures did not always imply closure of the locations* concerned, as was the case in rural secondary education (chapter 4).

These primary education locations were often continued as ‘dislocations’ of a second school. This phenomenon was found in a few of the most important Frisian cities, Leeuwarden and Sneek (subsection 5.6.6.4). Both counted several locations of former schools where full curricula were supplied still, mitigating the increase of home-to-school distances. The local school authorities thought at least a number of these locations to be necessary from the perspective of accessibility.

It was noted *on the other hand* that in smaller settlements, like the Frisian village of Eastermar, *schools (institutions) were clustered at one location*, thereby increasing the mean distances to school for those not interested in school denomination (public versus types of particular education).

These *remarkable contrasting counter tendencies in school concentration*, which are confusing spatial developments, are the *subjects of this chapter*, that is:

- the persistence of school locations in spite of amalgamation of institutions and
- the reduction of the number school locations in spite of persistence of the number of institutions.

Systematic knowledge of these phenomena, being essential for an assessment of resulting travel distances, was *missing altogether*. An extensive literature survey yielded no results.

The *purpose of this chapter* is to assess the following subjects:

- how common these phenomena are,
- which motives are presented by responsible agents, like Municipalities and school authorities, to create a discrepancy between the number of institutions and the number of locations, and especially
- whether the travel distance to school and its implications do play a role in those considerations and
- what the implications in terms of minimum school travel distances might be.

To those ends a number of empirical studies were undertaken to be presented in the sequel.

6.1.2 General character and outcomes of four studies into local school concentration

6.1.2.1 Introduction

This chapter is based mainly on two pairs of studies.

Sections 6.2 and 6.3 are dedicated to studies of the ‘more locations than institutions’ phenomenon, introduced especially by the 1996 economising operation.

Sections 6.4 and 6.5 are dedicated to studies of the ‘less locations than institutions’ phenomenon, inspired by Frisian cases.

The purpose of each of these studies, the research approaches applied and their main outcomes are presented successively.

This subsection is concluded with the hypotheses to be discussed in this chapter as a whole, presenting the general results as well.

6.1.2.2 Concentration of school institutions without related concentration of locations, an in-depth case study of the Municipality of Zwijndrecht

The phenomenon of continuing former schools as satellites is subjected to a case study of school location development in the city of Zwijndrecht (*section 6.2*). This Province of South-Holland city is one of several dozens which suffered from the 1996 economizing on urban schools.

The study is intended primarily to assess to which extent school density is maintained by continuing locations of former schools and whether school travel problems may have been prevented by this.

School location development is studied in this case for a longer period though. Therefore it has two *additional functions*:

- showing the impact of urbanization on schools in an originally rural area. As such it is the counterpart of the Dongeradeel case study (*section 5.4*).
- demonstrating the impact of demographic ageing of town quarters on their supply of education.

A variety of research methods is applied, being a literature survey into local school history, study of education data bases (CFI.nl, Schoolinbeeld.nl) and interviews with local education officials.

Schools will prove to have been closed because of demographic change in the nineteen-eighties and because of government economizing around 1996. Over one third of the present (full) school locations prove to be non financed satellites of institutions at other locations, so-called ‘Inspection locations’. There is hardly a sign of a reduction of the number of satellites.

These are necessary by lack of capacity at the official locations and desirable for reasons of spatial competition between different denominations.

6.1.2.3 Concentration of school institutions without related concentration of locations, a scan of the urban 'Drechtsteden region' to the southeast of Rotterdam

The search for 'more locations than schools' was extended to the region of which Zwijndrecht is part in order to make sure that it is a common phenomenon (*section 6.3*).

The more or less continuous urbanized area southeast of the city of Rotterdam counts eight Municipalities with the total number of 355,000 inhabitants. Six of these are part of the administrative 'Drechtsteden region'. Therefore we will use this name for the area under study. The regional centre is the city of Dordrecht, counting 120,000 inhabitants.

In this generalizing regional study the two school data bases of CFI and 'Schoolinbeeld' are scrutinised again for full school locations. Sites of the Education Inspection (onderwijsinspectie.nl) of school authorities and of individual schools are consulted in case of doubt.

The analysis will show that the phenomenon of full school satellites is quite common. The area counts 112 primary school institutions and 43 additional Inspection locations. Both the most and the least populated Municipalities have relatively few of these, most likely because they were confronted with relatively modest increases in minimum pupil number standards.

6.1.2.4 Traditional concentration of locations without related concentration of institutions. The nationwide application of the principle of 'school islands'

The phenomenon of *location concentration without related institutional concentration (amalgamation)* is the subject of a national survey of a sample of cities, allowing for generalization concerning this phenomenon (*section 6.4*).

The purposes of the study are among other matters:

- to find the origins of the principle and
- to identify the motives for this type of location concentration, that increases minimum school travel distances and
- to assess how common this physical concentration of institutions is

For the first and second purposes a literature survey has been undertaken. For the third purpose a quantitative analysis of the relationship between municipal housing production and the construction of multi-school precincts ('school islands') was carried out.

School islands are likely to be found especially where the development of new town quarters requires the founding of schools of different denominations. A selection of Municipalities with the highest housing production in the 1993-2002 period is taken from the 'Statline' data base of the CBS national statistics office and confronted with less productive ones.

For the school data the CFI and 'Schoolinbeeld' sites are used again. Where the incidence of a common precinct is doubtful, in spite of identical six mark postal codes, additional use is made of Google Maps (see De Boer and Velstra 2005).

It will show that common precincts are found in many places, without being commonplace though. It will be demonstrated that the roots of it can be found in Amsterdam town planning of the nineteen-twenties. There megalomania was sometimes a motive alas. Elsewhere functional considerations, like the possibility to redistribute classrooms or the opportunity to share facilities like a gymnasium must have prevailed.

*6.1.2.5 A new wave of concentration of locations without related concentration of institutions.
The nationwide application of the 'broad school' principle*

The 'broad school' ideology, seems to be a new motive for school location concentration (section 6.4). This ideology promotes the supply of a set of school related services at the school location. The feasibility of this approach is enhanced by school concentration in the centre of a town quarter.

A literature search has been undertaken to document the principle and its penetration. School architect sites have been visited to assess the share of broad schools and of multi-school locations.

It will be shown that the development of 'broad school islands' is accepted widely indeed, but that 'virtually' concentrated broad schools and individual broad schools are found frequently as well.

An important motive for Municipalities to promote the broad school is the possibility to economize on school buildings by replacing individual buildings by common ones.

It is a contribution to an increase of minimum home-to-school distances initiated by national government by raising minimum pupil number norms for existing schools and especially for schools to be founded.

6.1.2.6 Hypotheses to be discussed

In our effort to theorize on school concentration (chapter 2) a number of hypotheses were developed. A set of these are relevant for the analyses in this chapter. These hypotheses are listed in table 6.1. It indicates too which of the studies provide evidence for the discussion of specific hypotheses.

The broad Zwijndrecht Municipality case study (section 6.2) contributes to the discussion of a range of hypotheses, increasing the understanding of a number of phenomena.

The narrower regional and national studies presented in the sections 6.3 to 6.5. have a function of testing one or two hypotheses, allowing for quantitative results.

Table 6.1 Hypotheses on local school concentration, discussed per section of the chapter. The numbers of the hypotheses refer to sections of chapter 2, where these were developed (2.4.1 = section 2.4)

Hypothesis	Section	6.2	6.3	6.4	6.5
2.4.1. A higher and growing geographical concentration of control will naturally lead to a higher school concentration because educational institutions then will have better opportunities to create a qualitatively more attractive and affordable supply of education		X			
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.		X			
2.5.6. Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.		X			
2.5.8. In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.		X		X	x
2.6.1. The freedom of supplying education causes a relative (sectoral) school concentration since the suppliers have to attract pupils from a large area in order to collect a minimum number of pupils.		X			
2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper.		X	X		
2.6.4. In a school system with an important role for local government in providing school		X	X	X	X

locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance				
2.6.5. The creation of regional school authorities (geographical control) is motivated largely by the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.	X			
2.6.6. Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.	X			

Legend: X = important contribution; x = marginal contribution

6.2 Concentration of institutions without related concentration of locations, the case of the Municipality of Zwijndrecht

6.2.1 Background and set-up of the study

The urban case study of the Municipality of Zwijndrecht is in an in-depth study of a similar range as the rural study of the Dongeradeel Municipalities used in the preceding section 5.3. The region covered by the Municipality of Zwijndrecht at present is studied from the middle ages on. It provides additional information on the administration - authority - institution - location relationship in an entirely different landscape.

By presenting successively the development of the Municipality (stemming from seven largely rural village Municipalities), its school authorities, school institutions and school locations, the outcomes of this case may be compared with the Frisian outcomes, especially those of the Dongeradeel case study.

The case of Zwijndrecht was selected knowing that:

- substantial school closures had taken place during about a decade, that
- these produced a number of 'Inspection locations' and that
- information concerning its school history was available.

An exploratory study for a paper in a US Transportation Research Board journal yielded the maps 6.1 and 6.2 (De Boer 2005). It confirmed the fitness of the city and its sources for an extended case study. The fruitful cooperation with the city officials gave access to the variety data required for the school choice case study in chapter 8.

The school location case study is of *relevance for a number of our hypotheses*, as presented in table 6.1, column 6.2.

The development of school locations is directly related to urban development and to population development, which may be diverging for older and newer neighbourhoods.

Decision making on school institutions and their locations is an interplay between school authorities and local government. The Municipality has to develop a location to a school. Once the school occupies a location it cannot be forced to reallocate. Local public administration may be a Public school authority as well, being responsible for the provision of 'sufficient public education' anyhow (see chapter 3).

The spatial scale of operating of these authorities may have an impact on their institution and location policies. Larger authorities might be expected to be more detached, caring less about small local facilities. However, they just as well might be continued with the explicit purpose to maintain a dense network of school locations, optimising the competition with other authorities, active in the same area, as was demonstrated in our Frisian case studies (see chapter 5).

The present local pattern of school locations can be understood only as the result of decisions of authorities within the framework of the history of urban and related population development.

Subsections 6.2.2 to 6.2.5 are dedicated to the development of local government, of school authorities, school institutions and school locations respectively, as related to urbanization and population development at Zwijndrecht.

The *research for this case* consisted of a mixture of methodologies, namely:

- a search on the national sites mentioned in the introduction and of school authority and school sites
- a literature survey (public library and library of the local museum),
- analysis of municipal data,
- local field work and
- interviews with key persons, being officials of the Municipality, of Public, Protestant-Christian and Roman-Catholic school authorities and of some of their schools.

The analysis is similar to that of our Dongeradeel case study (section 5.3). There we saw a loss of *village independence*, to the advantage of existing regional Municipalities. In the 'Zwijndrechtse Waard' (Zwijndrecht Holm) region, most of the original 14 rural Village-Municipalities were swallowed by a few more populated ones, leaving only two Municipalities and part of a third one.

The scale of operation of *school authorities* increased at Zwijndrecht Holm as it did at Dongeradeel. It will be shown that the school authorities with the most local schools, being a PC one and a Public one, both are operating at a higher spatial level than the holm only.

The number of *school institutions* increased considerably until the 1985 and 1996 closures, as a consequence of a formidable urbanization. This is in sharp contrast to rural Dongeradeel. Especially the 1996 urban closure operation, which included a substantial increase of minimum pupil numbers, reduced the number of institutions, bringing it down at the city of Zwijndrecht to almost the level of about 50 years before. The number of *school locations* left is about 50% higher though, a phenomenon not found in Dongeradeel.

The explanation for the discrepancy between institution and location may be found in two factors: a lack of physical capacity at the official school locations, and the objective of some school authorities to maintain an area wide coverage in order to keep their share of the education market.

The *changes in accessibility* are assessed in general terms, considering two aspects, the home to school distances and the necessity to cross road arteries. For education in general these aspects are hardly unfavourable as yet. Taking account of the denominations Public and regular PC school locations only small parts of the built up area might be called less accessible. For the orthodox PC denominations (Liberated Reformed and Reformatory) with single locations this is of course not the case, but it is evidently is without consequence for demand.

6.3 Historical development of Municipality and city

The 'Zwijndrecht Holm' was originally an island in the combined delta of the rivers Rhine and Maas, being surrounded by the river branches Waal, North and Old Maas. The name Zwijndrecht indicates a ford (drecht) in a sometimes dry river (zwin) connecting it with the major City of Dordrecht.

The origins of the *administrative structure* of the area are dating from its 1331 redevelopment after a catastrophic flood. The land was issued to noblemen by Count Willem III of Holland

for re-diking, drainage and agricultural development in exchange for taxation. A division into eight sections was thought to be optimal for local economy, including services like a parish church and a school connected to it. Yet the number of interested parties with sufficient means proved to be too small. Therefore it was divided into *14 sections*, seigniories called ‘ambachten’, being governed by vassals on behalf of the count. Indeed a number of the smallest ones never had a church, let alone a school (see Jorissen 1955, pp. 22 - 25).

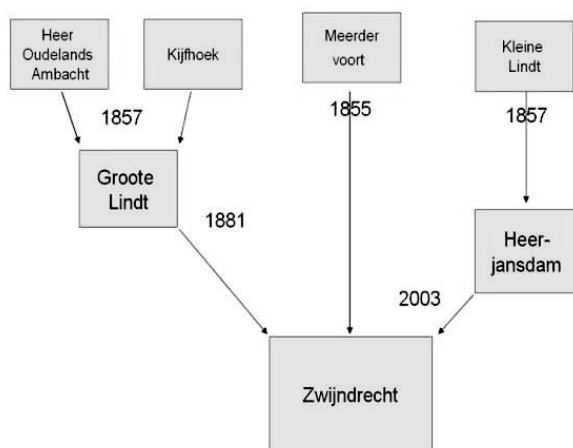
The ambachten did not have continuous territories, because each of those had to get a share of the good soil to be attractive for the drainage investment required and for farmers to settle in the area. It implied that there were continuous fertile ‘main lands’ for each ambacht, split up less fertile ‘following lands’ and ‘common lands’.

The French authorities wiped out the traditional administrative borders around 1800, like we have seen in Friesland.

At the start of the national kingdom in 1815 the old borders were restored in spite of the chaotic character of these. The ‘main lands’ of the seigniories were the foundation for a territorial reconstruction in 1833, resulting in *12 Municipalities* with continuous territories.

This structure of what were individual Village-Municipalities at most was in strong contrast with that of the Frisian regional Municipalities with their villages functioning as ‘farmers-republics’. Here the farmers had only a say in water management, to which they had to contribute.

The seigniories mostly had a church in their population centres. Of the present extended Zwijndrecht municipal territory, comprising seven former seigniories (see figure 6.1), two did not have one. There were only four with a school in the early 19th century (see Regt, 1848). One of those, the Kijfhoek school of about 1640, had lost its pupils by 1850. As in Friesland the school teachers used to have additional church related jobs (Van ‘t Zelfde, 1993, pp.34, 35).



Figuur 6.1 A succession of incorporations of six small Municipalities into the larger one of Zwijndrecht (compiled from Van der Top, 1960).

It implies that in contrast to Dongeradeel with its thriving ‘village administrations’ the relationship between local government, church and school was relatively weak, partly because the territories of several local authorities were too small to support local facilities.

Within a few decades some of the Municipalities were abolished because these were too small to support a decent administration. The history of incorporation of several units into the Municipality of Zwijndrecht is shown in figure 6.1.

The remaining Municipalities were incorporated into Hendrik-Ido-Ambacht and (Rijsoord and Strevelshoek) into Ridderkerk, the latter one lying outside the Zwijndrecht Holm.

The last Municipality to be abolished was Heerjansdam (Lord John's dam in the river Waal) in 2003. Nowadays only two Municipalities are left: Hendrik-Ido-Ambacht and Zwijndrecht. The cities bearing these names constitute in fact one conurbation with more than 70,000 inhabitants.

Around 1850 the *local population* was quite modest with the largest concentration at Zwijndrecht with its 2000 inhabitants.

In 1930 the scene had changed thoroughly. The Zwijndrecht village population had increased to some 8000 inhabitants, lying as it was across the river from Dordrecht, once the foremost city of Holland. Zwijndrecht attracted industries along the river dike and it attracted traffic by its ferry on the route from the southern Province of North-Brabant to the city of Rotterdam. The urban environment had enhanced gardening of vegetables and the city had an auction for its products until 1975. The industries attracted labour that was housed along the dike as well and, from about 1920 on, in planned housing estates.

In 2009 the Municipality counts about 45,000 inhabitants, 90% of those living in the city.

This radical change from small, independent rural communities to a few urban ones is bound to have had a considerable long term impact on school authorities and school locations. The 1990's economizing on urban schools no doubt had an acute impact on school institutions too. The case study will be restricted to the Zwijndrecht Municipality, because it is large enough for a study of location concentration.

6.3.1 School authorities

Amalgamation of Municipalities implies a *reduction of the number of public school authorities*, in this case a theoretical reduction from seven to one.

Each individual Municipality was entitled to at least one Public school. Therefore the amalgamation might have induced a similar reduction of the number of schools.

In fact the Zwijndrecht area did not count more than four school authorities in 1840, by lack of more schools. The 1881 inclusion of the Municipality of Groote Lindt did not reduce the number of authorities, because the first PC school was founded the same year.

The increase of the local population and the introduction of equal rights for Public and particular schools (1917/1920) led to a considerable *growth of the number of school authorities* with its peak in 1972. It was reached by the foundation of an orthodox Reformatory protestant school.

By 1972 the process of *amalgamation of school authorities* had started already.

The Groote Lindt PC authorities of the Dutch Reformed church and its 'Gereformeerde' secession church amalgamated in 1968. It operated south of Highway A16 (see Map 6.1).

This new authority amalgamated in 1979 with those operating north of the highway at Zwijndrecht proper (see Nijman 1989).

This succession of amalgamations was a sign of decreasing tensions between Protestant church factions. They took place in order to develop more competence and administrative strength, partly with regard to school location policies, where particular authorities (PC or RC) were confronted with the double role of the Municipality as the public school authority and as the physical planning authority.

An increase of competencies was important because between 1970 and 1990 the city developed substantial housing quarters to the southwest and to the northeast of the existing urban area.

The *promotion of concentration of school authorities* by national government during the 1990's hardly reduced the number of authorities working in the present Municipality, but it enlarged the scale of operation (the geographical span of control) of the authorities. Table 6.2 presents an overview of the present six authorities and their numbers of schools in- and outside the Municipality. The largest authority in terms of span of control is the Liberated Reformed one, like its Frisian counterpart operating at a provincial level with one of its 21 schools located at Zwijndrecht.

Tabel 6.2 Numbers of schools per authority in the Municipality of Zwijndrecht in 2008, by denomination and scale of operation of the authority. In brackets the total number of schools of the respective authorities, including schools outside Z.

Denom. Scale	Public	Protestant Christian	Reform- atory	Liberated Reformed	Roman- Catholic	Total
Local	--	1 (1)	1(1)	--	--	2 (2)
Regional	5 (16)	6 (9)	--	--	1 (9)	12 (34)
Provincial	--	--	--	1 (21)	--	1 (21)
Total	5 (16)	7 (10)	1(1)	1 (21)	1 (9)	15 (57)

There are three other authorities operating at a level above the Municipality, operating in four Municipalities at most. The PC school of Heerjansdam is governed by its 'village authority' still. The Reformatory school has a local authority as well, which is not unusual for this denomination.

The presence of a number of large school authorities implies that the Municipality has several competent counterparts in discussions on school locations, which the Municipality has to provide and to maintain structurally. The presence of two important players/competitors at the city itself, being the PC and Public school authorities, will stimulate these to develop their own location policies, aiming at attracting the largest possible share of pupils.

6.3.2 School institutions

The Municipality of Zwijndrecht counts 15 primary schools at present (table 6.2), excluding the local special primary school. This number has grown with the enormous increase of the local population, especially since 1900. Let us give a concise historical overview.

Regt (1848) describes all the settlements in the Zwijndrecht Holm of that time. On present municipal territory of Zwijndrecht he mentions the existence of a school at Groote Lindt, Heerjansdam and Zwijndrecht only. These schools counted 45, 120 and 200 pupils respectively. It is an indication of the size of the respective villages. Zwijndrecht counted about 2000 inhabitants. The Zwijndrecht school was of the 'highest rank', reserved for a small town (Boekholt and Van der Kooi, 1996, pp. 70, 71). Los mentions the existence of a prestigious 'French school' in the 19th century (Los, 1930, p. 82).

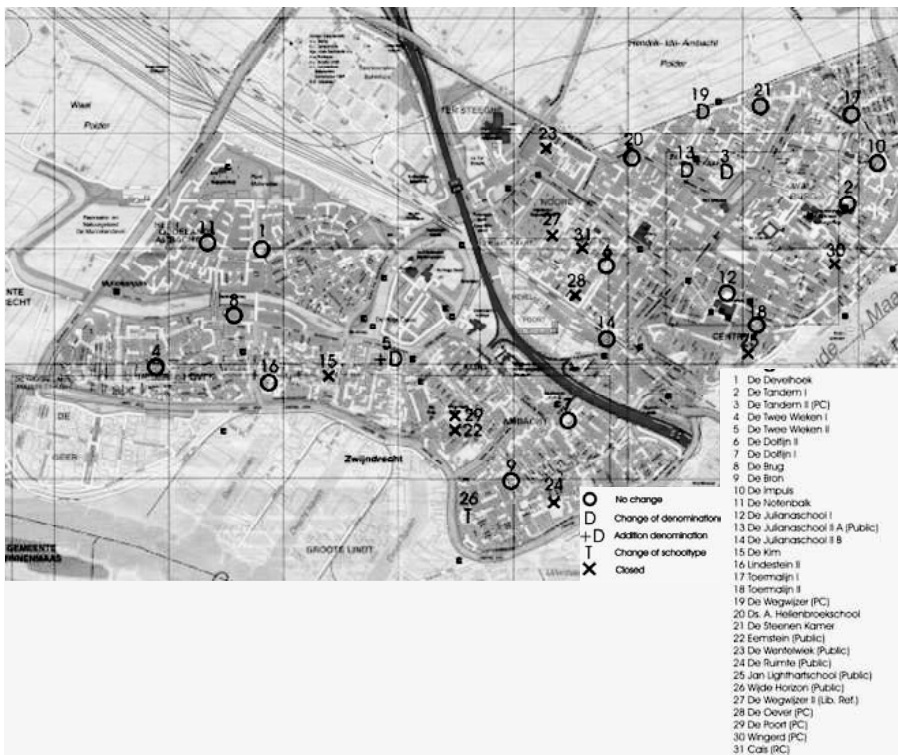
The *number of schools* in the Municipality of Zwijndrecht had increased to 12 in 1930, three of those in the settlement Groote Lindt, not yet swallowed by urban development of Zwijndrecht itself (Los, 1930, pp.83, 84). Only 4 of those schools were *public* in character. There were twice as many *Protestant-Christian* schools of the denominations we have seen before in Dongeradeel: Dutch Reformed and Gereformeerd. The first one was founded in 1881.

The first *Roman-Catholic* school was founded in 1921, at a RC compound along the Bruinelaan, the axis of the new urban development of the town, across the street from the new City Hall. The first RC church after the Reformation and a bargemen's children boarding house were added. This settlement was the response to a rapid increase of the number of Roman-Catholic inhabitants. New industries along the river had difficulty in getting labour, because the locals disliked factory work, used as they were to gardening. Therefore workmen were attracted from the Roman-Catholic southern provinces (Source: leaflet Sacred Heart Church, 2008).

In 1958 a *Liberated Reformed* school was founded and in 1972 a *Reformatory* school.

The local industries attracted foreign workers in the latter decades of the 20th century. Two mosques were founded, one of those using a former toddler school. So far, no initiatives were taken to found Muslim schools though.

By 1980 most of the village of Groote Lindt, including a PC school had been demolished for dike improvement and the remains had been absorbed by Zwijndrecht urbanisation, increasing its population to about 35,000.



Map 6.1 Zwijndrecht city, changes in the use of primary school locations from 1980 to 2010. The scale of the map is approximately 1:35.000. The distance between the south western and the north eastern borders of the built up area is about 5 km as the crow flies.

The number of schools in the city had increased to nearly 30 as map 6.1 demonstrates. In less than twenty years their number was reduced to 13 though!

In the book commemorating the PC authorities' amalgamation *a decline of pupil numbers was expected* (Nijman, 1989, p. 92). This was to be caused by both ageing of neighbourhoods and a decrease of birth rates in general as mentioned in chapter 2.

Perhaps even more important for school closures was the increase the of minimum pupil number standards of 1996. The 1996 closures were caused by a raise of the municipal norm for minimum school size, which was most incisive for cities of about 50,000 inhabitants. In 1996 *the minimum pupil number for existing Zwijndrecht schools was raised from 75 pupils to 185* (Gemeente Zwijndrecht, 1993, p.1). Of the 11 PC schools of 1979 only four had higher pupil numbers and these are likely to have declined further in the years after (Nijman 1989, p. 107).

There are *no signs of a relationship between the PC authority amalgamations (subsection 6.2.3) and school closures.*

6.3.3 School locations and their accessibility, disregarding denomination

The spatial distribution of school locations may be such that school choice is affected, that walking is no option, that dangerous traffic situations cannot be avoided and that cycling is to be avoided because of this. It enhances car transport by parents, causing danger in the direct school environment. These are the subjects of the school travel part of this thesis.

In this subsection and the next one (regarding denomination) only distance and the need to cross main roads is considered.

6.3.3.1 Locations

The changes in the spatial distribution of existing school locations at Zwijndrecht city, supplying a full curriculum, since about 1980 are shown on Map 6.1. Those of the village Heerjansdam (a Public and a PC one) are not discussed because no substantial changes took place.

Some of the locations were created after 1980. These (numbers 1 and 11) are indicated as 'not changed'. The underground is a municipal map of about 1995, not yet including the massive urbanisation of the Hendrik-Ido-Ambacht polder to the north, started soon after by the Municipality of that name.

The indicated locations amount to 29, more than twice the number of 1930. The addition of large housing estates in the northeast and southwest caused this increase.

The changes here are the combined result of neighbourhood population decline and of school closures of 1985 and 1996.

Location closures are indicated with a Greek cross (X). These are amounting to ten, more than one third of the 1980 supply. They prove to be concentrated in housing developments from the 1950 – 1970 period at both sides of the highway A16, suffering from an ageing of the population.

The T at 26 is in fact a closure too. It is now occupied by a 'practice school' for less gifted pupils of a local college for secondary education. Number 21 is a special primary school with a regional function. Only in one case closure of a location is the result of primary school relocation. The Public school at 15 moved to 5, where a PC school was accommodated already. The reason for this move was redevelopment of the area of an ill functioning neighbourhood centre.

6.3.3.2 Accessibility

Accessibility of school locations in urban areas can be assessed generally by considering *two factors: home-to-school distance and the need to cross main roads.*

The map demonstrates that the original school density was high. Assuming that the *distance over-the-road* equals 1.5 times the airline distance, there was no part of the housing areas

lying at a distance of more than one kilometre from a primary school. The largest distances were found near the locations numbered 1, 4 and 7.

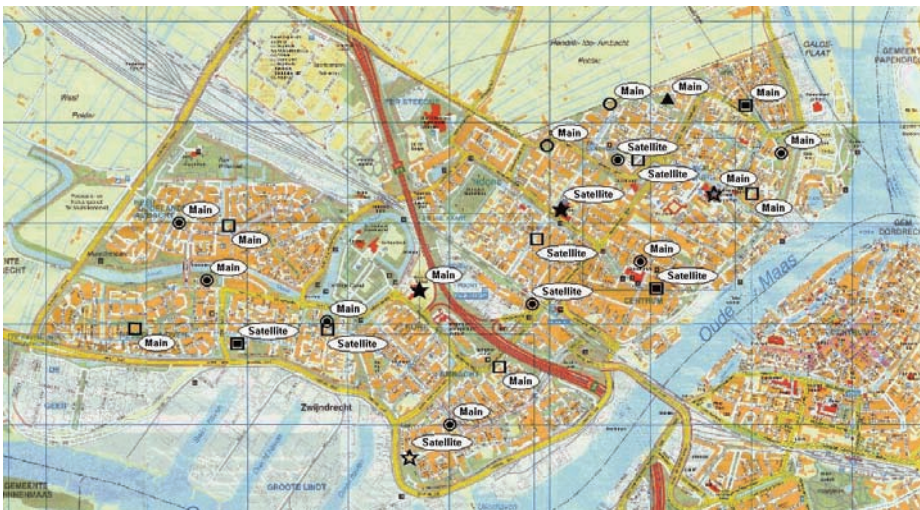
Quite a few locations were closed. No doubt this increased the distances to the nearest school locally, but without exceeding a 1 km value.

Children should be able to go to school on their own from an age of about eight years. This forbids the crossing of *main roads*. On the map these are indicated in yellow, carrying traffic loads ranging from 4,000 to 20,000 motor vehicles daily (Goudappel Coffeng 2005, p.15). The original situation does comply with this demand.

6.3.4 School locations per denomination and their accessibility

6.3.4.1 Locations

The second map (6.2) shows only the *present locations*. A location is characterised in two ways: its formal status and its denomination. Only those qualified with ‘main’ are formal locations of institutions, financed separately by the Ministry of Education. The other ones, qualified with ‘satellite’ are so called ‘Inspection locations’ supplying a full curriculum, but financed from the budget of the institution these belong to. Therefore these used to be called ‘*dislocations*’, being only temporarily allowed by the Ministry of Education by lack of sufficient capacity at the official location. Central Government transferred the responsibility for locations to the Municipalities, accepting the existence of dislocations. There are only 13 ‘main’ locations. This implies that the number of school institutions is reduced nearly to the level of 1930 (11), serving a built up area three times the size of that year.



Legend: Open squares are public, closed squares are Roman Catholic. Open circles are Orthodox-Protestant, dotted circles are ‘regular’ Protestant, PC. The triangle is a special primary school. Stars are indicating secondary school locations.

Map 6.2 City of Zwijndrecht primary school locations, their denomination and status in 2010.

The seven *satellites* are schools that had to be abolished as institutions in 1996. Their buildings are still being used by the amalgamated institutions though. One school (the PC Julianaschool (nr. 12 at map 6.1) has even two satellites (numbers 13 and 14), hosting a total of roughly 1000 pupils.

Of three RC locations two are satellites. One of those, Lindenstein (16), was the product of an amalgamation in 1996. By 2003 it had become too small again and it was amalgamated with a Hendrik-Ido-Ambacht school of the same authority. The Zwijndrecht school at location 17 was not able to bear the cost of this additional location with about 70 pupils, because of its unfavourable pupil – teacher ratio.

6.3.4.2 Accessibility

The *distances* to the nearest locations of Public and PC schools are still moderate, because these have seven and eight locations respectively. Yet these are about 1.5 km for Public education in the extreme northeast and south and for PC education in the extreme southwest. RC education has only three locations, which implies that more than half the built up area lies outside a one km zone.

The two orthodox-protestant schools have remarkably eccentric locations at 19 and 20 (see map 6.1), creating large distances for those living south of the highway. Yet this is no problem for demand. Both schools have capacity problems.

The Liberated Reformed school is related to a vital Protestant church denomination of the same name and it receives its pupils mostly from outside Zwijndrecht, especially from Dordrecht and even from the Province of Noord-Brabant, further south. It moved in the early 1980's from location 27 (map 6.1) to the larger building at 19, that was left by a closing PC school. A location near the bridge to Dordrecht would have been more appropriate (location 24 or 25).

The Reformatory school at location 20 attracts many of its pupils from the 'Reformed Community' (Gereformeerde Gemeente) church nearby and there is a concentration of church members living in the neighbourhood, attracted by these facilities (information Municipality). Both Public and PC schools can still be reached without *crossing the main roads* (indicated in yellow) with the exception of the precinct housing the Reformatory school. This school will accept only pupils of parents who can prove active participation in orthodox Protestantism.

6.3.5 Location policies?

Local government is responsible for school location planning. In a new town quarter is being developed, the composition of population is assumed to reflect that of the existing urban area. This implies that the demand for schools of the different denominations will be based on the existing distribution about these.

The present spatial pattern of schools (institutions and their denomination) does not seem to be the result of municipal spatial planning. The eccentric locations of the Orthodox-reformed schools, serving the entire Municipality demonstrate this.

In new town quarters the Municipality plans a number of schools, able to house the expected number of pupils distributed about different denominations conform the distribution in existing town quarters. In the case of Zwijndrecht this implied the planning of PC, Public and occasionally RC schools. At Zwijndrecht the PC schools housed 42% of the pupils (Nijman, 1989, p.113).

Only in one case there was an evident conflict between the Municipality, being Public education authority still, and the local PC authority of the time. The PC school at location nr. 11 was built a few years after the Public school at nr. 1, probably with the argument of excess capacity at other PC locations nearby. Nijman does not mention the conflict, but expresses his satisfaction about the school being built at last. The municipal official who had been responsible for school location planning refused to be interviewed by the present author.

Once a school is occupying a location, relocation is possible only in agreement of Municipality and institution or rather authority.

The pattern was and is such that PC and Public education are more or less in balance, in spite of a traditional PC dominance in demand. Evidently municipal government has taken its duty of protecting public education seriously.

The pupils of most of the schools that were closed could not possibly be housed in the remaining ones nearby. This is no doubt the major reason for the existence of a number of dislocations. Yet it is remarkable, that at least in Zwijndrecht, there seems to be no ambition to reduce the number of dislocations. The Public, PC and RC school authorities each must have the distinct policy to maintain a presence in all town quarters for reasons of competition. One of the most important factors in school choice is the distance from home to school (see chapter 8). Leaving a neighbourhood to a school of a different authority would imply the loss of many pupils.

The Municipality of Hendrik-Ido-Ambacht is developing the 'Volgerlanden' (following lands) area of about 4 km² at the Zwijndrecht northern border (see for 'following lands', subsection 6.2.2). Only one school location was developed for the area. It is hosting four schools of the relevant types: Public, PC, RC and Reformatory (see section 6.3). Each of these have to comply with the minimum pupil number norm for school founding, being 305 for Hendrik-Ido-Ambacht. It implies a concentration of over 1,200 pupils.

These schools have accommodations which are likely to be better equipped than the schools in the north of Zwijndrecht. Yet in 2008 about 250 children from the area were visiting Zwijndrecht schools which are closer by (information Municipality of Zwijndrecht). The schools east of the A16 highway have a 2008 shortage of 10 classrooms which can be explained completely by the influx of HIA pupils! (Information Municipality of Zwijndrecht). The Zwijndrecht Reformatory school at location 20 (Map 6.1) strongly discouraged this behaviour, because the Volgerlanden school of the same denomination needed the pupils (school guide, VCORG 2003). Nevertheless it counted dozens of pupils from the area, which might be lost otherwise to the Liberated Reformed school at location 19.

Evidently *the distribution of school locations would be affected seriously by closing the dislocations*. Both distances and main road crossings would become problematic.

One cannot but *conclude* that the present distribution of school locations with about one third Inspection locations is far better than it would be without those satellites. The arguments for continuing these informal locations may be partly opportunistic, being a lack of classrooms in the official locations and competition for pupils, but access to schools would be distinctly worse without those.

6.3.6 Redistribution and ongoing concentration?

It seems to be unlikely however that the present school location pattern is lasting. In chapter 2 we indicated a range of autonomous forces supporting school concentration tendencies. Two of those may have an impact on the school location pattern in the Municipality of Zwijndrecht: demographical development and municipal finance.

Demographical developments are the result of a number of rather independent changes to be discussed shortly:

- urban development and reconstruction, increasing or reducing the local population,
- migration, changing the population structure,
- autonomous change of the population structure (ageing) and
- change in general birth rates.

The territory of the Municipality is largely developed. Apart from a modest redevelopment of former industrial sites along the river Old Maas only *urban reconstruction* of older housing

estates is undertaken. It is ongoing in the 'North' town quarter (of about 1950) and being planned for the surroundings of the central shopping mall at 'Walburg' town quarter. These projects are intended to renew and intensify housing, replacing often relatively cheap rental homes with more expensive privately owned dwellings.

The logical impact of these projects is out-migration of people with lower incomes, especially workers of foreign non-European descent. These tend to move to the next ageing neighbourhood, changing its ethnic composition. As a consequence the 'blackest' school is to be found at location number 7 (the Public 'Dolphin' school).

Ageing was found recently only in the newest town quarter, Oudelandsambacht, were the school at number 11 (a PC school) is shrinking (Gemeente Zwijndrecht 2003 and pupil counts 2006). By 01-01-2009 ageing is found only substantially in the northeast, relaxing the pressure on the neighbourhood schools (data provided by Onderzoeksbureau Drechtsteden).

The recent *decline of birth rates* mentioned in chapter three has a modest impact only. A comparison of the age cohort of the 11 years old (about to leave primary school in 2010) and the 3 years old (about to enter) shows a 14% decline (from 483 persons to 405) but the youngest year cohorts are larger again and further decline is hardly to be expected (Onderzoeksbureau Drechtsteden).

Municipal finance is more likely to enhance school concentration, although there is little evidence until now.

School buildings are subjected to ageing, both technically and functionally. *Technical ageing* is dependent on the quality of construction and maintenance. Therefore buildings from the 1920's may be in a better state than those from the 1960's (information Municipality of Gorinchem). *Functional ageing* may be the result of changing education methods. Traditional classrooms for collective teaching are hardly adequate for teaching of small groups or working with ICT applications.

When two school buildings in the same town quarter are considered to be obsolete and new ones are thought to be necessary it is financially attractive to leave one of the locations and to create a common building at the other one. The municipal budget for school buildings is restricted though. Upon the 1996 decentralisation of this budget from central government to the Municipalities it was reduced by 25%, being a so-called 'efficiency reduction', applied because the Municipality was thought to be able to handle the matter more efficiently (information Municipality of Drimmelen). The Municipality of Zwijndrecht moreover is confronted with unexpected high cost of redevelopment of the river banks. It seeks to reduce the number of community buildings.

Yet a reduction of the number of school locations by creating common compounds for two or more schools is not being planned for.

Apart from the movement of a school from location 15 to 5, housing it in an addition to an existing building, the following *radical improvements* have been *made* during the latter decades at the following locations:

- 20, Reformatory school, addition of a number of classrooms because of growing pupil numbers,
- 9, PC school, radical reconstruction of buildings, combined with a modest redevelopment for housing,
- 2, RC school, replacement of the 1921 building with a new one.

Planned or at least considered were:

- constructing a common building for the Heerjansdam public and PC schools and related facilities at the 'education-plaza', near their existing common location (general agreement between partners signed (Source: Gemeente Zwijndrecht, Stadsnieuws 07-05-2008),

- constructing a common 'multi-functional centre' for the schools at locations 7 and 9. It was rejected by the PC school at 9, but will be constructed for the Public school and additional facilities ('Hier Zwijndrecht' journal 20-01-2010),
- constructing a new building for the PC school of location 12 at the nearby location of a former Dutch-Reformed school which is still standing, integrating part of the historical building. A plan was prepared but rejected and the decision was made to restore the present monumental school building,
- moving the small RC school at location 16 to the permanent building at 11, which had to be extended for replacing a temporary building. That one was constructed for handling the 'new neighbourhood birth wave' (considered, but rejected).

The idea of the 'broad school' is gaining field. There is a trend to integrate the supply of education with that of supporting and related facilities for children (see section 6.4). This is often taking shape in integrated locations. In the Municipality of Zwijndrecht the idea as such is accepted. The schools at location 5 are advertised explicitly as one broad school. The Heerjansdam 'plaza' is one in fact. Yet *physical integration is certainly not the standard.* The schools at locations 7 (public) and 9 (PC) are regarded to constitute a broad school. The new PC building replacing location 12 was intended to become a broad school in itself.

6.3.7 Discussing the hypotheses.

The Zwijndrecht case should shed some light on a series of hypotheses as presented below and provided with comments.

Hypotheses

2.4.1. A higher and growing geographical concentration of control will naturally lead to a higher school concentration because educational institutions then will have better opportunities to create a qualitatively more attractive and affordable supply of education.

There indeed proves to be a remarkable concentration of control in this Municipality, but there is no sign of an impact on school concentration. To the contrary: the present larger authorities preserve locations that are not financed by the Ministry of Education no doubt for reasons of competition with other authorities/denominations.

2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.

Secularisation is a general phenomenon, but it is not translated into a decrease of demand for the education as provided by Protestant schools. The locally small demand for RC education is likely to suffer rather from its low school density.

2.5.6. Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.

There are local immigrant Muslim minorities but no effort is made to found a Muslim school.

2.5.8. In new town quarters cities try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.

Only in the last housing development the Municipality tried to do with one location for Public education only.

2.6.1. The freedom of supplying education causes a relative (sectoral) school concentration since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils

This is self evident. Yet the existing networks for PC and Public education at Zwijndrecht show moderate distances to schools.

2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper.

This hypothesis explains the acceptance of dislocations by national government. Local government is responsible for school locations and edifices. In the case of Zwijndrecht the Municipality accepts the existence of dislocations for reasons of capacity, avoiding costly construction works at main locations.

2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural

maintenance.

At the Municipality of Zwijndrecht only one case was found, being a relocation of one school to the location of a second school (from location 15 to 5)

2.6.5. The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers

This may be correct for school authorities incorporating single institution authorities. At the Zwijndrecht case there was only one example, being the incorporation of the Liberated Reformed school authority into a provincial one. The school itself is thriving though. The increase of geographical control is inspired sooner by increased administrative duties.

2.6.6. Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.

The abundance of satellites at Zwijndrecht is no doubt inspired partly to preserve a share of the neighbourhood markets, although the cost of enlarging central locations must be of importance as well.

6.3.8 Concluding

We have seen that the city of Zwijndrecht counted some 30 schools around 1975 (see map 6.1). This number was reduced considerably as a result of declining birth rates and ageing neighbourhoods to 20 in the early nineteen nineties. In 1996 a radical increase of minimum pupil numbers required closure of again one third of the schools. The pupils concerned could not possibly be accommodated in the buildings of the remaining schools. Therefore the seven schools to be closed were (as usual) amalgamated, but continued as locations where a full curriculum was taught. It is likely that this was the result of both the reluctance of the Municipality to start a large scale reconstruction of school buildings at its own expense, and the reluctance of the important school authorities, being the PC authority and the Municipality itself (at the time) for public education, to disturb the spatial balance between the two denominations.

This development pattern is likely to be found in similar cities with an explosive population growth during the second half of the 20th century, being numerous in this region. The incidence of Inspection locations in neighbouring cities is assessed in section 6.3.

The analysis of location developments in the case of the city Zwijndrecht demonstrates that the spatial distribution of schools is subject to change, but less than one might expect on the basis of the reduction of the number of school institutions. The possibility to continue education in satellites made it possible to restrict accessibility problems, both with regard to home-to-school distances and to the need to cross major roads. Continuity is not guaranteed for the long term though. Therefore it is necessary to develop research instruments and evaluation procedures to assess the impacts of potential change in locations. Some of these are proposed in following chapters.

6.4 A generalising scan of full school locations in the Drechtsteden region

6.4.1 Background and set-up

The Zwijndrecht case yielded as a clear result that there is a considerable number of school satellites supplying a full curriculum, being unlikely to be closed in the foreseeable future.

To verify the likelihood of a general presence of satellites of institutions settled elsewhere, the whole urbanised zone to the southeast of Rotterdam, called Drechtsteden, was subjected in 2009 to an analysis of CFI location registrations, looking for 'Inspection locations', which are synonymous with dislocations with a full curriculum. These might be found partly at a common location with a different school: two locations of different schools at the same site.

This phenomenon was not registered in our analysis. See section 6.4 for a general check in the incidence of common locations.

Seven Municipalities with a total population of about 310,000 inhabitants were scrutinised. Five of those, including Zwijndrecht, belong to the so-called Drechtsteden region. Therefore this name is used for the study area.

6.4.2 Outcomes

Table 6.3 presents the findings in an order of population size, including the Municipality of Zwijndrecht. The Municipalities with about 50,000 inhabitants are most likely to have dislocations, because these were hit hardest by the 1996 increase of minimum pupil numbers. In fact dislocations with a full curriculum prove to be a common phenomenon. The relationship between population size and the number of satellites or dislocations is not particularly strong though.

Table 6.3 Numbers of schools and Inspection (dis)locations in eight Municipalities southeast of Rotterdam (Source: CFI, BRIN-gegevens / Instellingen, 2009)

Municipality	Population x 1000	Schools	Inspection locations	Locations Total
Dordrecht	120	38	11	49
Barendrecht	45	14	5	19
Ridderkerk	45	12	6	18
Zwijndrecht	45	15	7	22
Papendrecht	31	10	5	15
H.I. Ambacht	26	10	4	14
Sliedrecht	25	6	3	9
Alblasserdam	18	7	2	9
Total	355	112	41	153

More than a quarter of all full school locations prove to be dislocations.

The cities of Alblasserdam, Barendrecht and Dordrecht prove to have relatively few dislocations.

For the case of Dordrecht we found this rather strange, because it had lost numerous school institutions. Therefore school sites were visited to check the information. Quite a few dislocations were found, but often without having a full curriculum, a situation not found elsewhere. Evidently continuity of locations had no high priority. Inquiries at the City of Dordrecht revealed that the Municipality intended to continue all existing Inspection locations though (Gemeente Dordrecht, 2004).

For Alblasserdam the modest size of the population and therefore modest school closure is the likely explanation. In the case of Barendrecht the relatively low number of Inspection locations might be explained by the rapid growth of the population since 1990.

6.4.3 Conclusion: de-concentrated institutions are there to stay!

The Municipality of Zwijndrecht counts a number of informal school locations with a full curriculum, called Inspection locations. These are dating from the 'Equipment and Accessibility' operation of 1996. The number of locations may decrease by a few, but the majority of these are likely to be continued in the foreseeable future for reasons of accessibility and competition between different denominations. The inventory of schools in 7 neighbouring Municipalities confirms this tendency.

The Inspection location is likely to have a permanent moderating effect in the increase of minimum home-to-school distances as caused by school (-institution) closure.

6.4.4 Implications for the hypotheses

The scan of the full school locations was undertaken to find more evidence for rejecting hypothesis 2.6.5. The hypothesis presupposes a gradual reduction of the number of school locations. There were hardly indications for that in the Municipality of Zwijndrecht. The 2009 inventory of full school locations of the Drechtsteden region as a whole does not support this hypothesis either.

2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper.

The hypothesis is supported by the data, given the general presence of Inspection locations

2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.

The hypothesis is not supported by the data. These show shares of Inspection locations not dissimilar to the city of Zwijndrecht ones.

6.5 Concentration of locations without related concentration of institutions, the general phenomenon of ‘school islands’

6.5.1 Background

School closures, being the dissolution of institutions, may be without impacts on school travel, because education can be continued on the old locations by institutions seated elsewhere. In those cases the location density is larger than the institution density.

School location planning however may have an impact on school travel, not only by the location decision as such, but too by concentrating institutions at one location. Where schools of different denominations are required in a new town quarter this is a plausible strategy, because it may neutralise the factor distance in school choice and may open the opportunity to share certain facilities like a gymnasium. Nevertheless it increases the mean travel distance per pupil, given the importance of this factor in school choice (see chapter 8).

There was no literature available on this subject, but two TU Delft closure studies, for the Ministry of Education and the Province of Overijssel respectively, indicated that the approach is not uncommon.

Our 1986 *exploratory school closure study* included the urban Dordrecht ‘Grote Beer’ school located in the nineteen sixties ‘Sterrenburg’ quarter (De Boer and Van der Veen 1986, chapter 10). Founded in 1968 it had to be closed in 1985 by lack of sufficient pupil numbers. These reached their peak in 1973 (258 pupils), but they declined strongly because of neighbourhood population ageing (124 pupils in 1981). This Roman Catholic school was located in a special pedestrian precinct with two other schools (Public and PC) and a gymnasium: ***a school island, that is a school location used by more than one school institution.*** After closure of the school the remaining pupils went with a teacher to a distant school in a nineteen seventies Dubbeldam quarter. This ‘Geert Grote’ school was part of a school island as well. Evidently this approach was not exceptional in the city of Dordrecht.

A 1988 *study of three cases*, applying a method developed for *assessing ‘closure travel cost’* for the Province of Overijssel, yielded another case. In the deeply rural ‘Beerzerveld’ village we found a compound with two schools and a gymnasium in between, being the result of school relocation (De Boer and Nederveen 1988, pp. 14-18).

The study of regional school concentration in chapter 5 showed, equally incidentally, that the latter approach was applied in several Frisian villages like Eastermar, Heeg, Wirdum and Woudsend. In the analysis of the Zwiindrecht local school concentration we met with a four-school-island at neighbouring Hendrik-Ido-Ambacht.

In this section we will try to shed more light on an evidently more or less traditional practice. The origin of the principle is discussed in section 6.4.3. The Amsterdam City architects working for the development of new housing districts during the nineteen-twenties will show to have been responsible for the introduction. They created both multi-school buildings and school islands, multi-school compounds.

The national propagation of the principle is presented in section 6.4.4. It will demonstrate that the home base was Amsterdam indeed and that the nation's second City, Rotterdam, evidently was not convinced of its value, as were other Municipalities.

The implications for school travel will be discussed in section 6.4.5. In general terms the principle decreases the school location density and therefore it increases mean minimum home-to-school distances to up to twice the distance required in the case of an even distribution about the area served by the schools.

6.5.2 Relevant hypotheses and approach

Relevant hypotheses. A selection of hypotheses discussed in section 6.2 is relevant too for the school-island development. These are the following ones

2.5.8. <i>In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.</i>
2.6.4. <i>In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.</i>

Two searches. The origins of the school island concept were sought to be found by a literature survey. It yielded a publication of 'The Nut' which played an important part in the development of the Dutch school system around 1800 (see chapter 3).

A second survey was intended to decide how common the application of the concept is nowadays. School-islands are likely to be found most in Municipalities with a large production of new homes, requiring the simultaneous foundation of several schools.

The national statistical office, CBS, databank 'Statline' contains housing production data per Municipality. Of the total number of 496 Municipalities of 2004 the top twenty in housing production from 1993 to 2002 were selected and one in ten of the next hundred and ten, i.e. the 30th, the 40th etc. The second category was added in order to see whether school-islands could be found in Municipalities with smaller numbers of new homes. The 31 Municipalities selected were scrutinised in the CFI administration site of schools, looking for schools with nearly the same addresses indicating a school island (same street, successive numbers). The research was summarised in De Boer and Velstra 2004.

6.5.3 The origin of the school island in an era of a 'school construction rage', producing outrageous specimen

The 'Nut' monthly 'Volksontwikkeling' May/June issue of 1928 presented papers on school building in Amsterdam, Rotterdam and The Hague. The contribution about Amsterdam mentions the development of 'double schools', those about the other cities don't. From 1920

to 1928 new school buildings were erected for 156 city schools. De author called it a 'school construction rage'.

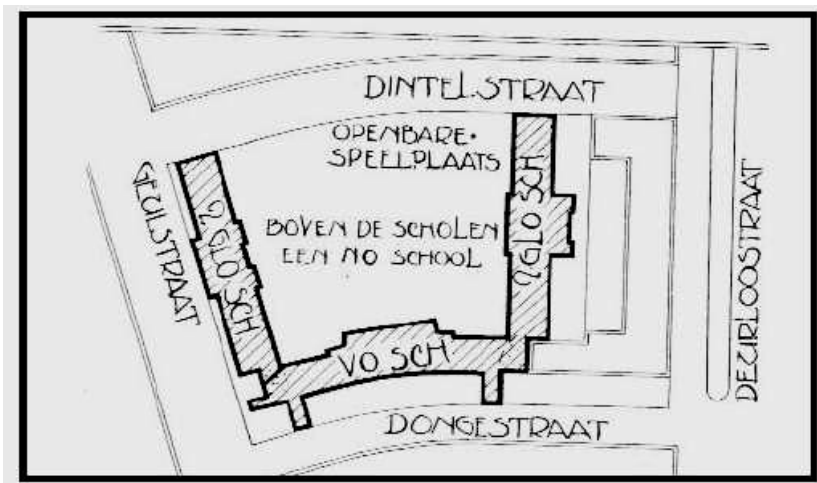
It was caused by the following three factors:

- the construction of new housing quarters, replacing derelict dwellings in the historical town centre. Most of the public schools (about 80) followed this exodus (Van Wijk, 1928, p. 239).
- the introduction of equal treatment led to the foundation of numerous particular schools. The buildings for those had to be provided by the Municipality,
- existing particular schools often had bad buildings which the Municipality had to replace now,
- the competition between public and particular education led to a larger supply of toddler schools because, as Van Wijk stated, 'both those in favour of public education and those promoting particular education know that who has the child in preparatory school can be pretty sure to keep it in primary school' (Van Wijk, p. 242).

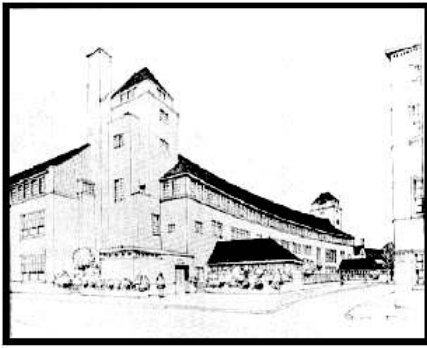
This large scale school construction was quite a burden for the city finance. Schools were provided with gymnasiums. To save scarce means schools were built in couples, sharing one gymnasium. This was accepted practice for Public schools, but combining a Public school and a religious one was accepted by the other parties only in a few cases (van Wijk, pp. 246/47).

The city architects used the schools to articulate the design of new town quarters (Van Wijk, p. 251) They created massive structures by amassing more schools, and not only primary schools. This hardly reduced the cost per school, except maybe by sharing a gymnasium.

The *most extended location* was that on the 'Wingerdweg' road. Here six Roman Catholic primary schools were combined with five Public schools, namely a toddler school, two primary schools, a special school and a school for ULO (van Wijk pp. 250/51. In a complex like that one might expect 2,000 or more pupils! Only the building of the two public primary schools is standing still, but this has lost the function of a school.



Picture 6.1. Layout of the six schools structure between Dintel Street and Donge Street (Source: Van Wijk, 1928, p. 252).



Picture 6.2 The monumental central part of the complex at Donge Street on the architect's drawing (Van Wijk p.253) and nowadays (Cok, 2005, p.23).

The *most extended building* for more than one school is shown in pictures 6.1 and 6.2. At the ground floor the central part, with a toddler school, was flanked by two wings with each two primary schools. The entire first floor was occupied by an industry (nijverheids) school (picture 6.1, van Wijk, pp. 252 - 255). The unbelievably massive castellum like structure on Dongestraat (picture 6.2) is still standing and it is still used for education, but except for one primary school, for secondary vocational training (MBO).

It is rather surprising that up to 4 schools of the same type and same denomination were combined in one building complex. These must have served each a specific neighbourhood. The schools had 7 class rooms each. It implies that the planners had a maximum school size in mind! It was a strange combination of individual schools of a human social scale in a building complex of a rather inhuman scale.

Nowadays secondary schools tend to create separate units at one location to prevent security problems amongst the pupil masses. At Zwijndrecht for example the Public 'Walburg College' housed its basic theoretical education in a wing into which older pupils are not allowed. The PC 'Develstein College' had a separate building constructed as 'Junior College' at its main location.

The argument of saving a gymnasium by combining two schools at one location or in one building is a rational one. The want to articulate an urban town quarter by elaborated school architecture is understandable. The massive complexes mentioned have to be regarded as irrational though. The school concentration compound at Wingerd street served no identifiable purpose. It created only unnecessarily long school travel distances. The massive building at Donge street can only be understood as an effort to visually dominate the enormous closed housing blocks around it.

6.5.4 The national propagation of the principle

The question to be answered in this section is how widespread the practice of clustering of schools at one single location is in the Netherlands. One may not expect to find excessive concentrations like those found in Amsterdam. These were created in developments with a much higher housing density than nowadays and in an age of much larger families (high birth rates).



Picture 6.3 An early example of a loose school cluster: the city of Gorinchem 'Linge' garden city quarter of about 1920, with along a 'Green' from right to left behind each other a PC school (De Linge) , a 'gymnastics school' and a Public school (Sources: Google Maps and picture by the author).

In the city of Groningen, subjected to secondary education analysis in chapter 4, several original double schools from the 1920s can be found, evidently like those in Amsterdam used to articulate a town quarter, being located at visually strategic places. A spectacular specimen can be found on Park Street (Parkstraat).

What may be expected nowadays are clusters of two to four schools of different denominations, in the shape of either a 'loose cluster' with separate buildings and a separate gymnasium (Dordrecht) or of one integrated building (Heeg, see chapter 5).

The loose school cluster is called 'school island'. An early example of this type is the city of Gorinchem 'Linge' garden city quarter of about 1920, with along a 'Green' behind each other a PC school ('de Linge'), a gymnastics school and Public school nr 4. These are shown in picture 6.3. The gymnastics school was mentioned already in Bakhuis (1926), p. 101.

The type with an integrated building is likely to have a design showing the presence of different institutions. We will use the term school island for a cluster as such, because this type is historically dominant and the distinction can be made only when the situation is visualised.

In present day discussions on the creation of school islands the gymnasium is still an important argument. The individual school is nowadays entitled to have sporting facilities, but by combining these for two or more schools the available means can be used to create more quality. The new town of Almere, east of Amsterdam, rapidly growing to become the fifth largest town of the country, mentioned it as a most important argument for participating schools (Velstra, 2004, p. 35).

The cluster may have an explicit neighbourhood function too, attracting additional facilities, like a library. These complexes may be used as well to articulate the design of a town quarter. Perhaps the most important economic argument lies in the nature of the Dutch school system with its 'freedom of education'. On the one hand schools can be created by a party which is

able to prove that it will attract a sufficient number of pupils, and on the other hand parents are free to send their children to whichever school they like. This free market implies that schools have no guaranteed public and that they may attract or distract pupils on the basis of quality characteristics. This causes a planning problem, worsened by the Ministry of Education demand that a new school should comply with the local minimum pupil number foundation norm for at least 15 years (Law on Primary Education, section 77, subsection 1).

At one location one may develop a shortage of class rooms and at the other one an over supply. In a new town quarter there is moreover the need for a temporary additional supply, required for the 'birth wave' of the first decade. This may lead to the construction of 'school homes' used temporarily as class rooms and reconstructed for dwelling purposes when the birth wave has passed. Specimen can be found at the sites of the architecture firms mentioned in subsection 6.5.3.

The neighbourhood design might be developed to optimise both accessibility for slow transport modes and for school transport by car, a relatively new phenomenon. The consumer is presented with a geographically equal opportunity for public education and often different particular education. Yet *in the case of a four-school concentration the mean distance to the nearest school will be twice the distance resulting from an equal distribution of the individual school sites.*

The four-school island at the Municipality of Hendrik-Ido-Ambacht, mentioned in subsection 6.2.7 was planned to be temporarily supplied with these school homes (see the Frencken/Scholl architecture site). The schools involved however preferred to have a planned expansion of the existing complex by 10 classrooms first. In 2009 it was decided to comply with this desire and to refrain altogether from constructing the school homes and to develop a new school cluster in the eastern part of the new town quarter. Developing birth rates seem to justify the decision. Maybe the pupil numbers to be expected for this cluster will be insufficient for independent schools though. In those cases it will be used as a new dislocation (information PC and Public school directors).

One argument for rejecting school homes across the road from the existing complex was the continuous struggle with massive deviant parking behaviour of parents delivering their little ones to the school. The supposed opportunity to control this at a central location was a major argument to choose for the concentration in fact (information Municipality).

The Municipality developed an impressive 30,000,000 Euro reconstruction scheme for its existing school buildings with the explicit intention to cluster hitherto individually located schools. The authorities involved are not unlikely to reject these relocations.

One may expect a direct relationship between the volume of housing production and the number of school islands, namely more school islands in areas with a high housing production, as was the case in Amsterdam during the 1920's. The data presented in table 6.4 indicate that no clear relationship exists though. The graphic presented in figure 6.1 serves to underline this. The cities of Zoetermeer and Almelo have relatively many school islands: Almelo one per 985 new homes and Zoetermeer 832 homes per school island.

Both cities are counting about 40% of their schools on school islands. Zoetermeer (near The Hague) is in fact largely a new town, like Almere, Hoofddorp (both Amsterdam oriented), and Barendrecht (near Rotterdam). Joure too underwent a relatively large growth. All these cities show high percentages!

There are cities with remarkably few school islands too, like Rotterdam, Eindhoven and Dordrecht. The low score of Rotterdam can be explained only as 'distaste for the concept', maybe because it was invented by the rival city of Amsterdam. The city was subjected to another analysis looking for schools with an identical postal four number code, indicating their location in the same town quarter. Some of these might have a common location but addresses on different streets. Only a few of these were found, confirming the Rotterdam dislike of the principle.

The city of Eindhoven does not seem to have been interested either. It lies in a region dominated by Roman Catholic education, which might explain a dominance of single locations. At the city this denomination counts only about 40% of the schools though, which implies ample opportunities for school islands

Tabel 6.4 The incidence of school islands in a sample of Dutch Municipalities related to the local number of schools and to the housing production during the 1993 – 2002 decade (adapted from De Boer and Velstra 2005).

Numbering of Municipalities according to the ranking in housing production.

Municipal Capital	Dwellings constructed 1993 – 2002	Schools	School islands	% Schools on school islands
1. Amsterdam	32,549	194	19	20.6
2. Almere	28,967	67	8	25.4*
3. Rotterdam	27,472	165	2	2.4
4. Den Haag	23,631	139	10	14.4
5. Tilburg	11,473	47	4	19.1
6. Hoofddorp	11,349	28	6	42.9*
7. Utrecht	10,994	69	4	11.6
8. Amersfoort	10,941	38	3	18.4
9. Eindhoven	10,667	59	1	3.4
10. Groningen	8,415	36	2	11.1
11. Breda	8,272	35	2	5.7
12. Zwolle	7,726	41	6	29.3
13. Enschede	7,113	54	5	18.5
14. Apeldoorn	7,075	54	4	14.8
15. Den Bosch	7,017	30	3	20.0
16. Helmond	6,976	29	1	6.9
17. Zoetermeer	6,656	40	8	40.0*
18. Barendrecht	6,398	12	2	33.3*
19. Dordrecht	6,119	39	1	5.1
20. Assen	5,135	22	2	18.2
30. Almelo	3,939	23	4	39.1
40. Heerlen	3,368	21	1	9.5
50. Delft	3,287	26	2	19.2
60. Best	2,918	10	1	20.0
70. Hoogeveen	2,652	16	1	12.5
80. Weert	2,352	18	0	0.0
90. Middelburg	1,949	15	1	13.3
100. Papendr.	1,749	9	1	22.2
110. Culemborg	1,629	12	0	0.0
120. Joure	1,543	7	1	28.6
130. Naaldwijk	1,430	6	0	0.0
Total	271,261	1,361	105	7.7

Legend: bold = extreme values, * = (largely) new town

The Dordrecht score we found hard to believe. Our first confrontation with the school island concept was with two specimens in this city. Later school closures (1996) showed to have reduced the number of school clusters, but the CFI registration of 2004 used for the search did not include ‘Inspection locations’ yet.

We did an additional search for the city of Dordrecht. It presents its school locations on a map (to be found via Google ‘Onderwijsvoorzieningen Dordrecht’). The north-eastern part of this map is presented as our map 6.3. It shows a number of overlapping locations, especially at the eastern half. All these locations in the city have been checked. Some of the ones shown and

some other ones too prove to be each separate buildings at collective locations, but only two of these are supplying more than one full curriculum, being the criterion for a school island. So the Municipality of Dordrecht proves to have three school islands when Inspection locations are included. The scrutiny of Barendrecht and Papendrecht schools (both included in table 6.3) yielded each one additional school island. Given the general presence of Inspection locations the number of school islands may be considerably larger than can be induced from our table.

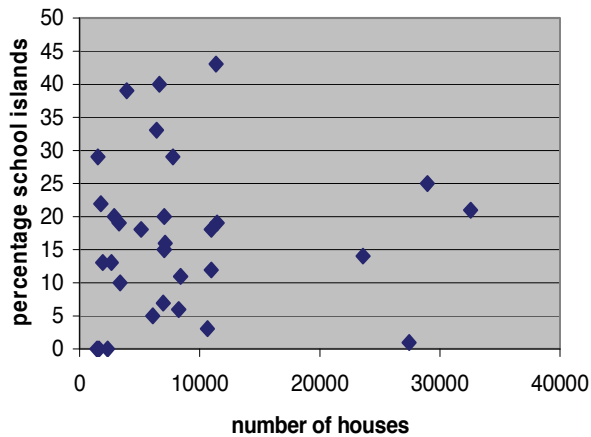
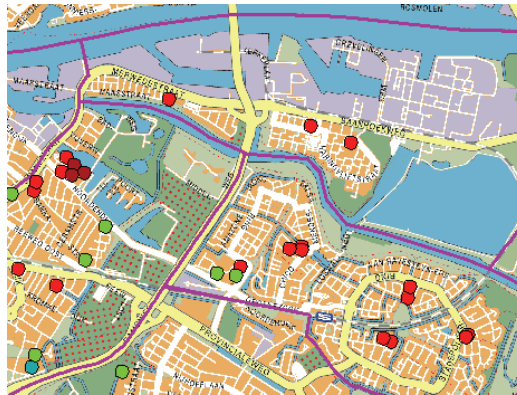


Figure 6.1 Housing production and percentage of schools on a school island in 31 Municipalities.



Map 6.3 Dordrecht, school locations as indicated on (part of) a municipal map (Source: <http://cms.dordrecht.nl/dordt>). The red dots represent primary school buildings.

6.5.5 Conclusions: a fairly common national habit increasing school travel distances

School islands, being clusters of schools of different authorities and denominations at a common location prove to be applied nearly everywhere, but with widely different intensities. Up to 43% of the local schools may be clustered! The inclusion of Inspection locations in the analysis yields even more school islands as a check of three Municipalities showed.

The absence of a relationship with the volume of housing production demonstrates however that it is essentially a matter of taste, of different weighting of arguments.

The motives for creating these complexes are different from those for spectacular early specimen, where architectural considerations seem to have been dominant. Now efficient town planning and school capacity planning are probably dominant motives. The population development in new town quarters shows a wave of high birth rates during the first decades of their existence. The composition of the population in terms of its preference for a certain denomination in primary education is uncertain. These factors make it attractive to concentrate school buildings in a central compound where capacities can be more easily adapted and redistributed about the participating institutions on the basis of manifest demand.

This policy creates considerably larger minimum school travel distances though, as in the case of the Hendrik-Ido-Ambacht Volgerlanden quarter. These were increased considerably already by the 1996 drastic raising of minimum pupil numbers for founding new schools, mentioned in section 6.2. In this way the factor distance is neutralised in school choice but at a considerable travel cost.

The concept was developed in an age when there was no trace of mass motorisation yet. However, nowadays parents are likely to bridge the larger distances to schools in less densely occupied areas more often by car, when they feel the children should be accompanied. It is not unlikely to create traffic unsafety at the school itself.

6.5.6 Implications for the hypotheses

In this section two hypotheses were to be discussed, the most important one being hypothesis nr. 2.5.8 postulating that the creation of new town quarters will lead to a lower density of schools and, especially, of school locations. The general search for ‘school islands’ showed that this principle is fairly common but that a relationship to the housing production of Municipalities during a certain period is absent. This may be caused however by the fact that the existing set of locations was developed at least partly during a longer period than studied for housing production. Indeed those that include largely new towns show relatively high percentages of schools on school islands.

The second hypothesis (2.6.5) is not unlikely to be correct, but it cannot be confirmed since the age of the school islands is uncertain. It will be subjected to a literature survey, presented in the next section.

2.5.8. In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.

The hypothesis could not be confirmed in the sense that schools are often clustered but without an explicit relationship to the recent housing production. New towns do have relatively high numbers of schools on school islands though.

2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.

This development is plausible and found in one case indeed, but testing would have required additional research of Municipal school planning.

6.6 The ‘broad school’, a new wave of undefined local concentration of facilities

6.6.1 Background, hypotheses and approach

There is a general tendency to make more of schools and of school buildings, to offer services additional to the traditional ones. These require facilities which might be used by other actors too. This may be especially important where other institutions are largely lacking as is the case in small settlements and new town quarters.

The ‘broad school’ is the common denomination for ambitions of this kind. In the next section the different conceptions of the broad school will be discussed, after which basic data will be presented, referring to earlier case studies. The broad school may imply clustering of schools, to provide sufficient support for additional activities. The available evidence is discussed in the last section.

This phenomenon is studied with only two hypotheses in mind (see below). Especially the second one, that was hard to discuss on the basis of data collected for the preceding subsection will receive our attention.

2.5.8. In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.
2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.

The research is restricted to a literature survey, looking especially for SCP contributions as cited for our chapter on the development of the school system (chapter 3). Particularly worthwhile sources prove to be the ‘Year reports broad school’ by the Oberon consultancy. These mention the occurrence ‘roof sharing’ of broad schools with other facilities, but without mentioning other schools! Sites of leading Architect firms show numerous examples though.

6.6.2 The ‘broad school’, a container concept

The broad school may be described as a school offering more services than the standard education, that is ‘a broader school’. These services do not necessarily require a concentration of hitherto separate locations. It means that the concept is rather vague, both in content and in physical appearance.

In a contribution to a national conference on the broad school, Bronneman-Helmerts called it a ‘container concept’ covering rather different approaches (Bronneman-Helmerts, 2003). She distinguished the following four varieties:

The education deficit variety (Dutch: onderwijsachterstandvariant), intending to improve the results of lower class children by all kinds of before school and outside school activities, partly intended for the parents as well. It would imply additional pedagogical activities and parent instructions.

The school support or care range variety (Dutch: schoolondersteunings- of zorgbreedtevariant), to prevent or solve serious problems of pupils and their families, even with the assistance of the police. It would imply a desk for a social worker or even one of the neighbourhood cop.

The relief or reception variety (Dutch: opvang variant) for preschool children and school children before, during, between or after school hours. This may imply inclusion of a nursery, of recreation rooms fit to offer ‘daytime arrangements’, hosting the school children before, between and after school hours. Nowadays schools have the duty to make arrangements for part of these.

The accommodation variety for an efficient or multifunctional use of buildings, maybe concentrating all local services in one building, popular in new town quarters and villages with a reduced level of services. Apart from aforementioned facilities a library and a public gymnasium might be added.

The latter one is most relevant for our study. Bronneman-Helmers stated, under the heading 'little new under the sun', that this and other concepts were not new. Multifunctional building was popular during the nineteen-sixties and nineteen-seventies

Indeed such different settlements as Nylân (FrI) and Zwijndrecht were provided with 'multifacs'.

At Nylân the multifac (1980) accommodates the primary school, the gymnasium and the village hall.

At Zwijndrecht (1989) it houses the secondary 'Walburg College', adult education ('Volksuniversiteit'), the library, a sports hall and the local theatre.

6.6.3 The broad school clustered with other schools?

There is a genuine 'broad school' movement. The general development is analysed in two-yearly 'messages', based on extensive research on behalf of the Ministries of Education and Social Affairs. The Ministries of Education and of Health provide subsidies especially for the varieties 1 and 2 (subsection 6.5.2). See for instance 'Subsidieregeling huisvesting brede school' (subsidy regulation for housing broad schools).

The 2005 'message' provides the following information (Oberon, 2005). In the Netherlands the creation and reconstruction of school buildings is the financial responsibility of the Municipality and so is care for family and child.

Of the total number of 467 Municipalities 289 (62%) were working on broad schools, in 2003 only 54% yet. The large cities had taken the initiative, because of relatively large educational deficits and social problems in older town quarters, but in 2005 46% of the rural Municipalities (less than 20.000 inhabitants) were active as well.

The number of active broad schools was about 600 and further growth was expected, especially in villages, with an estimated score of 1200 broad schools in 2010.

More than half the number of broad schools (54%) proved to be housed in multifunctional accommodations, usually new or renovated. The incitation to work on broad schools was for 51% of the Municipalities 'housing and construction of new buildings'.

The 2007 'message' mentions a formidable growth, perhaps because of national subsidies. Now 76% of the Municipalities were active. Only 9% is not interested. Broad schools are being created in villages as well.

The most frequently mentioned motives of Municipalities for developing broad schools are 'more opportunities for child development', and 'developing new accommodations' (72% both).

The number of broad schools was estimated to be a 1000 by now. The multifacs could not follow that fast. Only 43% of the broad schools is accommodated that way (Oberon 2007).

Alas the Oberon data do not show how many broad schools are to be found at the same location. That information will be included in the 2009 report.

The sites of three prominent architecture firms were visited to collect basic information on this topic. Two of those, KOW and Leijh Kappelhoff Seckel provided only 'reference projects'. Frencken/Scholl, perhaps the most prominent one, provided a substantive list for about 15 years (<http://www.frenckenscholl.nl/project/onderwijs>). Most remarkable was the fact that Frencken/Scholl designed only single schools until 2000, but mostly multifacs after that. The four school cluster of Hendrik Ido Ambacht was one of those. The result is presented in table 6.5.

Tabel 6.5. The number of schools and multifacs designed by three prominent architecture firms according to the character of the school and their clustering with another one

<i>Broad</i>	<i>No</i>		<i>Yes</i>		<i>Total</i>
<i>Cluster</i>	<i>No</i>	<i>yes</i>	<i>No</i>	<i>yes</i>	
<i>Frencken/Scholl</i>	8	2	5	7	22
<i>KOW</i>	2	1	7	0	10
<i>Leijh Kappelhoff Seckel</i>	0	1	1	2	4
<i>Total</i>	10	4	13	9	36

It may be noted that the majority of the schools can be characterised as broad, including additional facilities at the same location (about 60%). Of those broad schools about 70% is clustered with at least one other school. Of the ‘narrow’ schools 40% is clustered too! It confirms the general tendency to cluster schools when new buildings are required.

6.6.4 Conclusion: an additional impetus to cluster schools

The broad school is in essence an ethereal concept, intended essentially to widen and coordinate child oriented services. This requires a degree of cooperation between schools and other organisations. Spatial clustering is not strictly necessary, but it may prevent child or expert travel between the agencies involved.

The Municipality is a central actor in financing the services and their accommodations. It is financially attractive to concentrate these in fewer buildings, especially when some of the existing ones are obsolete. Therefore it is not surprising that the most important reasons for stimulating the ‘broadening’ of schools are both service oriented (child care) and economically oriented: solving an accommodation problem. Clustering of broad schools in one ‘multifac’ is not unlikely to be most effective and efficient from both perspectives.

6.6.5 Implications for the hypotheses

This analysis modestly supports the two hypotheses to be discussed. Local government, giving its responsibility for providing school buildings and its freedom to spend the means provided for this for other purposes, neglecting school buildings and promoting (replacement by) common buildings, reducing the number of school locations in this way.

2.5.8. In new town quarters cities will try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.

This is not confirmed in general terms, but it shows that new schools tend to be clustered in higher percentages than can be inferred from the national survey in section 6.4.

2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.

This hypothesis is supported by the fact that half of the Municipalities active in promoting broad schools use the construction of new buildings as a motive to do so.

6.7 General conclusions on local concentration of primary schools

The set of studies in this chapter was undertaken because there proved to be remarkable local differences between the numbers of school institutions and the numbers of school locations, the latter one being essential for school type choice and school travel.

National government stopped the growth of the number of primary schools in the 1990's by increasing minimum pupil number norms for existing schools in medium sized cities and by a radical general increase of those norms for the founding of new schools.

It did not provide the financial means required for housing the pupils at the remaining schools. Instead, national government transferred the responsibility for school locations and school buildings to local government, including the means for those, but only as a yearly standard allowance. There is no obligation to spend the full allowance on school buildings, since it is part of the general municipal allowance.

This approach incited *Municipalities* to continue the use of existing locations, in order to avoid investments most insufficiently covered by available means. These might even be spent on other municipal tasks. The scan of the Drechtsteden region (section 6.3) confirms that this 'more locations than institution phenomenon' is fairly common.

School authorities evidently were satisfied with this situation, being able to maintain their position on the neighbourhood markets.

Under spending on school buildings is a serious threat for this 'more locations than institutions' situation. When structural maintenance on school buildings is neglected it may be less costly to rearrange the locations in order to concentrate the education in one new building, which might accommodate even more than one institution. School authorities have difficulty in successfully resisting such a concentration strategy, especially because the new compound may have attractive additional facilities.

In fact many Municipalities have been active in *concentrating institutions at one location*, called 'school islands'. It most likely started in the city of Amsterdam in the 1920's but it became more or less common practice in the planning of new town quarters (section 6.4).

The desire to broaden the function of the school as a place providing child oriented facilities, named the 'broad school', is a further stimulus for this concentration tendency, even in existing town quarters (section 6.5).

Home-to-school distances are bound to increase by the foreseeable closure of dilapidated buildings/locations and by the ongoing creation of 'multi-institution' locations. In new town quarters the combination of the latter policy with high minimum pupil number standards may lead to minimum home-to-school distances that are three or four times longer than in quarters developed before about 1990. It is questionable whether these may be regarded to be *reasonable distances*, being the subject of *chapter 7*.

In large new town quarters developed during the period from 1990 on there is said to be massive car transport to primary schools, no doubt being largely caused by the unusually large distances. Municipalities may be inclined to concentrate schools because parents are known to behave like that. Such was the case of the Hendrik-Ido-Ambacht 'Volgerlanden' VINEX quarter, struggling with car traffic around the schools since.

Table 6.6 Summary of the outcomes of the discussions on a number of hypotheses in successive sections of chapter 6.

The numbers of the hypotheses refer to sections of chapter 2, where these were developed (2.4.1 = section 2.4)

Hypothesis	Section	6.2	6.3	6.4	6.5
2.4.1. <i>A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.</i>		–			
2.5.5. <i>Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non religious schools.</i>		–			
2.5.6 <i>Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.</i>		–			
2.5.8. <i>In new town quarters cities try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.</i>		–		±	±
2.6.1. <i>The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.</i>		±			
2.6.3. <i>In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economising on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.</i>		+	+		
2.6.4 <i>In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.</i>		–	–	–	+
2.6.5. <i>The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.</i>		–			
2.6.6 <i>Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.</i>		+			

Legend: + = supported by evidence; – = not supported; ± = partly supported

6.8 General conclusions on school concentration in primary education, at both a regional and a local level

School concentration may take place at three different levels, being administrative, institutional and locational in character. These levels are likely to interact, but there is no one to one relationship between these levels, such as larger administrations causing larger institutions causing larger locations.

The large administration may have a relatively large social distance to the school (the institution) and even more to the location. Yet it may be able to manipulate its resources to protect smaller units. Creating larger institutions, as may be enforced by central government, puts small locations under pressure, but again it does not mean that these are all abolished, because some may be thought to be important for the distribution of educational facilities and for a successful competition with other schools. The Municipality as the present day agent for the provision of school buildings is not unlikely to agree as long as existing buildings are of a tolerable quality.

Historically speaking school concentration is caused by a number of factors, such as demographic change, school preference change, school system change and government economising.

Both rural areas and town quarters may lose population and witness a change in composition of the population, which may influence the taste for different types of education. School system change has an impact on the duration of education, the duration of certain phases in education and the number of pupils required for an economic supply of education. Economizing may lead to larger schools by raising minimum pupil standards or to cluster schools into complexes housing common and foreign facilities.

And what about distances to school? From the point of view of education policy increasing travel distances to school may lead to suboptimal school choice, choosing the closest school instead of the preferred one. It may lead to an ‘insufficient public education’ when non-religious inhabitants of villages or town quarters decide to send their children to a Roman Catholic school because it is so pleasantly close. They do so only because the Public school is too far away. This is clearly the case in the northeast of the Province of Friesland, where at least part of the public will choose a PC school by lack of a Public school nearby. One may argue the other way too, as demonstrated in the section on the Volgerlanden school island. From the point of view of transport of vulnerable pupils the increase in distances can be regarded as a problem leading as these are to higher risk, less travelling independently (going to school on your own), more car use, and the incidence of obesity.

6.9 Elaborating the relationship between school travel distance and school travel in the school travel part of the thesis

In the following *chapter 7* we will analyse the concept of ‘*reasonable distance*’ applied in countries like Belgium, the UK and The Netherlands for decision making on school planning and/or school transport provision. The Dutch practice is analysed. The concept will prove to be complex in character with references to school duty and traffic safety.

We propose a different approach to control distance and safety: assigning a school a pupil travel budget, regulating the relationship between travel time and school size with the motto ‘*reasonable distances to a reasonably large school*’

In continuation, *chapter 8* will shed light on the role of distance in *school choice in primary education*. Actual school choice of pupils in the Municipality of Zwijndrecht is quantitatively analysed, including child characteristics, school characteristics, home-to-school distances and the need to cross major roads as explanatory factors (see section 6.2.5).

In *chapter 9 school travel* will be analysed, describing school travel distance and travel mode developments in The Netherlands and in Flanders and revealing school travel distance and travel mode choice as a function of a broad set of explanatory factors of both. This opens the opportunity to identify cultural factors in the choices made.

Chapter 7.

A reasonable distance to school or reasonable travel conditions on the school journey?

Developing an alternative flexible norm for a certain distance as a criterion for founding and dissolving schools

7.1 Introduction

7.1.1 Location and function of this chapter

This chapter is a turning point of our analysis in more than one sense, turning from school concentration to school travel and, although partly, from recent empirical studies to normative studies undertaken earlier to contribute to the control of undesirable travel impacts of school closures.

The *preceding chapters* were dedicated to studies into the types and volumes of school concentration in The Netherlands, mostly from about 1985 to 2008, in both primary education and secondary education. These studies were undertaken especially to assess the development of minimum necessary school travel distances.

The general picture proved to be quite varied and sometimes most surprising.

In secondary education the expected general geographical concentration tendency was not found for the countryside. There even a de-concentration of curricula may dominate, as the Frisian case study demonstrated. In primary education concentration in urban areas may be reinforced by the habit of creating ‘school islands’, clusters of schools of different denominations at the same location.

The development of necessary travel distances is the result of national government policies regarding minimum school location size, and of school authority and local government policies regarding geographical location patterns.

National government policies clearly took account of travel distances by allowing and even financing school satellites in secondary education with lower than standard pupil numbers at some distance from the main location. In primary education it went one step further by relating the minimum size of existing schools to local population density.

In *this chapter* the concept of *reasonable distance* is analysed in order to assess what are basic values or at least norms used in school planning and school travel aiming at safeguarding a minimum level of accessibility.

A *norm* may be *defined* as a statement expressing which action should be taken if a criterion variable of an object or system satisfies a certain threshold value. This may be expressed as: if $(A < \alpha)$ then Y. Its *function* is creating transparency in decision making.

Example: if the number of pupils (A) of a certain school location is less than α , this location should be closed (Y).

In the case of Dutch primary schools non compliance with the valid threshold implies automatically closure by the Ministry of Education, or, more precise, discontinuing government subsidy.

The term ‘reasonable’ is used for instance by the European Union for measures demanded from an employer to provide access in the widest sense to a person with a disability ‘... unless such measures would impose a disproportionate burden on the employer’ (Council Directive 2000/78 European Commission, Article 5). Here ‘reasonable’ means in fact that user benefits are more or less proportional to employer cost.

The concept of reasonable distance is found in Dutch and Belgian school planning (‘redelijke afstand’) and in related British and Belgian school transport provision. The term ‘reasonable’ is not defined. It seems to refer to common law or to jurisprudence. Reasonable is then a certain distance, being two miles as a traditional value in England. It is presented as ‘two miles walking’, referring to the supposed travel mode that might indicate a travel time as a basic criterion.

In Germany the concept of ‘zumutbarer Schulweg’ is wider, meaning ‘the school route that may be demanded’. This implies norms concerning quality of the route to be followed.

Travel conditions are the subjects of the following chapters on primary school choice (distance and traffic as factors in choice, chapter 8) and on travel distance and travel mode choice in secondary education (chapter 9).

7.1.2 Theorising on character and origins of norms for government financed provisions, especially in school travel

The core of this chapter is an analysis of ‘reasonable distance’ as defined for secondary education by the Dutch Provinces in their secondary education planning and by the Council of State in their verdicts on appeals against unfavourable decisions by the national Ministry of Education on individual school founding initiatives. For an understanding of these decisions and related verdicts it is important to know the norms laying at the foundation of these and, more general, the principles guiding the legitimization of these norms.

A search for treatises on the origins and development of governmental norms in general yielded no result whatsoever. Inquiries at the most important Dutch institutions for general education studies, being the Education Council (Onderwijsraad) and the National Institute for Social Research (SCP), were equally unproductive. This is not really surprising because the geographical kind of norm we are interested in is aiming at the efficiency of education rather than at its effectiveness.

Government norms no doubt are developed and revised in an interaction between interested parties, politics, administration and courts of law, the result being a trade off between quality, government cost and consumer cost.

In shaping these norms a *number of principles* may be distinguished though. These will be presented concisely as follows:

- norms are often based on traditional values,
- norms for new phenomena are likely to be derived from these,
- norms tend to be differentiated, distinguishing between types of education facilities, types of transport facilities, and types of users,
- changing circumstances, changing the balance between the cost benefit ratio for (government) provider and user may change the values chosen,

- norms for the provision of new facilities are likely to be less generous than those for the withdrawal of existing ones, losses being perceived to be stronger than gains of a similar size,
- changes in norms are likely to be the result of (political) negotiation, seeking a fair distribution of impacts on both provider and users,
- detailed norms for certain provisions may be exchanged for a (certain) freedom in de spending of fixed budgets.

The practice of norm development in supplying education provisions as related to the presented principles will be illustrated with Dutch and foreign education norms. These are to be found both in the topics of school duty, school travel and school planning.

One must be aware though, that *norms for education are likely to be a separate universe*, because this type of activity is unique in the claim it puts on parents and on children from the tender age of four or five and for a period of more than ten years. Therefore the sacrifices of these 'policy subjects' in terms of finance and travel have to be limited.

Distance and time norms may be found for emergency provisions like fire brigades, ambulances and hospitals, but these will be more demanding. Time has a much higher value in these cases than in the case of education, because it may decide about life and death.

Traditional values as a foundation. The earliest transport related norm to be found in The Netherlands is the *school duty distance limit of four kilometres* 'over the shortest passable and sufficiently safe road' (see chapter 3). It expressed a *one hour walking* limit to the sacrifice to be made for education. Poorly paved roads tended to be impassable during the winter season, forcing/allowing children to stay home. Free transport provided by government might serve as compensation, bringing the school again within an hour's range (see the chapters on school system and primary education).

New phenomena like obligatory secondary education require(d) compensating larger distances, taking account of the larger abilities of the older children involved. The former 8 km threshold for public transport compensation, noted in the Frisian case study of chapter four, is no doubt a simple duplication of the old 4 km norm!

Norms tend to become differentiated, according to population density and distinguishing basic and additional education, young and older children and able and disabled children (see chapter 5 for the first kind of differentiation). Differentiation will be based on differences both in the cost of providing education and those of enjoying education.

Withdrawal of facilities is treated less demandingly than *provision of facilities* as we have seen in the chapter 5, on primary education at a regional level. Dutch primary schools with only 23 pupils may be continued in some cases, but for a new (particular) school the minimum is 200 pupils (see chapter 5).

Changing circumstances may be a motive to adapt norms. Both economic and demographic developments (especially declining birth rates) and a general change of travel conditions (creation of separate cycle tracks or, in contrast, increasing car traffic) may inspire adapting norms. We have seen the former developments in the school concentration studies (chapters 4 to 6). The latter ones are explanations of the contradictory developments in Dutch norms for primary school transport (from 4 to 6 km) and in Belgian norms, evidently being reduced from 4 km to 500m as the crow flies. In Flanders a reasonable (minimum) distance for school transport provision was defined to be 4 km (Decreet basisonderwijs, 1997, art. 25). In the government initiative 'sustainable to school' taken in 2004, a minimum distance of 750 m (air line) is mentioned (www.ond.vlaanderen.be/nieuws/archief/2007/2007p/files/1130-duurzaam-naar-school-bijlage.ppt#404).

Norms as the result of political negotiation clearly came about in the struggle between the Ministry of Education and associations of school authorities and rural Provinces like Groningen and Friesland about minimum school sizes in primary and secondary education. The Ministry made enormous efforts to prove the desirability of larger (and cheaper) schools in studies like those of Blank and Boef (1990), but it managed to stabilise the number of

schools (its purpose proper) only by closing urban schools that were several times larger than the smallest country schools (see chapters 4 and 5).

Detailed norms may be replaced with other control mechanisms as was done in the management of schools and their facilities (chapters 4 and 5). In secondary school planning a self control mechanism was introduced by the 'Regional Plan for Education Facilities', intended to make school development plans the responsibility of the collective of competing regional school authorities (see Regulation facility planning in secondary education [Regeling Voorzieningenplanning Voortgezet Onderwijs], CFI VO/BenB-2008/26204).

The concept of reasonable distance will be studied, discussed and made operational with these arguments in mind.

7.1.3 Content

This chapter discusses the notion of 'reasonable distance' on the basis of an extended effort to make the concept operational for Dutch application. It is based on a study undertaken in 1990 on an assignment of the Province of South-Holland, being one of the major Dutch Provinces. The related research report had the title 'Reasonable distances to a reasonably large school' (De Boer and Nederveen 1990), expressing the desirability of an explicit trade off between the size of a school and the volume of travel it causes. It was applied to both special schools and secondary schools, including MBO. This explains the discussion of special education, being a school type not subjected to our concentration studies.

Our study starts with an *analysis of then existing interpretations of the concept, to be reported in section 7.2*. There were two sources, being views of other Provinces, and verdicts of the Council of State (Raad van State) in appeals against provincial decisions.

The analysis demonstrates that apart from distance, travel time (per public transport) is taken into consideration. It implies that good public transport makes it possible to define distances of up to 43 km as reasonable.

No doubt traffic safety should be included too, since a lack of safety may make relatively short school trips 'unreasonable', that is unacceptable.

A further problem is the likely imbalance between the government cost savings of large schools and the pupils' large expenses in terms of travel time and cost. It is argued that the decisions on school founding and school closure should include an assessment of the total travel time in the present situation and after proposed changes. Therefore a new norm is proposed, being a maximum travel time budget, which is the product of minimum school size and maximum individual travel time.

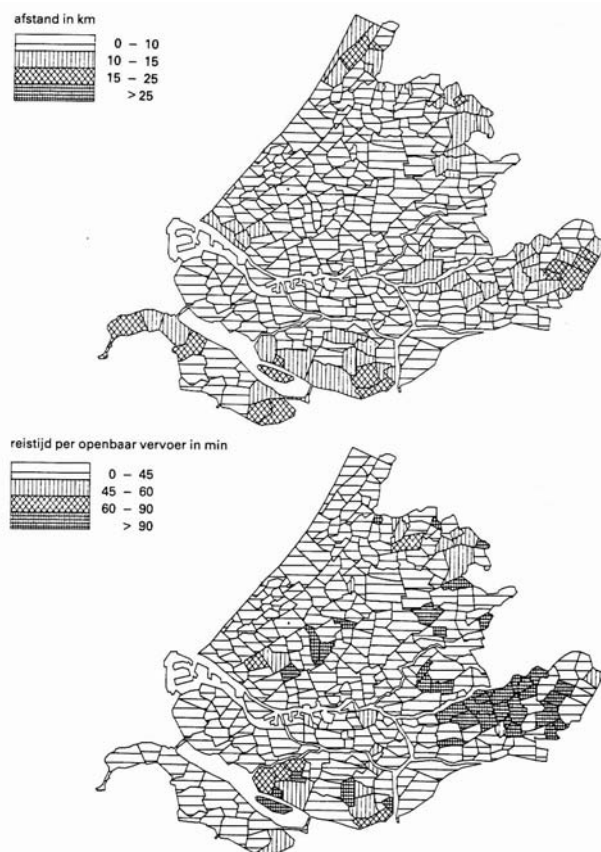
On the basis of the analysis *a flexible concept is developed for application in school founding*. It is applied to a number of cases. This operation is *reported in section 7.3*.

The chapter is concluded with a *description of present practices (section 7.4)*, following old habits in stead of our proposals. Yet these are more acceptable than in the past, because nowadays school satellites are allowed.

7.2 Reasonable distance in school founding for pupils living beyond a certain distance from an existing school

7.2.1 Background

The necessity to economise on secondary education during the last decades of the twentieth century, leading to quadrupling the minimum number of pupils required for the continuation of a secondary school with one type of education, a so-called *categorical* school, led to a discussion on the accessibility of education after the necessary closures (see chapter 4).



Map 7.1 Distances (above) and travel times in minutes per public transport (below) from home zones to zones with the nearest Public VWO school in 1988 (Huigen 1988, figure 4.9).

At the time regional government was responsible for the planning of secondary education as regulated by the Law on Secondary Education (Wet op het Voortgezet Onderwijs, WVO). WVO mentioned in article 69, section 3 'redelijke afstand' i.e. 'reasonable distance' as an argument for founding new schools. Consequently an 'unacceptable distance' after school closure might be an argument against some closures. Where and when numerous schools are threatened with closure, it is important to specify what is a reasonable distance and why, in order to enable politicians to reduce the subjective character of their decisions. *The reasonable distance is in all these cases, both of founding and closing, the distance to the nearest school of the same type and denomination. If it is reasonable for part of the pupils concerned, those will not be counted as pupils contributing to foundation or for closure prevention.*

The Province of South-Holland wanted to prepare as good as possible for the political ordeal of school closures. To that end it started a series of research projects. For our purpose the following ones are most important:

- *Calculating travel times by bike and by public transport between settlements* in the province, in order to be able to assess changes in the time spent on the journey to school as caused by changes in the school location pattern (Huigen etc. University of Utrecht 1988).

Huigen calculated distances from 292 housing zones in the Province to existing schools. The actual road network was used for calculations, with the exception of highways and motorways unless the latter ones were provided with separate cycling facilities. The mean cycling speed for secondary education was assumed to be 13.28 km/h, based on Huigen's Frisian research, mentioned in our chapter 4 (Huigen 1986). It implies that 10 km takes 45 minutes of cycling.

Travel times in public transport were calculated on the basis of public transport schedules, school times and distances from railway stations and bus stops to the schools and to the centres of the housing zones (Huigen 1988, pp 13 – 19).

Map 7.1, taken from Huigen shows that only areas in the rural periphery of the province scored negatively on both distance (over 15 km) and public transport (over 45 min) to a Public VWO school.

- *Developing a set of criteria to make the concept of 'reasonable distance' operational*, using the outcomes of previous research and the verdicts of appeals at the Council of State against decisions of the Ministry of Education on founding and closing schools (De Boer and Nederveen, 1990).

The following subsections are dedicated to the outcomes of this second operation. At the start of it South-Holland officials expressed the expectation that 15 km would prove to be an acceptable distance, implying a travel time 67.5 minutes by bike!

7.2.2 Criteria as applied by Dutch Provinces in school planning procedures

The Province of South-Holland made an inventory of the norms of all Dutch Provinces regarding 'reasonable distance' in 1990. It made inquiries about all types of special and secondary education. The responsible officials were asked which norms they applied. There were no written sources as a rule. Table 7.1 presents the results.

Table 7.1 Provincial norms for 'reasonable distance' to special education and secondary education. Source: de Boer and Nederveen 1990, p. 21

Province	School type		
	SpEd/SecSpEd	SecEd 1 st phase	SecEd 2 nd phase
Drenthe	?	10 - 20 km	30 km
Flevoland	none	none	none
Fryslân	none	10 km	none
Gelderland	30 - 45 min	45 min	60 min, 30 km
Groningen	none	16 km	none
Limburg	none	none	none
North-Holland	45 min	45 min	60 min
North-Brabant	60 min	?	?
Overijssel	60 min	16 km	30 km
Utrecht	none	none	none
Zeeland	none	none	none
South-Holland	45 - 60 min	none	none
(Ministry)	60 min	16 km	30 km

It proves that in four cases the officials were not aware of any norms at all (indicated with none). Only in three cases norms were mentioned for all general school types.

Remarkably, for special education no distance at all was mentioned, but different travel times, varying from 30 to 60 minutes! It indicates the standard practice of school transport in this sector (see chapter 11).

For secondary education a mixture of distances and travel times is mentioned, with distances varying from 10 km in the first phase to 30 km in the second phase. We assume that these values refer to distances ‘over the road’.

No doubt these views were in some degree based on knowledge of jurisprudence. A lack of norms in several Provinces on the other hand might be explained by a degree of inconclusiveness of the jurisprudence.

7.2.3 Criteria as applied in verdicts on appeals at the Council of State

The jurisprudence was collected in the ‘Handleiding WVO’ of May 1985. The ‘Kroon’ (= ‘Crown’ = Council of State, being the national administrative court of appeal) had judged about ‘reasonable distance’ to secondary schools in dozens of cases. *All verdicts had cases of school foundation as their subject.*

It appears that the Council did not institute a single clear cut distance norm.

The jurisprudence is quite complicated, as the manual WVO shows. ‘Reasonable distance’ of course is expressed in a distance, but, regarding the verdicts of the Council, it has to be related to such factors as:

- decent public transport,
- distance home – train-station (or bus-stop),
- distance train station (or ...) – school,
- travel-time by public transport,
- the need to change in public transport,
- the reliability of public transport (like a ferry),
- the frequency of the service (once per hour being infrequent),
- the coordination between public transport and school hours,
- the possibility of private transport,
- the age of the pupil.

(see: De Boer and Nederveen, 1990, Annex 2)

The subject of the Council of State verdict concerning the Leerdam to Rotterdam journey was most likely the founding of the Reformatory Gomarus MAVO at Gorinchem, making education of this denomination more accessible for the southeast of the Province. The travel time mentioned is shorter than that indicated in the present railway schedule. The present improved schedule requires an in-system trip duration of 59 minutes.

At the time the trip characteristics were as follows:

- modest public transport, being an hourly service from Leerdam to Rotterdam-L
- an average travel from home to the train station of at least 10 minutes
- a very short distance (5 minutes) to the school, being located at the railway station
- perhaps an in-system travel time of 47 minutes
- a need to change with a 12 minute change time at Dordrecht (sufficient and reliable)
- a perhaps modest adaptation of school hours to public transport, pupils arriving with different train types and from different directions

A MAVO school was granted at Gorinchem later on and it developed into the Gomarus College (see chapter 4). Its location at some distance from the railway station requires at least 15 minutes to be bridged.

Textbox 7.1. Public transport quality in the acceptable 48 km case.

What the Council thought to be *reasonable* in a number of individual cases in secondary education can be found simplified in the tables of our 1990 annex 2 (de Boer and Nederveen 1990). The longest distance and travel time judged to be acceptable were 48 kilometres, implying a travel time of 47 minutes. This pertains in fact a journey by train, including a change at Dordrecht, from the small town of Leerdam to a school at the Rotterdam-Lombardijen railway station.

This assessment implied that the potential pupils concerned were not accepted to be included in the size estimates for the new school, with a government refusal to fund it as a consequence.

Of course the '*unreasonable*' verdicts are more interesting. See tables 7.2 and 7.3. Alas only a few cases were qualified as such.

Table 7.2 Cases of no reasonable distances for schools in first phase secondary education according to the Council of State

p.J.O.	Trajectory	Remarks
2667	Zoetermeer - Waddinxveen	Road distance about 15 km Rail distance 24 km, change at Gouda, Travel time train 30 min, frequency 1 hour
2667	Zoetermeer-Delft	Existing school at Delft – West (about 15 km) Rail travel possible only by changing at The Hague CS
2552	Eersel – Valkenswaard	Distance to Hertog Jan College about 16 km

p.J.O.= page Jurisprudentie Onderwijs

Remarkable in these cases are the distances mentioned on the one hand and the travel time and quality on the other hand. In all three cases of first phase secondary education the *unreasonable distance threshold is 15 to 16 km*. It explains the only more or less consistent opinion amongst provincial officials found in table 7.1!

The travel time in public transport seems not decisive. The need to change trains or buses proves to be more important. Eersel is in fact a similar case, since there is a bus connection to Valkenswaard with a change at the city of Eindhoven only.

In the only case of second phase (vocational) education, assessed for two villages, the distance does not seem to be a factor. The travel time is clearly excessive.

Table 7.3 Cases of no reasonable distances for MBO schools (secondary phase of ...) according to the Council of State. Source : De Boer and Nederveen 1990, Annex 2.

p.J.O.	Trajectory	Distance Public transport	Travel time in minutes	Frequency
4250	Rotterdam - Rilland - Bath	87 km	65	1 hour
2693	Rotterdam - Yerseke	97 km	66 – 75	½ hour

One might conclude that a distance of 13 or 14 km is the limit for reasonability in the first phase of secondary education, using private means of transport, i.e. the bicycle.

There are clues for a reasonable travel time of 60 minutes, given the verdicts for Leerdam and Rilland-Bath. In fact 13.5 km is about 60 minutes by bike, following Huigen (Huigen 1986).

7.2.4 Conclusion: a judicial operationalisation only, and an unduly straightforward one

The analyses demonstrate that there was neither a clear cut consistent operational concept of 'reasonable distance', nor of a specific threshold value. There are in fact competing criteria, being distance per bike and travel time per public transport, both tending to one hour travel.

The quality of public transport is taken into consideration by the Council of State. The quality of the journey per bike is not, in spite of considerable variations in road and weather conditions. The road may be unreasonably unsafe as well.

In 2008 a group of 13 pupils of the Gorinchem Gomarus College (chapter 4) was swept from the Vlietskade road north of the city by a car driver, leaving one of them wheelchair bound. (<http://www.refdag.nl/artikel/1315718/Overleg+over+weg+Arkel+na+ongeval.html>)

The trade off between government and parent/pupil cost moreover is not expressed in these verdicts. Should not school closures be treated differently, and, more importantly, shouldn't school size be in balance with the volume of travel demanded from the pupils? Our effort undertaken for the Province of South-Holland elaborated this thought.

7.3 On developing norms for 'reasonable distance'

7.3.1 Introduction

We were not really satisfied with these outcomes, if only because a distance of 15 km is hardly feasible when cycling in stormy and wintry conditions. Students having a different option, i.e. some kind of public transport, tend to take that in winter for distances over 5 km. See chapter 9 for travel mode choice.

It should be possible to take into account considerations like these in decision making. One might say for instance, that collective transport should be available for distances over 3 km! This indeed is the standard for pupil transport in the German Land of Niedersachsen for those who are 10 to 16 years old! (Landkreis Aurich 1996, being valid still. See the site of the Landkreis).

Another consideration is that the balance between cost for individuals and government was in visible in the verdicts of the Council of State.

We are convinced that it is possible to design norms that take account of both individual and collective interests. The norms for preserving elementary schools, the so-called Deetman-norms, called after the Minister of Education at that time may serve as an example.

These norms allowed schools at a minimum distance from another one to have smaller minimum sizes, and especially when these schools were the only ones left in a settlement (see De Boer, 1987). At present the school size allowed by the Ministry depends on the population density of a given Municipality, thus taking account of distances (see chapter 5).

Developing norms, that is defining what is acceptable (reasonable, tolerable) or needed (necessary) is a slippery activity. Yet in transport, as a strongly government controlled activity, one cannot do without these. We have formal rules for roads, for vehicle and driver licensing, for driving, for passenger facilities and behaviour. There are service rules as well, for instance the maximum time accepted for the arrival of emergency services, like the ambulance.

In this section a number of different considerations on developing norms will be presented.

Sub section 7.3.2 discusses the subject concisely, distinguishing different reasons for 'reasonability' of government measures.

Next we will try to answer the puzzling question why a certain distance, defined to be a threshold, might be acceptable still and a longer one not anymore? The answer will be stated hypothetically for a start, presenting possible approaches to derive norms (7.3.3). The conclusion is that approaches based on behavioural change or, static deprivation cannot be applied by lack of data. Therefore a comparative approach, trying to find parallels in existing norms will have to be used (7.4).

7.3.2 Reasonable and acceptable, a matter of policies and impact analysis

What is reasonable, or rather acceptable still, stated otherwise: on the brink of rejection?

In politics there is a balance of what is collectively thought to be acceptable and what is accepted by the public. On both sides this is a matter of dominant factions, decided on the one hand by elections and by organisational competence on the other hand. The debate should be objectified by specifying the cost and benefits for both government and affected parties.

In the case of education, government will (or at least should) strive for an educational system which is both effective and efficient, confronting the share of the budget required with the quality of the output provided. For the individuals, both parents and pupils, education must be worthwhile as well, requiring effort, time and money, but promising a better, more comfortable future.

Then *reasonable* is what government may defend to be justified to ask or even demand from individuals in terms of general policies and collective cost. It will be defended as being *fair*.

Acceptable is what individuals perceive as having only bearable personal disadvantages.

Change, both in the educational system and in the individual conditions for education, has to be evaluated from these general perspectives. Change introduced in other citizen oriented policies, like those aiming at reducing car use and traffic noise nuisance, led to basic insights into principles of acceptance.

The design of the Dutch 'Tweede Structuurschema Verkeer en Vervoer' (Second National Transport Plan) of 1989 heralded considerable change in the approach of car traffic. All kinds of measures should at least slow down growth, for reason of its serious environmental impact in the widest sense. These would imply either physical restrictions or financial punishment for using the private automobile excessively.

One of the government advisory bodies, to be consulted in the process of decision making, was the National Council for the Environment, CRMH (Centrale Raad voor de MilieuHygiene).

In the Council's advice a section was dedicated to acceptability of policy measures (CRMH, 1989, pp 36 – 40). It suggested that *measures could be unacceptable at three different levels*:

1. *policy objectives*: if people do not agree with those, they are unlikely to accept any measure based on it.
2. *policy instruments*: it should be 'normal' instruments, and, if not used in the sector, at least common in related fields.
3. *negative policy impacts*: these should be modest for the individual, fairly distributed and have no unintended re-distributive elements.

The third level is not unlikely to be the most important one for acceptance, since it may change daily life. Dutch noise abatement policies may serve as an example. See textbox 7.2.

School closures that took place during the eighties and the nineties were simply intended to economise on the cost of education supply.

This is a very general *goal*, which is difficult to identify with, because one may ask 'why economising on education' or 'why economising on this kind of education' or 'why economising on our school'. It was presented successfully by pointing at rising cost, being caused partly by the combination of increasing numbers of schools and decreasing numbers of pupils.

The *instrument*, closure, was not unusual, although it was applied rarely in the years before. A sharp increase of minimum-standards for school size is a radical change though, which may cause collective protest. This happened indeed.

Given these rather negative assessments, *a fair distribution of effects and impacts is a minimum condition*, which is difficult to realise, because the countryside, less frequented school types and schools of religious minorities are likely to be affected strongly. Therefore both the countryside and relatively rare school types and denominations were allowed smaller school sizes to prevent substantial increases in school travel distances, as was demonstrated in the chapters on school concentration.

Yet the fundamental concept of ‘reasonable distance’ is not defined satisfactorily. Shouldn’t it be related directly to school size?

On the foundation of the Dutch Law on Noise Nuisance of 1978, national norms were developed for critical noise levels at dwellings, both inside and at the façade. Three different situations were distinguished, with different norms: existing situations, reconstruction (of a road) and entirely new situations.

The national Road Department (Rijkswaterstaat) and the Ministry of the Environment developed a policy for noise sanitation along national roads by constructing noise barriers. These were intended primarily for lowering the noise level at the façade, but a satisfactory level inside was strived for. The alternative measure, being sound insulation of dwellings, was considered to be inferior, because it isolates residents from all external sound, like the wind and bird’s song.

This policy met with unexpected resistance from residents, for whom the barriers were intended. A series of case studies revealed the causes, present conspicuously in the case of the N2 noise barrier at the city of Maastricht. The barrier reduced the noise level only on the service street in front of the dwellings, having no substantial social function. The barrier however reduced the view from more than one story of the apartment blocks along the road. The measure had no beneficial effect, but a detrimental impact instead! (Kortbeek and De Boer, 1987).

Textbox 7.2. A policy instrument being rejected because of its impact

7.3.3 Approaches to derive norms

There are different ways to develop new norms. Not unusual is the ‘*expert opinion*’ approach in which in some way or another arguments and (partial) proposals are produced by a number of experts with different backgrounds, both in terms of discipline and employer. It is typical of the traditional Dutch ‘*poldering approach*’.

The Dutch ASVV manual for traffic facilities in built up areas is example of this (CROW 2004). The CROW institute, traditionally responsible for it, organises working parties of professionals with various employment backgrounds, discussing problems and character and details of solutions, translating these in ‘design suggestions’ or directives, having a decisive impact on actual road construction and geometry.

The acceptance of proposed norms however is dependent on cost consequences (investment, maintenance) and on benefits like an improvement of traffic safety, which in its turn might imply a certain cost reduction. As soon as the matter to be standardised is relatively new and as the standard may have uncertain cost implications, essentially political discussions will take place even in the CROW working parties.

However useful this kind of approach may be, both from a political and practical perspective, one would like to develop norms on a more objective basis. There are three possibilities for this, two of which (the second and the third) are impact-oriented:

- a *comparative approach*, looking at norms of other actors or in other more or less related fields, for instance school transport,
- a *behavioural approach*, considering the relationship with behavioural changes, like the utilisation of ‘intervening opportunities’, second choice options,
- a *deprivation approach*, regarding elements of suffering as a consequence of using the preferred opportunity.

In the *comparative approach* the activity required is rather superficial still, that is: making an inventory of rules as found in all kinds of administrative regulations. It is useful from two

different perspectives, namely political consistency and equality as a central political value. This approach is no doubt feasible, but it is not without difficulty.

Distance or time norms are likely to be found for police stations, fire brigade stations, ambulance posts and hospitals, but all these provisions have an emergency function. This implies very short arrival times for the fire brigade and the ambulance at the location of the incident, being 8 and 15 minutes respectively for The Netherlands (See Ministry of Internal Affairs 2006 for the fire brigade). The ambulance should bring the patient to a hospital within 45 minutes after the alarm. The latter value is identical to the 2010 value for reasonable distance to a secondary school, but this regards daily travel by public transport or bike, disregarding potential safety problems (see www.minocw.nl/61154.pdf).

In the *behavioural approach*, knowledge concerning adaptive behaviour is required. The central question is whether the choice of a certain kind of education or even the participation in education as such is determined at least partly by the distance to its institutions.

The lowest and least specialised levels of secondary education, MAVO, LAO and LHNO used to be present even in relatively small settlements. This, officials of the Province of Groningen argued in the 1980's, was bound to be detrimental to an adequate choice in secondary education, because higher and specialised types were only present in about ten regional centres, often at a considerable distance. There was no empirical evidence for this hypothesis (see chapter 4).

This information cannot easily be inferred from *statistics*, which do show the distribution of students about different types of schools but not related to the relative distance to a set of schools.

Surveys of parent's motives for the choice of a primary school, do mention distance, but often combined with other motives (See chapter 8).

Another approach is *investigating the redistribution of pupils after closure of schools*. Only one case, investigated by us for the Province of Friesland, was available. See textbox 7.3.

The LHNO-school 'De Twade Hikke' (the second fence), at the village of Garyp, was closed in the 1980's. Most of its pupils came from the municipal capital of Burgum, having a MAVO-school for general secondary education of the lowest level.

After the closure no one girl from these villages seemed to be going to (faraway) LHNO anymore but to the Burgum MAVO instead, perhaps because it adapted its curriculum to accommodate them. Nowadays the second type of education is thought to be generally overvalued by parents, as compared with vocational types. The first one was thought to be one of the least useful vocational types, and it was dissolved. Part of it is found in the present 'care' stream in VMBO.

The case proved to be inconclusive except for school travel. Closure considerably reduced the travel distance for two-thirds of the girls. Moreover these no longer had to cross the dangerous N365 road, but now one-third had to do so (De Boer 1984).

Textbox 7.3. Closure of a school, maybe a blessing?

This example also illustrates the utility of *investigating transitory processes*, in which the transition itself may make clear how difficult it is to adapt, causing a degree of deprivation. This conclusion was drawn already in one of the first studies of transport deprivation (de Boer, 1980). Alas analyses of the effects of withdrawal of education are scarce and too superficial to draw conclusions about deprivation.

In the *deprivation approach* knowledge of a series of individual impacts of long travel distance, to be summarised as the 'distance cost of education' must be known. This is not at all a simple task. It requires substantial research, which will have been undertaken only where either an academic tradition or a general unrest concerning these problems does exist.

In spite of a degree of turmoil during the 1980's and 1990's, that inspired TU research projects and created the opportunity to finance these, this kind of research did not take place. A recent increase of the kilometre threshold for pupil transport from 4 to 6 km to compensate for the cost of introducing decent seating in the vehicles (01-01-04), was not evaluated from the user perspective.

Analyses of withdrawal of transport for education seem to be missing altogether.

The conclusion is bound to be that the only feasible approach is the comparative one. Nevertheless, following the original research for the Province of South-Holland, some basic reasoning on the desired character of norms will be undertaken in the next sections, because it might give birth to unusual approaches.

7.4 Basic elements of norms.

7.4.1 Introduction

A norm was defined in subsection 7.1.1 as a statement expressing which action should be taken if a criterion variable of an object or system satisfies a certain threshold value. This may be expressed as: *if* ($A < \alpha$) *then* Y .

It has been shown that apart from or instead of distance travel time may be used to define reasonable distance: *if* ($A < \alpha$ and $B < \beta$) *then* Y .

Furthermore it was demonstrated that different values may be defined for different school types, as related to the abilities of pupils concerned and travel conditions like the need to change in public transport: *if* $Context = C$ and $A_c < \alpha_c$ and $B_c < \beta_c$ *then* Y .

In this section the basic elements for designing a norm for 'acceptable distance', will be presented. First, the variables that might be included in a complex norm are reviewed (7.4.2). Next a number of operational considerations are presented (7.4.3). The available information on both empirical data and norms related to the listed variables is summarised in section 7.4.4. The most surprising finding is a German set of norms for maximum school size (table 7.6).

The conclusion for our effort is that central elements in a norm should be the age of pupils and the time required for school travel, given a normal travel mode choice at the distance concerned, taking account of the safety of the given itinerary.

7.4.2 Context variables to be considered ideally

Ideally five types of context variables should be included in decision making on establishing or closing down schools. These types can be labelled as: school, education, accessibility, person and cost. All are to be related to the impacts of school travel characteristics!

- *school*: type, religious orientation or perhaps pedagogical approach,
- *education*: participation, demanded school, non-attendance, drop-out, performance,
- *accessibility*: distance, transport, time, weather,
- *person*: age, safety, time-budget (social integration),
- *cost of*: education, safety, transport.

The first category, *school*, seems to be more or less self-evident. For a general school a stricter norm is more plausible than for a specialised one. One might say the same for a non-religious one (often called 'public' or 'neutral') versus a religious specialised one, since government is not supposed to support religions. In The Netherlands however both types are treated almost equally. It was the outcome of the long school struggle (see chapter 3).

For special education, as (general) education adapted to physical disabilities and to learning and behavioural problems, stricter norms are plausible.

In fact the variables mentioned are important only in connection with those of other categories. One will institute a new school of a different type of religion only because it is in much demand and might even reduce dropping-out, since the pupils are educated within their own cultural circle.

The second category, *education*, seems to be really self evident. It is necessary provide education at a place which does not discourage participation and does not stimulate the choice of an improper school, with consequences for further development.

One should be aware of the fact though, that a minimum participation and a minimum quality are required anyhow.

It has been made sufficiently clear that accessibility may be operationalised in terms of distance, of available transport and of discomfort in the use of it (travel time, the need to change vehicles).

The background for choices regarding acceptable values of these variables must be a series of what might be called *person variables*.

Age is an indicator for the ability to make longer, more independent journeys with ever faster vehicles. It is difficult however to take a standard age for a certain journey of a certain length, since the 'development age' may be different from the historical one. The pupils of special schools are less developed in their abilities.

Safety of the school route should be a feature in a norm for 'acceptable distance', in the sense that some kind of assessment decides that a route of acceptable length is nevertheless rejected, because it is not 'passable' to use the old word.

Time-budget, i.e. insufficient time for other activities because of a time-consuming travelling is a reasonable argument as well.

One might say that the '*person*' variables are the essential ones and should be confronted with the financial '*cost*' ones in decision making on school locations and thus on distance.

7.4.3 Operational considerations

The choice of one or more criterion variables for a norm is only the first step. In order to develop norms one has to arrange for:

- *measurement*,
- *defining a threshold value*,
- *defining an accepted excess values*.

Variables should of course be measurable, but often one has to resort to indicators or to partial measurements as in the (relatively easy) case of travel time.

In the South-Holland case travel time was estimated by defining the distance between home and school and assuming a mean travel speed per bicycle on the one hand and taking the official bus-schedule on the other hand. This is net travel time. It would be plausible though to use gross travel time, including waiting at the bus stop or at school.

The next step is defining a threshold, a criterion value that serves as a limit for accessibility. It should be as clear as possible: 60 minutes per single trip for instance.

The last step is choosing an acceptable excess value, since it is unlikely that every journey has a standard travel time (bad weather!) or that the journey of every child can fit with the criterion. One might choose for a transgression of 15% of the children, and an absolute limit of a 50% longer time (90 minutes).

7.4.4 Empirical evidence and partial norms concerning relevant variables

7.4.4.1 Introduction

This section is aimed at establishing two types of information on norms, that is insight into the factual knowledge concerning the identified criterion variables and knowledge about (partial) norms based on these. The way in which information was collected is described in sub section 7.4.4.2. After that the results for the diverse variables will be treated in successive sub-sections: school (7.4.4.3), education (7.4.4.4), accessibility (7.4.4.5), person (7.4.4.6) and cost (7.4.4.7).

This complex is summarised in subsection 7.4.5 with conclusions regarding the feasibility of norms which seem to lead to variables like age, distance, time, traffic safety and travel cost. Knowledge of the choice between transport modes is essential. It is the subject of chapter 9, but some essentials will be treated in 7.5.

7.4.4.2 Research

The search for elements of a system of norms followed a number of different approaches, two of which have been treated before:

- *analysing jurisprudence* (see subsection 7.2.3),
- *making an inventory of provincial norms* (see subsection 7.2.2),
- *discussing the matter with key informants*,
- *source analysis*.

Discussions with key informants were arranged with provincial officials, with the process coordinator for secondary vocational education (MBO) and with the Protestant school boards association (PCO). These showed that the discussion on closures of schools focused on continuing schools as satellites, but not for categorical education, a supply of only one or two curricula like MAVO/LHNO. Indeed solutions were found in this direction, as the chapters four to six have demonstrated. Concentration of institutions was larger than concentration of locations.

Source analysis took place on materials available from previous research projects, but efforts were made to gather additional foreign material.

An interesting source proved to be the ‘Niedersächsische Verordnung zur Schulentwicklungsplanung’, the bylaw on school development planning of the German Land of Niedersachsen. It contained a series of interesting conditions: establishment of schools according to a hierarchy of settlements, minimum- and maximum (!) school size, and a precondition of ‘zumutbarer Schulweg’ (acceptable way to school), defined with distance, accessibility by transport and traffic safety (Landesregierung 1990/2006).

Although the analysis is based on data of two decades ago, recent data were not collected because these would not change the general argument on ‘reasonable distance’. Administrative changes in the definition of ‘reasonable’ were assessed and will be reported.

7.4.4.3 School (type) context: criterion variables and thresholds

One cannot imagine that the (tolerable) accessibility of all types of schools should be the same. Some types are that rare, that it is impossible to locate these at a distance that can be bridged daily by everyone, using normal means of transport.

There are three types of solutions: moving to the school (or create boarding schools), creating special (fast) transport or providing the essential courses on an individual basis in less specialised schools. The solution may depend on the (collective) cost and on the necessity of the education. In The Netherlands government subsidised boarding schools were restricted to institutions for the deaf-mute, the blind and to bargees’ children schools.

By consequence we would need a system of accessibility norms based on the relative rareness of schools or rather the rareness of demand, excluding those with a demand of less than maybe 1:1000th for disability categories like the deaf-mute and vocational categories like a silversmith.

Implicit accessibility norms can be found in norms for founding and closing schools of certain categories. The higher the minimum pupil number norm the less accessibility is considered to be a problem, given the type of school and the geographical situation. We collected those norms for different kinds of special education and secondary education, and summarised these in the tables 7.4 and 7.5.

The school system has changed considerably since then, but these norms show what kind of differentiation is possible.

There proved to be different site norms for founding and closing, the first ones being much higher than the latter ones. The exception is MBO (secondary vocational education), where norms for foundation are lacking (not in the tables). The ratio between foundation and closure norms varies, from 1.1 in secondary special education (table 7.4 'can'-norm) to 2.9 in LTO, lower technical education (a type of secondary education now integrated in VMBO).

The differences are not easy to explain. They must be the result of tradition and a mixture of arguments.

Table 7.4 The most important founding and dissolving norms for the minimum number of pupils in special and secondary special education (state: 1990). Source: art. 67, 104, 104a, 106 Interimwet SOVSO.

School type	Founding norm can	Founding norm Must	Dissolving norm
SO	40	60	25
VSO	32	42	39
SO + VSO	55	81	33
of which VSO	14	21	-
department	10	15	8

Table 7.5 The most important founding and dissolving norms for the minimum number of pupils in first phase secondary education (schools entered at 12; state 1990). Source: art. 107, law on secondary education. (*) as part of a school community.

School type	Founding norm categorical school	Founding norm school community	Dissolving norm
Gymnasium	355	265	180
Atheneum	340	255	180
Lyceum	460	-	300
HAVO	360	270	150
MAVO	260	195	120
LTO	350	262	120
ITO (*)	120	-	-
LHNO	260	195	120
IHNO (*)	60	-	-
LEAO	250	188	120
LAVO	100	-	-
LMO	200	150	120
LLO	125	94	120
ILO (*)	60	-	-

The low norms for special education no doubt are the result of the relatively low participation and the fears that long distances will cause expensive transport or severely reduce

participation, resulting in non-education. The same will be true for the ITO and ILO, individual vocational education for the modestly talented, now hosted by 'practice schools'.

Remarkable is the distinction between 'can' and 'must' norms in special education, the 'must' one underlining the political will to make this type of education accessible. The flexible norms in primary education, treated in chapter three are an expression of the same.

The differences between the various types of secondary education, shown in table 7.5, are to be explained by duration of the education and by the age of those entering. The 6-year Gymnasium has a foundation-norm of 355 pupils, the 4-year MAVO one of 260. These types of education are entered at the age of 12, the 4-year MBO with a 600 norm at the age of 16.

Two things are remarkable though: the lower norms for agricultural education and the neglect of relative rareness in the case of the Gymnasium.

The Gymnasium was much less common than the MAVO and yet this did not lead to a reduction of the number of pupils required. The explanation can be only that participation in this elite type of school was regarded to be rather insensitive to distance. It is likely however that the impact of the social distance is reinforced by the physical distance.

Agricultural education proves to have lower norms than other types of vocational training. This is true of both the first phase of secondary education, the LLO (lower agricultural education) and the second phase, MAO (secondary agricultural education): 400 instead of 600. The explanation is the separate organisation of this vocational education financed as it was by the national Ministry of Agriculture, promoting the development of a modern industry as much as it could.

The search for foreign norms yielded one remarkable system of norms, being that of the German Bundesland of Niedersachsen. It uses both minimum and maximum norms (see table 7.6). The second one is probably intended to prevent both social disintegration and costly pupil transport. The Dutch equivalents for the general categorical schools are indicated. The Orientierungsstufe was combined with the Hauptschule and Gesamtschule. It was cancelled before 2006.

The criterion variable is not the number of pupils, but the number of parallel classes (see table 4.6). The maximum class size is 32 pupils but average class size may be estimated to be 25 (Information Gymnasium Ulricianum, Aurich).

The *maximum* is 8 parallel classes for the Gesamtschule (12 to 16), offering all general secondary education and for the Orientierungsstufe (10, 11 years). This leads to a school of at most $9 \times 8 \times 25 = 1800$ pupils.

The Gymnasium maximum size (without Orientierungsstufe) is much smaller with $7 \times 4 \times 25 = 700$ pupils. The 2006 norm is higher and the pupils of the Orientierungsstufe have been added. The maximum size then is 1350 pupils.

For the Grundschule (6 to 9 years) the maximum is 4 (= 400 pupils), the *minimum* 1 (=100). For the other types the minimum is 50% of the maximum, with the exception the Berufsschule and the Sonderschulen for which there is *no maximum*.

For the Berufsschule (following Hauptschule) the minimum is much higher than for a Gesamtschule, probably because it has to offer a series of specialised courses.

For the Sonderschule (special school) for Lernbehinderte (the light cases) the minimum is 1 class per year, which seems to lead to a low density, but the classes are likely to be smaller (15 pupils?). For the other type (the heavy cases) the density will certainly be low.

Exceptions are explicitly possible, but only for the most common types. These were developed probably for the North Sea islands.

Table 7.6 Norms for minimum and maximum school size with regard to the number of parallel classes in the German Bundesland of Niedersachsen, state 1990 and (2006). Source: Niedersächsische Verordnung fuer Schulentwicklungsplanung 1990 and 2006 (Landesregierung Niedersachsen)* Sekundarbereich I, ** Integrierte Gesamtschule

School type	maximum	minimum	exception
Grundschule (6 – 10 years)	4	1	½
Orientierungsstufe (11 – 12 years)	8 (-)	4 (-)	3 (-)
Hauptschule (MAVO)	4	2	1
Realschule (HAVO)	4	2	1
Gymnasium (VWO + G)	4 (6)*	2	1? (1)*
Gesamtschule	8 **	4	(-)**
Berufsschule	-	8	?
Sonderschule Lernbehinderte (Gr)	-	1	½ ?
Sonderschule geistig Behinderte	-	4 (1)	- (½)

The German Land of Niedersachsen witnessed incisive school reforms after 1960. First the 'Volksschule', housing all pupils receiving basic general education was split into a primary 'Grundschule' (Ground school, 6 – 10 years) and a secondary 'Hauptschule' (10 – 14 years) parallel to the existing Realschule and Gymnasium. Later on a 'Orientierungsstufe' for secondary education was added to the Hauptschule, to avoid too early selection in secondary education. A second development with the same purpose was the 'integrierte Gesamtschule' (IGS integrated general school) as a parallel school for the three-school hierarchy.

The first change implied the loss of the majority of the village schools. The Landkreis of Aurich for instance lost about 70% of its rural basic schools. See figure 2.3 in chapter 2 for the development in one Municipality. Often 'School centres' were created to combine primary, secondary and basic special education in an effort to provide maximum quality. The modest village of Hesel, halfway between the cities of Aurich and Leer (Landkreis Leer capital) is a typical example.

The massive school closures were feasible only by generous provision of free transport to the nearest school for all types of education up to the age of 16.

The policy of the Land regarding school integration was changing with the dominance of either CDU or Labour. A conservative change put an end to the Orientierungsstufe and to the founding of additional IGSes. The latter restriction was relaxed again.

German parents are free in the choice of the level of education, resulting in an overpopulation of Gymnasiums (for those wanting the best) and of IGSes (for those hoping ...). The Hauptschule lost almost completely its perspective, to the detriment of the smaller school centres. Ongoing de-population contributed to decline at Grundschulen as well.

The massiveness of central schools and of school transport led to a disenchantment with further concentration. It was the reason for introducing strict maximum norms and lenient minimum norms for school size.

The change was marked by a 1980 publication of the Niedersachsen Minister of Education. It had a personal introduction of the 'Kultusminister' himself, titled 'Do leave the school in the village' (Laszt doch die Schule im Dorf), stating in fact that about 40 pupils would do (Der Niedersaechsische Kultusminister 1980). From 1960 to 1976 the mean catchment area of primary schools had increased by 130% (from 10 km² to 23 km²).

The impact on actual school size depends on local (Gemeinde) and regional (Kreis) policies though. No Grundschule was closed in recent years in the Landkreis, because Gemeinden do not dare to. The ancient Aurich Gymnasium should not have more than 1350 pupils but in 2009 it has over 2000 in an exotic collection of buildings (Risius 2009). The Labour dominated Kreis administration simply refused to found another Gymnasium in spite of the obvious reduction of school transport it would imply. The Land cannot enforce this by law.

Sources: Information Kreis officials (Von der Brelie and Keiser) and (partly former) school directors at Aurich (Dykhoff and Risius) and Hesel (Hotan).

Text box 7.4. School reforms and school struggles in Germany.

Regarding the differences in age of the pupils and in the rareness of schools reasonable distance should be differentiated for the various parts of the school system. In table 7.7 the relationship between both variables is indicated for the curricula of the period. See our list with abbreviations.

In the 3 – 12 year category for instance, one finds under ‘general’ the primary school and the special primary school (former LOM and MLK) provided in modest regions. Under ‘specific’ one finds present ‘expertise centres’ for specific serious problems, provided sooner at the level of some 30 large regions. The other category includes centres for the blind and the deaf/mute, present only in a few cities.

In the 12 – 16 year category one finds common types of general education and vocational training in ‘general’, secondary special education and specialised vocational curricula, like agricultural training. VSO-LOM and VSO-MLK are now ‘practice school’ integrated into secondary school communities and therefore belonging sooner to ‘general’ (a case of school de-concentration).

In the 16 – 21 category one finds mostly MBO curricula (secondary vocational training) ranging from general to rare, shipping and goldsmith’s craft for instance belonging to the ‘rare’ category.

Table 7.7 School types according to age category and desired geographical density (state 1990). Source: de Boer and Nederveen 1990, p. 20

Age	General	Specific	Rare
3 – 12 years	Primary education LOM, MLK	IOBK ZMOK, ZMLK	Other special education
12 – 16 years	LHNO/IHNO LTO/ITO MAVO, HAVO, VWO	VSO-LOM VSO-MLK LAO/ILO LEAO, LMO	Other VSO Other LBO
16 – 21 years	(HAVO, VWO) Core departments of MMO, MEA, MDGO, MTO	MAO (in AOC)s Specific MBO Department	MBO specialised Dept. MBO specialised Schools

The highest demands should be made for primary education and (primary) special education of common kinds. The lowest accessibility norms are for specialised branches of MBO vocational training.

7.4.4.4 Education variables

The previous sub-section contained quite a few references to this category of variables, as explanatory for accessibility norms. There is little direct evidence though. A central argument is participation:

- participation as such. Non-participation is possible where distances are very long (a free school to be visited from a Frisian island like Vlieland) or the available schools are inadequate: for example a primary school instead of a school for ZMLK (low IQ)
- participation in the right kind of education.

The ‘right kind of education’ can be regarded from different perspectives:

- desired education, a client argument,
- equal opportunities or emancipation, a societal argument,
- the demand on the regional labour market, an economic argument.

The *desired education* argument is in The Netherlands more or less similar to the desire for education of a religious signature, but it may be an educational approach as well, such as Freinet, Montessori and the like. Educational approaches are not used as a basis for planning in The Netherlands.

The arguments of *equal opportunities* and *emancipation* are used where regions or population categories are participating too less in higher types of education or in those that give better access to jobs.

It can even be an argument to close down schools, that function as (nearer by) intervening opportunities (MAVO) and typical girl-schools like the LHNO. Indeed this once popular type

has been completely abolished by 2000, although much of it came back in one branch of VMBO, which is normally integrated with MAVO and 'higher' secondary education (see chapter 4).

The *regional labour market* may be an argument to keep vocational schools, especially in the nautical sector (fishery, dredging) in relatively isolated places.

These arguments can be found in general discussions and in the jurisprudence, but without reference to specific norms. Other educational arguments like non-attendance and performance could not be traced in discussions on founding and closing.

7.4.4.5 Accessibility variables

In this category a number of arguments could be included: *distance, time and comfort*.

For these variables provincial norms (oral information) and national jurisprudence, as presented before, were the most important sources.

For special education only time criteria are mentioned, reflecting the assumption that transport is required for distances of more than a few kilometres (in fact transport is provided on that basis). The time-norms in secondary education can be regarded as standards for a public transport journey, the distances as 'reasonably to be (motor)biked', related to age: under or over 16 years. The average speed of a bicyclist evidently is estimated to be 15km/h, that of a moped-rider 30km/h. Time translated into distance!

The *comfort*-argument could not be found on our sources. The only trace of it might be the necessity to change on a public transport journey, but this is sooner is a sign of unreliability, a time factor.

Overlooking this information one cannot help but concluding that *time* (or transport-time) is *a more important criterion than distance*.

To accept a distance of 15km for the first phase of secondary education (the original idea of the Province of South-Holland), disregarding public transport, would imply that one expects pupils to travel the distance all year by bike, taking 1 hour. Knowledge of modal choice of pupils is in fact essential.

The Ministry of Education's former 'Regulation for compensation of Study-cost' for lower income parents included a threshold of 8 km, which might be regarded as an indication of 'acceptable'. This threshold was supported by statistics on cycle use (CBS 1987). These showed 85% values of 7.5 km both for moped and bike (!), with travel times of 25 and 30 minutes respectively

Under the WTOS law (Wet Tegemoetkoming Onderwijsbijdrage en Schoolkosten) (valid in 2009) there is no specific transport provision for regular secondary education anymore (<http://wetten.overheid.nl/BWBR0012438>).

7.4.4.6 Personal variables

In the category life-variables, *age, safety and time-budget* were mentioned.

Age is decisive for independent use of different transport modes. Apart from temporal age, one has to do with development-age: the level of development of abilities related to the normal development at the temporal or historical age. Especially in special education and of course even more in education for 'retarded' children one has to do with restricted abilities.

Table 7.8 Number of fatalities in traffic per 10 billion travel kilometres as related to age and travel mode in 1986 (Source: CBS 1987).

	car	public transp.	moped	bicycle	walking	other	total
12 – 14	1	0	0	16	33	5	55
15 – 17	6	0	89	10	33	21	159
18 – 19	13	0	41	10	20	43	127
20 – 24	12	0	65	5	26	129	237
25 – 29	6	0	38	13	21	20	98

Temporal age is related to the second factor, traffic *safety*. Youngsters from 12 to 24 years old prove to be the age category with the largest risk after the elderly. For the school types we were interested in, special and secondary education, especially cycling and moped-riding are relevant. Walking, the most dangerous travel mode for the 12 to 14 year old (see table 7.8 and figure 7.1 for 1986 and 2006 respectively), is uncommon for these school types because of their low geographical density. Of course some of the accidents take place while walking to and from public and organised school transport.

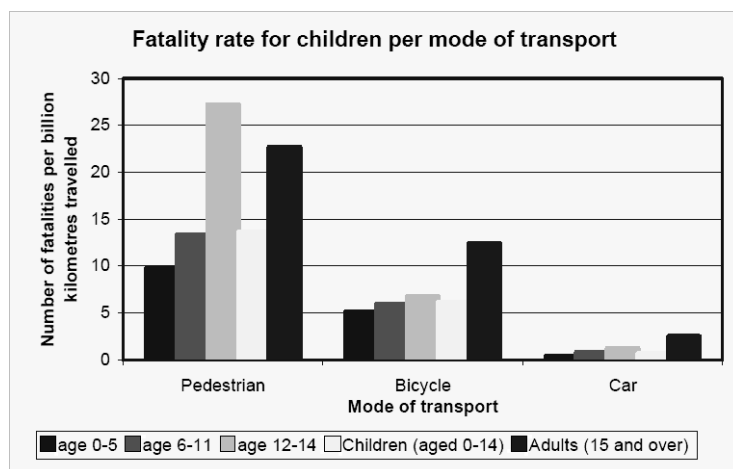


Figure 7.1 Mortality risk per billion travel kilometres as related to age and travel mode during the 2005 – 2007 period (SWOV, 2009, Factsheet traffic safety of children in the Netherlands p. 3)

Especially the category from 15 to 17 years old falls victim to traffic accidents and the cause is clearly the *moped* (table 7.8) It shows in the number of death and even more in the number of wounded: 10 times more than in biking! (De Boer 1987, table 9, p. 24). The fatalities in the category 'other' are mostly the result of motor-biking, which is not very common.

Thinking about accessibility norms *it would be logical to disregard the moped as an alternative in school transport*, which makes longer distances more acceptable for the second phase of secondary education.

Safety could be a more specific consideration, like the presence of safe public transport, in the sense that the relative safety of school routes can be assessed, looking at the presence of facilities for pedestrians and bicyclists and the absence of dangerous crossings and fast traffic (see chapter 10).

The argument of *time-budget*, that is the travel time fitting into the total time budget of pupils, depending on their age, is not used explicitly in the discussions on closure. Research into the

connection between school travel and the use of time outside the school could not be found. The only thing, that can be said, is that younger children need more sleep than older ones, which reduces their 'spare' time (Onderwijsraad, 1986). Older children however tend to get more home work for school.

7.4.4.7 Cost of schools versus cost of accessibility

The cost of schools on the one hand and the cost of transport and/or provisions for road safety should play a role in norms for the accessibility of schools.

The Ministry of Education acknowledged that in the project for 'closability' of primary schools, which it assigned to the present author. In the study 'might that school be really closed', the accessibility cost of closure was confronted with the savings on education. (De Boer 1987).

Closing schools (or not founding these) decreases *the cost of education proper*. One saves expenses for staff and for buildings. These savings are relatively modest though, because the pupils of the closed schools have to be educated elsewhere, and may cause additional cost on a different location.

The Ministry of Education estimated in 1986 to save fl. 100,000 annually per school closed (€45,000). By 1990 this had been corrected: fl. 85,000 for three classes (teaching units) and fl. 70,000 for four classes. It sheds a rather strange light on closures of much larger schools during the nineties. These led to amalgamations of schools, using both old locations (each being too small to house all pupils) and saving not much more than the difference between the salary of a director and a normal (part-time) teacher replacing him. Maybe a €7,000 annually? In secondary education savings of closures were estimated to be fl. 200,000 (de Boer 1984). It is not unlikely that savings in VSO (secondary special education) were roughly the same, and in MBO roughly fl. 400,000.

On the other hand there is *the cost of travel*, of making cycling routes sufficiently safe and/or of organising transport.

The former bus company 'West-Nederland' (now part of Connexxion) mentioned a price of running a *school bus* for four runs during one year for fl. 130,000 (€60,000). This standard bus had 40 seats and another 40 standing places. Nowadays every pupil must have a seat.

Pupils cycling to school are bound to be confronted with dangerous road stretches and dangerous crossings on some routes. The *construction and maintenance cost of road measures* are substantial. The cost of constructing separate cycle lanes at both sides of a road, were estimated to be fl. 200,000 per km in the countryside (€90,000, 1987 prices!). Within an urbanised area it was the eightfold of that amount. Traffic lights on a simple crossing were estimated at fl. 200,000 as well. A bridge (viaduct) or a tunnel would cost roughly fl. 1,000,000. The annual cost of these measures is about 20% of the construction cost. These indicative amounts show that *savings in education are easily compensated with cost of travel, to be paid by government as well!*

We assessed the closure cost of 42 primary schools for the Ministry of Education in 1987. Given the length and the traffic safety characteristics of the new school route the measures required to make the journey to the nearest school acceptable were estimated and confronted with a yearly 'closure budget' as defined by representatives of the Ministry and of unions of school authorities. From this budget either traffic safety measures or school transport might be financed. It showed that one quarter of the schools might be closed forthwith. Half of the number of schools might be closed against affordable cost. The remaining part would have to be continued (De Boer 1987).

In spite of these outcomes the Ministry decided not to choose for this approach, to be translated into a formal procedure, and to leave small rural schools alone and to close much larger city schools with relatively short distances to the nearest one.

7.4.5 Concluding: no norms without insight into the choice of school travel modes

The conclusions from the previous analyses are that:

- It is possible to make a typology of schools according to the *age of the pupils* and to the demand for its type of education, i.e. its number of locations. This typology may serve as a foundation for norms for 'acceptable distance'.
- 'Acceptable distance' may be defined in kilometres, but in *time* (minutes) too: the time required for bridging the distance, as related to the time budget of the child. The second approach is recommendable, because the available vehicle types will decide whether the distance is bridged with more or lesser difficulty.
- *Safety* should be taken into consideration in assessing the way of travelling: using a given vehicle along a given roadway. The moped is too unsafe to be considered for use in school transport.
- The *cost* for a sufficiently fast and safe way to school should be part of the assessment.

A norm for 'reasonable distance', for accessibility of schools, cannot be constructed without knowledge of the choice of a travel mode. This knowledge is essential for assessing, among other matters:

- travel time: the bus being faster than the bicycle,
- travel cost: motorised travel being more expensive,
- safety: the more public transport, the safer it is.

7.5 Transport modes in school travel

7.5.1 Introduction

Modal choice in school travel is discussed only concisely in this section, since it is the subject of chapter 9. Here the only purpose is to show the variation in travel mode per age category and school type.

The information is based on research by the author and by the STOGO institute on assignment of the Province of South-Holland, and by the Province itself (see De Boer and Hurkens 1990). In chapter 9 it will be shown that travel mode use has changed only little since.

In section 7.5.2 it is explained, that a free choice of travel mode by the children should be accepted as a principle for planning, except for the moped. Section 7.5.3 discusses the available knowledge about special education and section 7.5.4 knowledge about the first phase of secondary education. We exercised with MBO as well but this part is left out, because this type of education is no subject of this volume on school concentration. After that conclusions are drawn for the standardising effort (7.5.5).

7.5.2 A free choice of travel mode

In many places there are at least two options for travelling to a distant school, namely the bike and the bus (see for South-Holland Huijgen 1988, service levels were improved since).

The actual choice has consequences for access in terms of travel time and traffic safety. In spite of the normative character of defining 'acceptable distance', one should follow the logical preferences of pupils: for the bike when this is faster and in spite of its relative dangerousness (see chapter 9 for travel mode choice). One might find this unacceptable from the point of view of general policies. In that case one may choose to improve the safety on the routes cycled or to make (public) transport more attractive.

Prescribing the use of public transport and forbidding cycling (which is a healthy exercise!) is in fact unfeasible, although some Dutch primary schools do not accept bicycles of children living close by for parking on the cramped school premises.

7.5.3 Travel mode use in special education

The available information on special education was rather modest. The Province of South-Holland only made an inventory of the share of the children in the different 'normal' school types getting 'aangepast vervoer' (adapted or special transport) and those in boarding schools. The data are shown in table 7.9 (De Boer and Nederveen 1990, p. 29).

The system of special schools was changed since this inventory. SO-LOM and -MLK have been integrated into the special primary school. VSO-LOM and -MLK are now integrated into the practice school, being part of school communities. The other curricula belong to the new category of expertise centres. Transport data are likely to be similar in 2010.

In special education transport was provided for pupils living more than 2 km from school. This could mean a certain amount of money (for using the bike, the family car or the bus) or specially organised transport.

The table shows percentages of pupils using this special transport.

The schools are presented in an order reflecting increasing difficulties for their pupils.

Table 7.9 The percentage of South-Holland pupils in special education and special secondary education getting adapted transport and those in lodged in boarding schools, according to age and school type. Source: Province of South-Holland (De Boer and Nederveen, 1990, p. 29). The first percentage refers to transport, the second one to lodging.

Age	SO: LOM	MLK	ZMOK	ZMLK	VSO: LOM	MLK	ZMOK	ZMLK
5		-		100				
6	40	70		90				
7	50	70	70+20	100				
8	60	70	80+20	100				
9	50	70	70+30	100				
10	40	60	70+30	100				
11	20	40	50+20	90+10				
12	10	40	40+20	90+10	0	30		-
13	20	30	30+30	90+10	0	10	10+30	
14	20	30	30+30	80+10	0	10	0+50	100
15	60	30	30+10	80+20	0	10	0+40	90
16		40	-	70+20	0	10	0+40	80
17		70	-	70+30	0	10	0+30	80+10
18		-		60+30	0	0	-	70+10
19		-		60+30	0	10	-	60+20
20		-		90		0+20		-
21						10+40		-
Total	5931	2100	157	433	1333	2100	157	475

Some conclusions:

- LOM-schools, the largest group with about 7,300 pupils had the least special transport, a 50% for those up to 10 years (a threshold for special transport), a 20% for those over 10, and none in secondary education,
- MLK-schools, the second largest group (4,200), containing less intelligent pupils, showed higher percentages,
- ZMOK-schools, for children who are very difficult to educate (and discipline), showed very high percentages for 'special treatment': special transport or internship,

- ZMLK-schools, for children with a low intelligence (900 pupils) received nearly always a special treatment,
- The transport cost was no doubt considerable, especially for the school types with (fortunately) relatively few pupils. It should be reason to make these schools smaller than other ones. The norms of table 7.4 do not show this distinction. It may be one of the reasons for internalising some of the pupils.

It may be assumed that those who do not get special transport hardly ever go to school independently under the age of ten.

Especially in secondary special education LOM and MLK, now practice school, the travel mode use will follow the normal pattern for secondary education. In line with this the pupils of these schools are not entitled to a transport provision anymore in 2010, unless they are disabled.

<http://www.postbus51.nl/nl/home/themas/onderwijs/speciaal-onderwijs-en-leerproblemen/algemene-informatie-speciaal-onderwijs-en-leerproblemen/hoe-is-het-leerlingenvervoer-geregeld.html>

7.5.4 Modal choice in the first phase of secondary education

A modal choice model was developed on the basis of surveys amongst 2000 pupils in four rural areas, in the Provinces of Friesland, Drenthe and South-Holland. (De Boer , Hurkens ... 1990). It calculates how many pupils choose the bus, using the variables season, distance, travel time per bike and travel time per bus. Both modes were available in the four areas, where the bus network is largely oriented on secondary education. The variables will be discussed shortly.

Season. The pupils were asked which means of transport they use most in the months of May, November and January. A 60% chooses the same, but in May the other 40% rides a bike, in contrast to January, when they take the bus.

Distance. On the short distance the bike is used most. In January nearly everyone takes the bike for distances less than 5 km. In May the bike is very popular for distances up to 15 km!

Relationship between the travel times per bike and per bus. A bus which regarding its gross travel time (from leaving home to the start of the lessons and back) is only half as fast as the bike attracts less than a quarter of the pupils in January and this up to a distance of 10km. A bus which is just as fast as the bike attracts 75% of the pupils in January, even at shorter distances.

Summarising and simplifying one might state that distances up to 10 km can be biked by nearly everyone, both in May and in January. For standardising this might imply, that for distances of over 10 km public transport should be available. The Ministry of Education's 'Regulation for compensation for Study-cost' of the time included a threshold of 8 km, which might be regarded as an indication that transport is required at larger distances. Therefore 8 km is to be preferred. At shorter distances the pupils should be able to reach the school safely by bike.

7.5.5 Modal choice in MBO

The STOGO institute investigated the modal choice of more than 1300 South-Holland pupils of the MBO school type, using the same questions as in our earlier research in first phase secondary education (Van Voorthuizen and Stijnenbosch, 1989). Only the data for November will be discussed in this section.

In spite of relatively long home to school distances the bike is the most used transport mode (33%), followed directly by public transport (31%) and at some distance by the moped (26%). Only 7% use a car.

The travel distance by bike is hardly more than 10 km. In this age category (16+) the moped is used for 'middle distances'. A travel time of more than 30min. is rare for moped users: the weather is taking its toll.

Of the public transport users 83% travels for more than half an hour, 62% more than 45 minutes and 39% more than an hour.

According to a second report (Beaujon 1988) the students of MDGO-schools in the Province of North-Holland (90% girls) use for 61% public transport and for only 8% the moped.

7.5.6 Conclusions for 'reasonable distance'

It was argued that the free choice of travel mode should be respected in the assessment of 'reasonable distance', of course with the exception of the moped, as an explicitly unsafe travel mode. This implies that in travel time calculations use of the moped is to be excluded.

In *special education* there is a conditioned choice of travel mode, caused by the restrictions of the pupils on the one hand and the rules for providing transport on the other hand. In fact the population at the primary school age, visiting, the special primary school and especially the rare types, 'expertise centres', are strongly dependent on special transport, even those older than 10 years. For them the time spent in organised transport should be a central criterion.

The pupils of the secondary school age, with the exception of the expertise centres, show a behaviour which is largely similar to that in regular secondary education.

In the *first phase of secondary education* biking is the most common transport mode. The former Ministry of Education's norm of 8 km for remuneration of public transport fares is a reasonable criterion for the presence of public transport, since pupils tend to cycle further in the summer season and less far during winter.

In *MBO* an identical criterion is plausible. Here biking is restricted to distances under 10 km, since the moped takes over at longer distances. Then public transport should be an available alternative.

7.6 An operational assessment procedure, defining a travel time budget for a school

7.6.1 Introduction

On the basis of the reported research a proposal for an assessment procedure for 'reasonable distance' was developed. It was accepted enthusiastically by the Province, especially because of its *central feature*, the *travel time budget for a school*.

In subsection 7.6.2 the basic elements of the assessment procedure are explained:

- distance (per student involved), translated into
- travel mode choice (given the available modes and a simple traffic safety judgement), resulting in a
- travel time for all pupils, to be confronted with
- time limits for individual school travel on the one hand and with transport and traffic safety cost on the other hand.

Schools should not just be restrained by a minimum pupil number for their size, but by a maximum as well, in order to maintain an environmentally sustainable geographical pattern (7.6.3).

Therefore it seems to be reasonable to limit the school size by assigning it a maximum travel time budget (7.6.4). In decision making on school closure and school foundation the travel

time budget will serve to keep the balance between the efficiency of education and the quality of daily life of pupils and their parents.

7.6.2 Basic norms

Principles. On the basis of the foregoing analyses it is quite clear that a norm for acceptable distance should have either distance or (travel) time as its foundation. Time proves to be preferable though. Travel distance is translated into time, and, in motorised transport, into money. If dissolving a (too) small school takes too much time from the pupils, or, to prevent that, too costly transport, the school should stay open.

If, on the other hand, a large school creates too long travel distances, it should be split.

The road to school cannot only be too long, but too unsafe as well. Danger can be relieved by taking physical measures, but by organising transport as well. If the cost for these is too high, poor traffic safety can be reason to continue a school location with less than the minimum pupil number.

Norms based on these principles cannot be the same for all types of schools, and not only because the minimum pupil numbers are different but too because schools serve different age categories and a market that may differ in volume.

Norms. The *travel time* norms as analysed in sections 7.2.2 and 7.2.3 do not yield a very clear picture. Nevertheless a consistent proposal, developed in close cooperation with regional officials, proved to be possible. It is presented in table 7.10.

Table 7.10 Time-norms for school types per age category and commonness. Source: de Boer and Nederveen 1990, p. 36

School type	General	Specific	Rare
SO 3 -11 years	30 min LOM, MLK	30 min IOBK 45 min ZMOK, ZMLK	- Other
VSO 12 – 20 years	-	45 min LOM, MLK	- Other
Sec. Ed. 1 st phase 12 – 15 years	30 min MAVO LHNO, IHNO HAVO, VWO	45 min LAO, ILO LEAO, LAVO, LMO	- Other LBO
Sec. Ed. 1st phase 16 – 18 years	45 min HAVO, VWO	-	-
MBO 16 – 21 years	45 min Core department MNO/MEAO, MDGO, MTO, MMO	60min MAO, Specific departments	- Specialised Departments Specialised Schools

The values chosen are roughly similar to the mean travel times for the specific schools in South-Holland. For the really rare school types no norms were developed, because these will often require either staying overnight or moving to the school.

For the *person* category no (semi-)official norms could be found in the jurisprudence. A lack of traffic safety is nevertheless a traditional argument to provide pupil transport. We

developed safety assessment and safety norms on different occasions, especially for the Ministry of Education (de Boer 1987). The most simple and feasible system of norms is one in which maximum values are defined for the traffic volume and speed of roads, to be used or crossed by children's, without protective provisions.

These values are presented in table 7.11.

Table 7.11 Safety norms for school travel in different age categories using or crossing roads without protection. Source: de Boer and Hurkens, 1990, p. 37

Age		Crossing a road	Following a road
8 – 11 years	Traffic volume	7000mvh/day	7000mvh/day
	Traffic speed	50km/h	50km/h
12 – 15 years	Traffic volume	10,000mvh/day	10,000mvh/day
	Traffic speed	80km/h	80km/h
16 – 21 years	Traffic volume	10,000mvh/day	10,000mvh/day
	Traffic speed	80km/h	80mk/h

Children under 8 years are not supposed to take part in traffic independently. Children older than 8 do take part, but they need separate walking and biking facilities and protected road crossings (with traffic lights) when the traffic is voluminous and fast.

The norms are crude and these might even be unacceptable for safety experts, because even an 80 km road with 5000 mv/h will have cycling facilities! In a route assessment it gives a good first impression though. The assessment procedure TU Delft developed for assessing the closure of primary schools went into more detail, more factors, the coincidence between these and the accumulation on a route (de Boer 1987).

Norms for *cost* might (in case of a potential closure) be found in the savings on the cost of education as compared with the cost of transport and/or safety measures.

The savings could be estimated to be €200,000 per annum for schools in special education and the first phase of secondary education, and twice this sum for MBO.

It would be justified (fair) to take 50% of these amounts as the (yearly) maximum to be borne by other agencies, parents and pupils in case of closure. This was the assumption in our assessment of primary school closures, as suggested by the Ministry of Education itself (de Boer 1987).

Excess values. Of course this set of basic norms is no operational system yet. One of the additional things needed is an excess percentage, the portion of pupils for which certain norms are exceeded. In transport planning it is not unusual to work with an 85 percentile.

7.6.3 School size and accessibility: a matter of environment too

In primary education it is usual to make the school size dependent on the distance to the 'reference school', the nearest school of the same denomination.

In Germany there are not only schools which are considered to be too small, but ones that are considered to be too large as well (see table 7.6). The argument is pedagogical or social in nature. In the Netherlands the 'too large school' does exist only from the point of view of accommodation: founding a school is not allowed when a neighbouring school has sufficient capacity. From the perspective of accessibility one might object to this: the large building enforces longer school journeys.

In a norm system it should be possible to indicate when schools are too large from the point of view of accessibility, which would justify founding new schools.

Maintaining a school, considered to be too small for whatever reason, is defensible from the perspective of sustainability too: restricting the growth of motorised transport. This aspect tends to be neglected (see US Environmental Protection Agency 2003).

7.6.4 A school travel time budget as a central criterion

The principle. For each school type it is possible to define a minimum school size and a maximum travel time from home to school. Their product is the school total travel time budget. For MBO for example these were defined as 600 students and 45 minutes respectively. The complete collection of travel time budgets is presented in table 7.12.

Of course the *maximum travel time* is not an ideal one. Therefore it is desirable to define a *maximum sum travel time* for the school population. The most logical solution is to choose the product of minimum school size and maximum travel time. For MBO this is $600 \times 45 = 27,000$ minutes in each direction. This case will be elaborated.

A budget of 27,000 minutes may be consumed by pupils in quite different travel categories. If 300 students live at 15 minutes and the other 300 at 75 minutes, the school does comply with its budget, but half of the students have to spend far too much time! A solution may be to limit the number of students that is tolerated to surpass the 45 minutes norm (as suggested before), or by counting the excess travel time double $75 = 45 + 2 \times 30 = 105$.

The way to calculate the sum travel time is shown in figure 7.2.

Table 7.12 Basic norms for total travel time (travel time budget) in minutes per single trip for different types of school: maximum travel time x school size. Source: de Boer and Nederveen 1990, p. 39.

School type	Maximum travel time	Minimum school size	Travel time budget
SO	30	25	750
VSO	45	29	1,305
LHNO, IHNO	30	120	3,600
LTO, ITO	30	120	3,600
MAVO	30	120	3,600
LAO, ILO	30	120	3,600
LEAO, LAVO, LMO	30	120	3,600
HAVO	45	150	6,750
VWO	45	180	8,100
MBO general	45	600	27,000
MBO specific	60	600	36,000

Dissolving schools. For decision making on the closure of existing schools we suggest the following preliminary decision rules, being:

1. The new travel time total of the pupils of the school to be closed exceeds the budget of 27,000. *The school should not be closed down.*
2. The new travel time total of the students of the school to be closed and that of the reference school(s) exceeds the budget of the new school by more than 100%. The school should at least stay as a satellite, because transport is no solution as a rule.
3. The new travel time of the students of the old and the reference school exceeds the budget by less than 100%. It should be assessed whether transport is possible for acceptable cost, i.e. 50% of the savings of the school closure. If not, the old school should stay as a satellite.

If one of the possibilities is valid, but the new situation is not really worse than the old one, a new location for a satellite should be sought.

The assessment procedure is shown in figure 7.2.

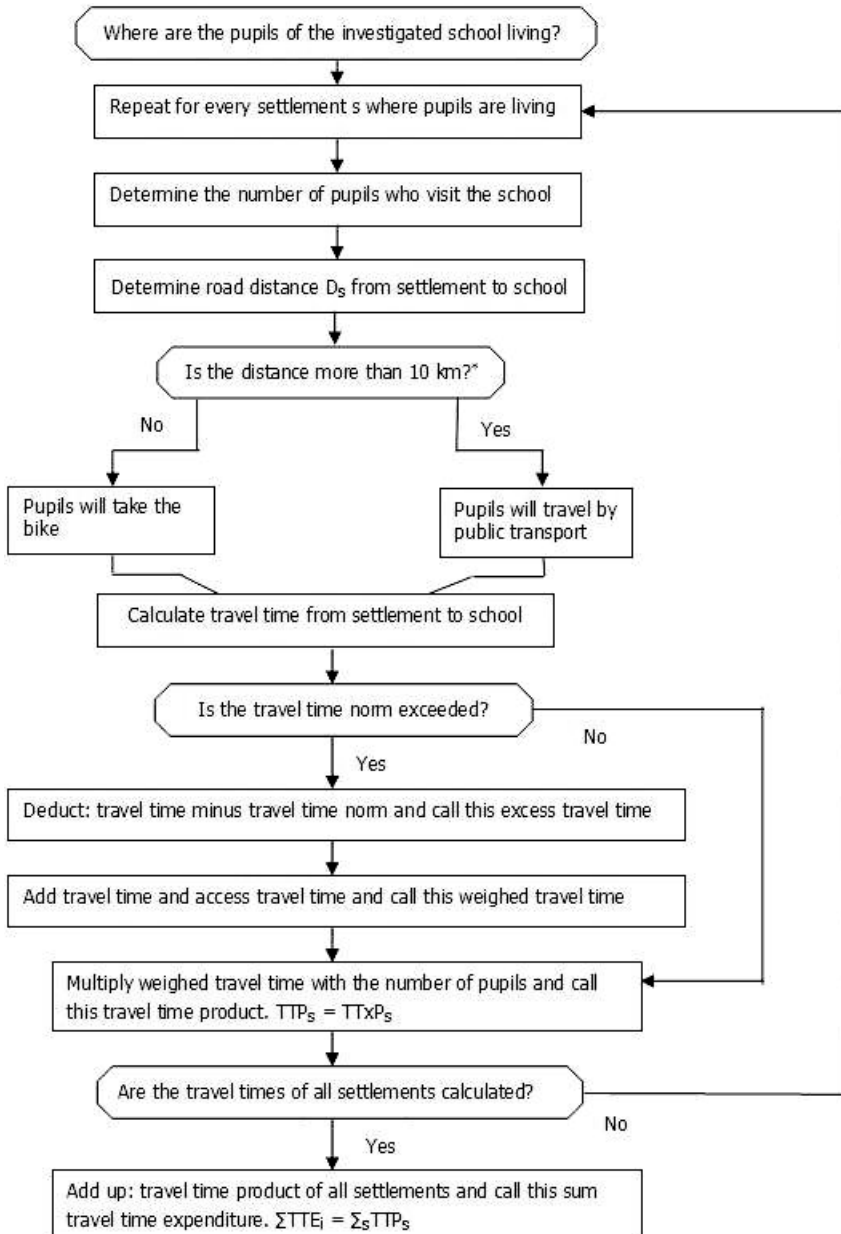


Figure 7.2 Flow chart travel time calculation.

*The value of 10 km is a first approximation. For a more accurate approach see: de Boer 1990, annex 3.

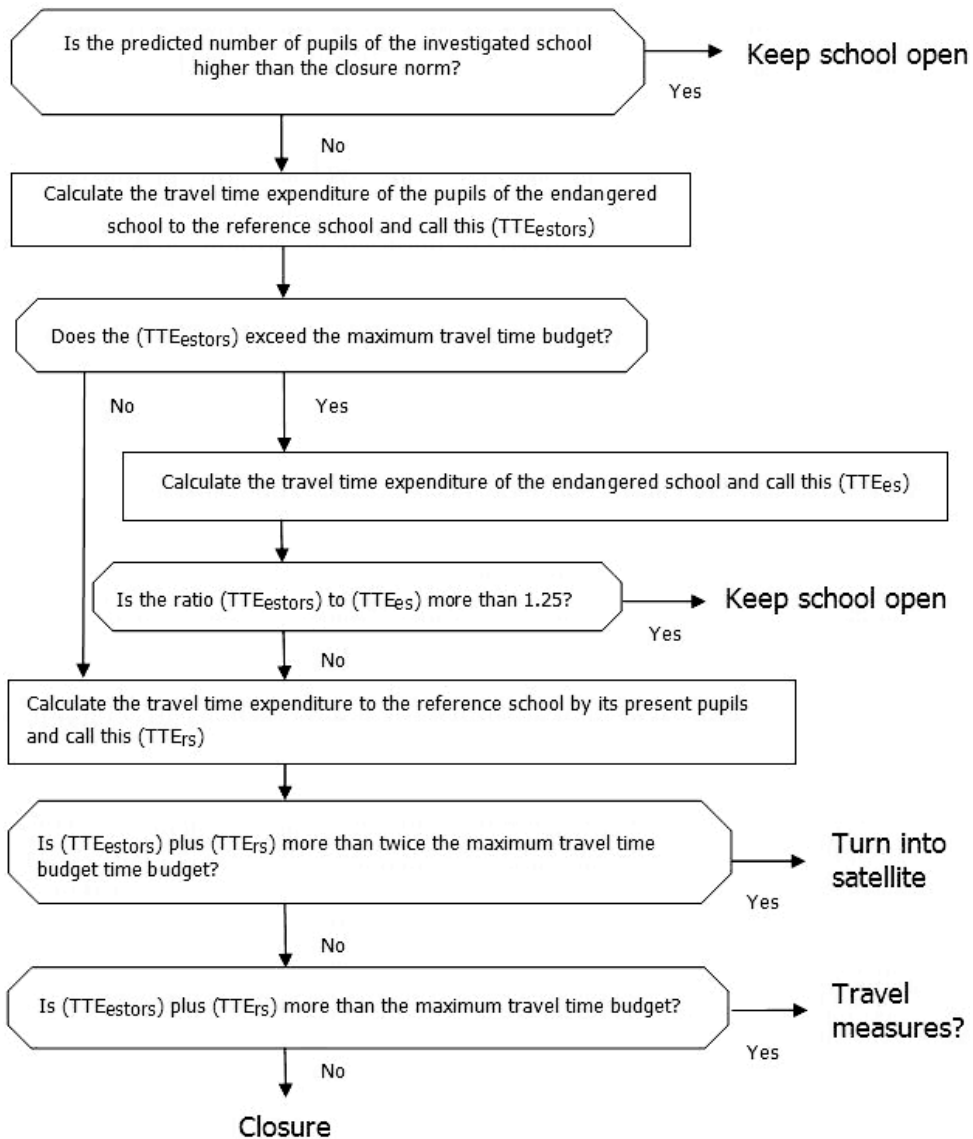


Figure 7.3 Flow chart continuance of a school

Founding schools. For founding new schools we suggested similar considerations. There should be considerable gains in time or transport cost. These should benefit at least 25% of the students of the new location, because 15% is not really considerable.

1. The existing school should create a satellite when its sum travel times exceed the maximum by a 100%.
2. A new school attracts partly new students (of other school types or specialism's), partly existing ones. Foundation is normally allowed when there are a sufficient number of new students and too in case of a capacity shortage in existing schools. For travel time's sake founding a new school should be allowed too, when addition of

pupils of surrounding schools, which exceed their travel time budget, yields the required minimum number of students.

A stimulus for shorter travel times. Using these norms, schools may still become pretty large, but in MBO (to elaborate this example further) it makes a size of more than 1500 students difficult. Nowadays more than a 1000 is thought to be undesirable anyhow from the perspective of security. By working with satellites a large school organisation is possible nevertheless.

The travel time budget has additional qualities. Schools will be forced to look for central and by public transport well accessible locations or to improve the quality of their own transport. Other opportunities are tele-learning or part time education at more decentralised. The budget approach might prevent an over-specialisation of schools as well.

7.6.5 The complete procedure

The full normative approach includes then:

- time criteria as primary yardstick,
- the spontaneous travel mode choice as a result of distance and quality of transport
- a traffic safety assessment
- cost caused by necessary expenditures for safety and/or transport

In the source report the successive steps are explained in detail (De Boer and Nederveen 1990).

7.7 The travel time budget principle applied in five cases

7.7.1 Introduction

The full procedure was not tested by TU Delft. The province agreed with the approach, and it had sufficient expertise within its traffic department to apply the transport related activities. Therefore only the central criterion, the travel budget rule, was tested in five cases, selected by the Province, including four potential closures and one possible foundation.

In the next sections two of these cases are presented shortly: a foundation case for a special school and a closure case regarding a MEAO.

In the final section the outcomes of these and the other cases are discussed, concluding that the instrument seems to be worthwhile.

7.7.2 Founding a Public SO-LOM at Schoonhoven

In Gouda there is a LOM school with 133 pupils (state 1988). Its travel time budget is 750 minutes. It is surpassed grossly with a sum travel time of 4,312 minutes.

The proposal was made to found another LOM-school in the neighbouring town of Schoonhoven.

According to a prediction of 1988 41 pupils were to be expected. Of those 10 pupils would be coming from the Gouda school. The minimum norm is 40, but there are additional demands. One of those is that the school should be fitting into the regional school plan. If more than 60 pupils are to be expected these additional demands are skipped.

The sum travel time of the proposed school would be 1982 minutes. This is much more than the norm! The average travel time of the pupils would be 36 minutes.

So this would mean founding a small and inaccessible school.

The sum travel time of the Gouda school would of course decrease hardly: from 4,312 minutes to 3,676. This would be much too high still.

One should look for other locations in order to improve the situation for the pupils.

In fact other locations had been sought feverously and had not been found. In 2010 Schoonhoven does not have a 'special basisschool' yet.

7.7.3 Closing the Protestant-Christian MEAO at Dordrecht

The travel time budget of a MEAO (MBO) is $45 \times 600 = 27,000$ minutes. The assessed school counted 502 students in 1988. The school therefore did not comply with the minimum norm of 600 students, although it had shown a growth of about 200 students since 1985. This would make a further growth, surpassing the minimum level, quite likely.

The students were producing a travel time expenditure of 17,075. The reference schools were MEAO's at Sleeuwijk to the east and in the centre of Rotterdam to the west.

The travel time expenditure of the endangered Dordrecht school pupils for the journey to Sleeuwijk would be 19,767, less than the 27,000 norm. The travel time expenditure for the Sleeuwijk school (old and new pupils) would amount to a respectable 82,931. The Sleeuwijk school was not an option.

After closure of the Dordrecht school and a shift of demand to the Rotterdam school it would count 1579 students with a travel time expenditure of $39,987 + 18,767 = 59,754$. That would have been more than twice its travel time budget.

The Dordrecht MEAO could not be closed.

In 2010 both the Dordrecht and the Sleeuwijk locations were gone.

7.7.4 Conclusions for the five cases

Drawing conclusions from testing the procedure in only five cases is rather difficult. It should be possible though to answer the following *important questions*:

- are the criteria discriminating in the sense that both negative and positive results are possible?
- are the results plausible, understandable or explainable?

Of the five cases two were assessed to be positive (continuation, foundation) and three negative (the contrary). *The first question may be answered positively.*

Schoonhoven was clearly a bad location for a LOM or special basisschool, but no better one could be found. A rather silly solution for the travel time budget excess would be to split the Gouda school. Yet the pupils probably would have to travel too far still. The only way to solve that problem is integrating pupils in normal basic education. *This has become a dominant concept since.*

In the Dordrecht case closure was not an option. This MEAO had a modest travel time expenditure but it would be overloading the travel time expenditure of the reference schools. Closure would be a bad idea, and indeed it was from the perspective of sustainability.

Our answer on the second question is that *the criteria make the problem of excessive travelling explicit, which is quite useful.*

7.8 Adoption of the proposed procedure

7.8.1 Introduction

The Province of South-Holland received our report with a friendly recommendation of the coaching committee to analyse a threatening school concentration with the help of it (De Boer and Nederveen, 1990, p.4.). The increase of minimum pupil number norms for categorical schools like an individual MAVO had been announced, meaning a new 60 pupils per school year norm in stead of the old 15 pupil norm.

This section describes what national government decided with regard to reasonable distance. Section 7.8.2 is dedicated to the discussion on maximum school size. It did not lead to definitions nor did it to regulations.

Reasonable distance is still being used as a criterion in school planning (section 7.8.3). It is still being handled in a little satisfying manner as indicated before.

The relaxation in minimum school size norms in relation to increasing distances was demonstrated in earlier chapters. Planning procedures demonstrate a similar relaxation too (7.8.3). Regional school authorities did get a certain freedom with regard to satellites and curricula on condition of a regional mutual understanding.

The possibility of splitting up existing schools is explicitly mentioned in national regulations.

7.8.2 Maximum school size as a solution for a reasonable sum-distance?

Our idea of a maximum school size based on the summarised travel time of its pupils did not find support in 1990. The idea that schools might become too large came up after the start of the active school concentration. Increasing distances were not the primary concern. The dominant concerns were rather a lack of security and of personal attention for individual pupils.

In 2001 National Parliament expressed its concern about school size. Under-Minister Mrs. Adelmund of Education responded with the 'Tailored school' letter, stating that a large size did not have to be a problem. The subtitle of the letter, 'Large outside, small inside' suggested the solution: introduction of small social units inside the school. (www.minocw.nl/documenten/brief2k-2001-46135a.pdf).

In 2003 National Parliament started a similar discussion. The CDA party explained its Minister Mrs Van der Hoeven, that it wanted education at a human scale and near the local world of the child. Like Adelmund she pointed at the difference between institution and location. Pupil numbers per location could be produced for primary education only: 50% less than 200 pupils, 97% less than 500 pupils (Letter VO/B&B/2004/4708).

Norms for maximum school size or location size were not introduced.

7.8.3 Reasonable distance interpreted both as distance and travel time still, but ..

The jurisprudence shows that 'reasonable distance' is still an argument in school planning. It is still operationalised both as distance and time. In regulations for and verdicts on secondary school planning 12 km and 45 minutes were used (Ministry of Education 2003, section 2). The distance norm over-the-road led to disputes about the right road and therefore a 10 km norm 'as the crow flies' was introduced (Regeling Voorzieningenplanning VO, annex 1, <http://wetten.overheid.nl/BWBR0024261>). In fact this is a much longer distance over-the-road (!).

An association promoting individual learning requested government finance for secondary schools to be founded at railway stations in the modest villages of Hurdegaryp (Province of Friesland) and Kapelle (Province of Zeeland). The first one, the 'Tjalling Koopmans College' was to be Roman-Catholic in character, the second one General-Particular. Denominations and locations were chosen to create the largest possible catchment areas, unrestricted by competitors of the respective denominations. Demand was shown to be sufficient by 'direct measurement', being parent signatures.

The Ministry of Education evidently disliked the manoeuvres and it refused to finance both schools, referring to the obligation of existing particular schools to accept pupils living beyond acceptable distance from a school of the desired denomination. For the Hurdegaryp request it was argued that pupils living within reasonable distance from a Bolsward school could not be included into its catchment area. This implied that demand was insufficient and that government finance was refused. Reasonable distance was defined as 45 minutes in public transport, calculated from stop to stop. National Parliament protested and the responsible Under-minister had to admit that the calculation should have been made for the door-to-door trip. Finance for both schools had to be granted.

7.8.4 Relaxation of regulations

School planning is subjected to detailed regulations. National Parliament had the outspoken desire to leave part of the planning to regional school authorities, united in 'regional arrangements'. The matter was studied in the 'Planning or poldering; report (Van den Berg and Van Kampen, 2003). Three options were studied, being 'regulation dense', 'regulation free' and the middle course.

The regulation density was decreased considerably, allowing existing schools more freedom in adding curricula, opening satellites and moving existing locations. Most remarkable was the new freedom of adding a Gymnasium curriculum to an existing VWO. It used to be the cause of fierce regional conflicts.

Chapter 8.

Explaining school choice in primary education

8.1 Introduction

Dutch education constitutes a market, characterised by a relatively large freedom of choice for increasingly better informed customers (see chapter 3). This makes the utilisation of a local supply of school services less predictable.

The school system is subject to constant changes, which tend to require modifications, both in school buildings and school locations. In primary education, local government plays a central role in location planning, providing both locations and buildings. Its use of market information is rather restricted, making decisions less efficient for both suppliers and customers, and less effective for traffic safety, a major concern in school planning.

The available information on school quality, school catchment areas, pupils' characteristics and pupils' (or parents') behaviour can be used to gain a better insight into geographic school choice by the pupils or rather their parents.

Data of manifest demand patterns in the Dutch Municipality of Zwijndrecht are used to develop a discrete choice model for the school choice of consumers. The pattern of Zwijndrecht school locations was depicted in section 6.2.

It is no doubt an illusion to expect, that school choice can be predicted exactly and reliably on the basis of indicators as used. Nevertheless the potential impacts of school location shifts on geographical demand can be understood better and can be used to objectify debates between the administrative participants in decision making.

8.2 A concise theory of school travel

School travel may be regarded to be the result of two central types of choice, that is school choice and travel mode choice. These are not unrelated. Given the preference for a certain type/quality of school, the nearest one complying with these will be chosen. The given distance is an important input for the travel mode choice.

Figure 8.1 displays the plausible basic relationships between categories of variables concerning school system, personal conditions and travel conditions. Only forward relations are indicated. In individual decision making the burden of daily travel towards a preferred school may deter people from choosing it and make them choose a more accessible one. Furthermore it is not unlikely that school choice and travel mode choice are in fact simultaneous choices.

The basic argument in this conceptual model is that a number of objective characteristics of the physical environment are conditions that are taken into consideration in school choice and, via the resulting travel distance, in travel mode choice. Those choices are made by individuals, in education usually in agreement between parents and pupils/students.

The school system, that is the degree of *differentiation* in education and of *freedom* of supplying and consuming education, and the *physical concentration* of educational opportunities are decisive for the school density.

The degree of urbanisation of a certain area indicates the housing density. Those densities are decisive for home to school travel distances in that area.

Household conditions like the parents' level of education and (the degree of) car ownership will have an influence both on school choice and travel mode choice, taking the child's capacities into consideration. These capacities are age related.

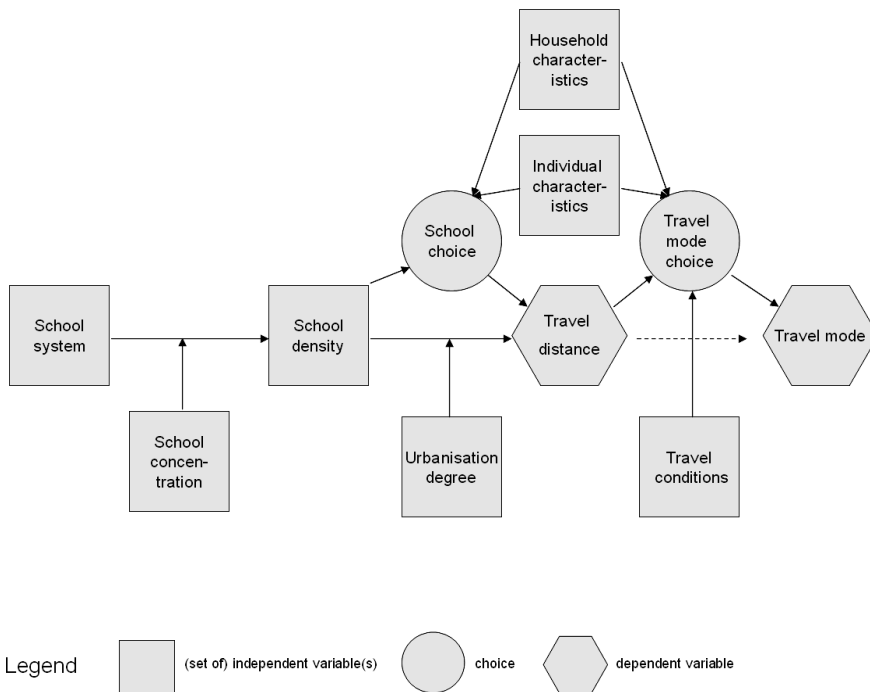


Figure 8.1 A conceptual model for the explanation of school travel distance and school travel mode

A classical theory of travel choice behaviour is presented in the TU Delft transportation modelling lectures (Bovy et al., 2006).

It distinguishes a hierarchy of trip making decisions, being activity → destination → mode → time → route. For all these choices there are alternatives of a discrete nature, being incomparable on a single scale, like the choice between bus and bike. Some of the variables like distance and cost are of a continuous nature though.

In this theoretical approach selfish and rational choice behaviour is assumed. Decisions of the traveller will be based on the characteristics of the various behavioural alternatives, assumed known to the traveller.

Especially in travel mode choice the options may be restricted though, like in the field of education, where the only individual transport option on certain connections may be the bicycle (Bovy, 2006, p.14). A restriction in options may be caused too by the social network.

Parents may want to protect children from traffic hazards, peers (other children) may press for conformity in independent travel, like cycling in groups. The latter is a typical Dutch phenomenon. See picture 9.1 (

Considerations like these explain the development of random utility models, where a random factor is added to the calculus to cover for the ‘non-observable random utility component’.

8.3 Dynamics of the school market

8.3.1 The freedom of education

The *Dutch educational system* has the character of a competitive market. This is especially true of the system for primary education. It is a consequence of the ‘*freedom of education*’ principle, anchored in the national constitution. Since 1920 the successive laws on lower, basic, and primary education offer *religious denominations* the opportunity to constitute their *own schools*, alongside existing public (municipal) schools. The education in both types is financed 100% by national government, while school buildings have to be provided by the municipal government.

In some regions the schools of one denomination became so popular that public schools largely disappeared. This was the case in the Dutch Roman Catholic South, but in some northern Protestant regions as well. Of the 26 Public schools in the Frisian municipality of Dongeradeel in 1818 only four are left in 2006, two of which in the central town of Dokkum and only 2 in the 20-odd villages. The majority of these villages have a Protestant school nowadays (see chapter 5).

In most areas different schools are within reach, certainly in settlements with more than a few thousand inhabitants. The city of Zwijndrecht (Province of South-Holland) for instance, with ca. 43,000 inhabitants, offers Public schools (4x) and schools of four different denominations: Roman-Catholic (1x), Protestant-Christian (6x), ‘Reformatorisch’ (PC orthodox, 1x) and ‘Gereformeerd’ (Liberated Reformed, PC dissenter church, 1x). Some schools have more than one location, each supplying a full curriculum. Public schools have 9 locations, RC schools have 3 locations and PC schools have 8 locations. The 22 locations will be used for the analysis of school choice.

Only the ‘Reformatorische’ and the ‘Gereformeerde’ school limit access just to believers. Therefore the other consumers have three multiple options with respect to denomination and location of schools. The groups of schools may each have a concept of their schools’ catchment areas but they cannot use closed districts, because the customer might choose for a competitor instead. *This implies that there is a free consumer choice, an open market situation with 20 options.*

All 22 locations are included in our analyses.



Legend: Open squares are public, closed squares are Roman Catholic. Open circles are Orthodox-Protestant, dotted circles are 'regular' Protestant, PC. The triangle is a special primary school. Stars are indicating secondary school locations.

Map 8.1 School locations in the city of Zwijndrecht.

There is a potential market restriction though; that is a lack of capacity, which might occur at a popular school, leading to a waiting list.

In the case of Zwijndrecht this has not yet occurred. Local government has to anyhow provide class rooms, either in temporary buildings at the school location or in vacant class rooms at other schools nearby.

8.3.2 Dynamics on the supply side

There are four major factors causing changes in school locations. These are: changes in the school system, changes in educational methods, changing market shares of some schools and ageing of buildings.

School system change may vary from changes in standards for pupil numbers of individual schools to amalgamation of school types.

An example of the latter is the amalgamation of kindergarten and primary schools in 1984, creating the 'basis school'. It implied a primary school with 8 'groups' (classes) instead of 6. The integration had to be physical: housing in one and the same building.

These days the national Ministry of Education seeks to minimise the role of special education by integrating 'care pupils' into regular education. It will have consequences for the variety of teaching rooms.

An example of the former is the operation called 'equipment and accessibility' of 1996, in which minimum pupil numbers for urban schools were increased considerably.

The difference in Zwijndrecht between the number of schools and the number of locations was the result of school closures in 1996 without sufficient means for new buildings.

A recent movement is the development of so called '*broad schools*', schools with supplementary facilities for children, improving general care. This requires cooperation between neighbourhood schools, which is easier when these share a common building (see chapter 6).

It is stimulated by the Ministry, which now obliges schools to accommodate children from 08.00 h to 17.00 h on request of the parents.

As yet Zwijndrecht has only one broad school, accommodating two primary schools and supporting facilities.

School method change may be the choice for a different standard approach in education, like Montessori, Dalton and Jenaplan. It may be a general tendency for more individual-oriented teaching. It makes it necessary to work casually with smaller groups, with consequences for school layout.

At Zwijndrecht a public school adopted the Dalton approach recently, as did a Roman-Catholic school with the Jenaplan approach.

An increasing market share of some schools may lead to a lack of capacity in existing locations, which cannot be solved locally.

The one Roman-Catholic school mentioned witnesses a *decreasing market share* in spite of its educational renewal. Its building has an overcapacity of several classrooms.

Ageing of buildings has two aspects: technical and functional. Apart from the educational aspects mentioned before, demands for the climate and for technical facilities of a school may make it less suitable. Of course structural decay is a factor as well.

One Zwijndrecht PC school building is considered to be functionally obsolete and moving to the nearby site of an old school building was considered, but in 2009 it was decided to renovate the protected building.

8.3.3 Dynamics on the demand side

Demand may show various types of change too. These have to do with the expansion of housing, the ageing of the population of neighbourhoods, its replacement with people with a lower income and often of foreign descent, and a consequent change in preferences for the different kinds of primary education and their characteristics. General developments are a decline in the demand for education with a religious foundation and an increase in parents' search for quality in education.

The addition of housing will increase the neighbourhood population and with it the reproduction. It is predictable, but with a limited time horizon, because children are already allowed into school at age four.

The ageing of the neighbourhood population is a process which develops in a few decades. Children leave the primary school, but their parents don't leave the neighbourhood.

The ageing of the neighbourhood housing makes it less popular and relatively cheap. It will attract people with lower incomes and especially in rental homes. Often these are people of non-western foreign descent.

The neighbourhood demand for primary education shows a growth in the early phase of development and a decline after a few decades. Later on the change in the population may make the supply inadequate from a religious perspective. A Roman-Catholic school may have predominantly pupils with a Muslim background, because there is no Muslim school and the Roman-Catholics have moved away. When the foreign pupils dominate a school this may lead to a 'white flight.'

The general demand for religious education is declining rapidly along with church attendance. It may imply that Protestant-Christian schools are housing a vast majority of at most inactive believers, acting thereby as quasi public schools. The *awakening demand for Muslim schools* and the fear that these feed anti-western sentiments led to a discussion on the freedom of education, intensified by the right of non-public schools to refuse children, thus causing the 'blackening' of other schools. The freedom of education though is fiercely defended by Christian political parties. The 2009 Prime Minister was a member of the CDA Christian party.

There is a *tendency for parents to look for quality in education*, not choosing for a religious orientation or for the nearest school.

In the city of Zwijndrecht the area north of the highway/railway zone is thriving in terms of new housing. It shows population growth, whereas part of the southern half of the town shows a decline, caused by an ageing population.

In both areas one finds concentrations of older rental homes, largely apartments. As a consequence there are two dominantly 'black' public school locations.

8.3.4 A planning problem

The developments described before are creating a planning problem for the Municipality, as the provider of school buildings, and as the guardian of traffic safety. The market for existing school locations is less and less certain. Existing buildings may develop functional and technical problems which are difficult to solve at the location. There is a tendency to create larger units, 'broad schools', housing more than just one school. It is difficult to construct these on present locations and alternative locations are scarce. Schools may have to move as a consequence, but it may imply a loss of their market share.

Local government cannot move schools without their consent. They may be inclined to stay where they are as long as possible. Of course the Municipality might persuade them with attractive new premises. However, quantitative information on the present distribution of pupils (see section 8.4.) and an explanation on how it might change by the removal of a school is indispensable.

8.4 Consumer behaviour as a foundation for planning

8.4.1 Motives in school choice: a market segmentation of demand

There is a substantial international literature on school choice (Gorard 1999, Oelkers 2005, Whitley 2005). This literature has the following four features though which make it less useful for our purposes:

- the large differences in school systems, especially with regard to government support of religiously oriented schools (freedom of education) and regarding the freedom of choice between different schools, that is the use of school districts. In these senses the Netherlands system differs radically from that in the neighbouring German Bundesland of Niedersachsen for instance (see Kramer 2002),
- a concentration on the choice for a more or less advanced theoretical or practical secondary education,
- a dominance by matters of social equity, i.e. the lack of a real choice for the disadvantaged,
- a reliance on questionnaire surveys and hardly on the analysis of actual, geographical behaviour, let alone the combination of these. In terms of transport research: stated preference research, *neglecting revealed preference*.

The most important Dutch source for school choice motives is a Socio-Cultural Planning Agency (SCP) report of 2004 (Herwijer and Vogels). The study summarises earlier studies and gives a general insight into motives. That is, in matters parents find important and in matters that are in fact decisive. Another source provides similar insights for Belgium, probably the only country with the same kind of freedom of education and of school choice (Creten and Douterlungne, 2001).

Older research yielded three types of motives for school choice: quality of education, accessibility and religious orientation. The quality of education is valued more by parents with a higher income (Herweijer and Vogels, p. 80). In an additional survey parents were interviewed and presented with a list of 21 motives to indicate their importance. The results

with regard to the types of motives are presented below. The figure in brackets indicates the ranking of the motive.

Asked for important motives

- quality arguments were chosen most: nearly 100% for 'good atmosphere' (1)
- accessibility, i.e. to be reached on foot, was chosen by less than 60% (14)
- religious orientation was mentioned only by 40% (19)

Asked for decisive motives

- 'good atmosphere' was mentioned most: 32% (1)
- walking accessible was mentioned by 31% (2)
- religious orientation was mentioned by 21% (5)

The differences between these two judgements are remarkable: conspicuous characteristics of schools like the distance from home and the religious character are mentioned relatively little, but these are amongst the most important for actual choice.

It implies that the essence of the Dutch school system, which is the freedom of education or rather government funding of religiously dominated schools, only partly guides school choice by parents. It is a very strong argument for visiting Orthodox Protestant schools and probably too for schools of immigrant religions like Islam. It is much less so for 'regular' Protestant-Christian schools and hardly for Roman-Catholic schools and public schools.

Parents from countries where Islam is a dominant religion would partly prefer an Islamic school (about 30%), but the majority prefer a Public school for reasons of integration. They do not object to the 'black' character of some of these schools, because they are amongst people of their own kind and receive adequate education, considering the disadvantages they suffer from.

Even those who would prefer an Islamic school prove to be pragmatic in actual fact. Initiatives often find the support of sufficient numbers of parents. A school is founded on the basis of that, but it may fail to acquire the required number of pupils. Sometimes this is caused by the unfavourable location of an existing building provided by the Municipality: outside the neighbourhood where most of the parents live. According to ITS Nijmegen, specialised in this type of research, the city of Alkmaar is one of the cases (information ITS).

Low income native parents tend to avoid black schools for cultural reasons, but do not object to the basic kind of education offered. Higher income parents tend too be interested in a more individualised teaching system, aimed at developing the personal qualities of the child.

The authors of the SCP study expect a new market segmentation on the basis of a distinction between more and less formal teaching methods. The latter segment would be more interested in systems like Dalton and Jenaplan (p.226).

The results as presented were confirmed by a study in city of Amsterdam, which showed the same tendencies, but even more pronounced (Ten Broeke a.o., 2004, pp. 3-5).

8.4.2 Attractive and repelling characteristics of schools: a market segmentation of supply

On the basis of the knowledge of school choice motives the local supply of schools can be characterised on corresponding qualities. This should be done by *finding indicators to which parents have easy access*. Much of it can be found on internet sites like 'onderwijsinspectie.nl', 'schoolinbeeld.nl' and 'bri.cfi.nl'

There are different characteristics of schools attracting or repelling pupils, or rather their parents, such as the following:

- signature: public or religious of different kinds, found in municipal guides and in school guides, which schools are obliged to issue,
- teaching system: collective or individualised as advertised actively with trade marks like Dalton, Jenaplan and Montessori,
- teaching quality as shown objectively in assessments of the Dutch national education inspection (onderwijsinspectie.nl). It is marked by green or red scores on a standard list of criteria,
- social atmosphere as expressed partly in the percentage of disadvantaged pupils, mostly allochtonous, published by the education inspection,
- distance and dangerous traffic situations, local knowledge which may be expected from parents.

8.5 Explaining the local distribution of pupils: the case of Zwijndrecht

The city of Zwijndrecht was chosen as a case for describing the local distribution of schools and of their pupils, and for explaining the latter pattern. The development of the local school system was described in section 6.2.

School data were made available by the city education department, geographical and demographical pupil data were provided digitally by the city's demographer. The numbers of schools and of pupils are such that statistically significant analyses are possible.

8.5.1 The spatial distribution of schools: best for Public and regular Protestant-Christian schools

The schools of the city have been presented in section 8.3.1. In total there are 22 alternative school locations are available. These locations can be found on Map 8.1, identical to map 6.2. The spatial distribution of the schools of the respective denominations shows the following phenomena:

- the Public schools and the regular protestant schools (PC) are fairly evenly spread, but some of the Public school locations might repel native pupils, because these are 'black' schools. One of these has an excellent inspection assessment though!
- the Roman-Catholic locations are less evenly spread, since only few are left after closures. South of the railway / highway zone there is only one location, applying the Jenaplan approach,
- the two Orthodox-Protestant schools, serving different kinds of customers, have rather eccentric positions. This should be no problem, regarding their attractiveness for their market segment.

On the map major roads are marked in yellow. These and a few others may be expected to be barriers for visiting schools across.

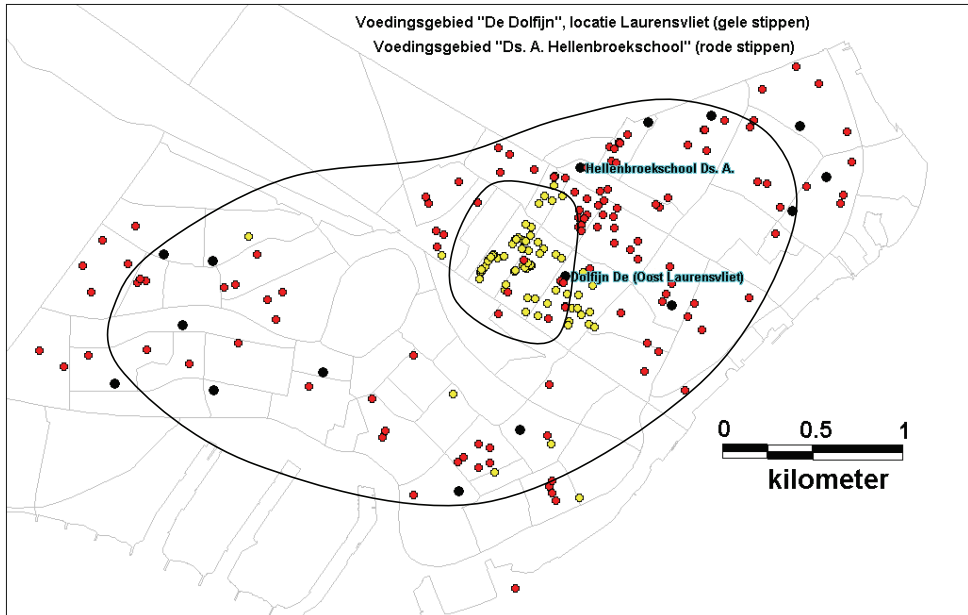
8.5.2 The catchment areas of the schools: remarkable differences between different schools and between similar schools

Map 8.2 shows the spatial distributions of the pupils of two schools are shown. These prove to be remarkably different.

The Hellenbroek school, Orthodox-Protestant 'Reformatory' in character, attracts pupils from the entire city, although there is a concentration around the school location. This latter fact is surprising because the school is accessible only for believers, who for instance have to obey clothing rules: girls are not allowed to wear trousers. Records of the neighbourhood election district show however a concentration of votes on the SGP Orthodox-Protestant party. People must have moved to the school! The median for the distance from the pupil's home to the

school is 871 m. For the nearby second Orthodox ‘liberated reformed’ school it is 1990 m, because in this case there was no migration to the neighbourhood of the school.

The Dolfijn school, Public and with a relatively ‘black’ population, attracts only pupils from nearby cheap social housing estates. The median distance is only 285 m. The highest value for a Public school is 621 m, maybe because it is a Dalton school? But what about the second location of the Dolfijn school at Bali Street, showing a median of only 273 m, the lowest of all? The national Education Inspection assessed it to be the best of Zwijndrecht, being a general score of 9 out of 10, because of its contribution to the development of its ‘black’ pupils!



Map 8.2 An illustration of different catchment areas of schools (90% contour).

Each dot indicates the home of one or a few pupils. The Hellenbroek school (red dots) is Orthodox Protestant, the Dolfijn school (yellow dots) is a Public school. The black dots are school locations.

The distribution of the pupils' home addresses is characterised by their position in 180 living zones. These are qualified in two ways:

- by the route to school: the distance from the centre of the living zone to the school as the crow flies and the number of barriers on the school route,
- by parent taste, as indicated by the mean family income of the zone and the percentage of residents born in a non western country.

8.6 Testing the contributions of the identified variables with a discrete choice model

There are several different ways to analyse individual choice behaviour. We have chosen to apply the discrete choice approach, because it has a sound theoretical foundation and has shown its usefulness in a wide range of situations. The discrete choice model is based on the concept of individual utility maximisation, a theory that stems from micro-economics. The approach is applied in numerous studies of location and travel choice behaviour such as

residential choice, transport mode choice, route choice and airline choice (Ben-Akiva and Lerman 1985).

The choice for a primary school from a set of available alternatives is a conditional decision which will be modelled in the form of a multinomial logit (MNL) model, based on random utility theory (Ben Akiva and Lerman 1985). According to this theory we assume that a person (in our case the pupil's parents or guardians) attaches a utility to each alternative school location in a considered subset of available, alternative locations. The school with the largest subjective utility is assumed to be chosen. The utility of school i for individual n is composed of an observable systematic part and a random, unobserved part (see equation 1)

Equation 1

$$U_{i;n} = \mu V_{i;n} + \varepsilon_{i;n}$$

with:

$U_{i;n}$	:	the subjective utility of school i attached by individual n
$V_{i;n}$	:	the observed utility of school i by individual n
$\varepsilon_{i;n}$	:	the random, unobserved utility of school i by individual n
μ	:	model specific scale factor for the sample of observations

If we assume that the random component of utility is Gumbel distributed, identical for all alternatives, we can derive for each n the choice probabilities of each i and choice shares of each alternative in the population of subjects (Kramer, 2003). The resulting multinomial logit model (equation 2) describes the probability that parents/guardians n choose school i from a subset of C_n alternative schools:

Equation 2

$$P_{C_n}(i) = \frac{e^{\mu V_i}}{\sum_{j \in C_n} e^{\mu V_j}}$$

with:

C_n	:	choice set available to n
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The observed utility function in the presented model has the form of a linear additive utility function containing K explanatory variables (equation 3).

Equation 3

$$V_i = \sum_{k=1}^K \theta_k \cdot x_{ki}$$

with:

θ_k	:	utility coefficient of attribute k
x_{ki}	:	attribute k for school i (generic or specific)

The *attributes in the utility function* reflect various aspects that contribute to the utility of a school for a household. In the available data set these are the following variables:

- The difference in Euclidian *distance* from the nearest school for the household to the alternative school (measured in meters).

- The number of *traffic barriers* that have to be crossed between neighbourhood of pupil and school;
- The *quality of the school* as measured by
 - o the number of pupils that need special attention – as a percentage of the total number of pupils;
 - o the average size of the classes – as the number of children per class;
 - o a score indicating the objective quality of a school, given by the Dutch Education Inspection – on a scale of one to thirteen.
- The *religious nature of the school*: Public or non religious, Roman-Catholic, Protestant-Christian and Reformational and Liberated-Reformed, being two types of Orthodox-Protestant schools. The valuation of a religious school is measured by the extra distance people accept relative to the Public school;
- The *study plan used at the school* (Jenaplan and Dalton). The valuation of a study plan school is measured by the extra distance accepted relative to non study plan schools.
- *Number of children from the neighbourhood* (size variable) – to account for the size of the school.
- *Level of income of the household* (in 1,000 euro's per year), a proxy variable: the average income of the neighbourhood where the household lives. We make the income interact with the quality characteristics of the school, to control for different preferences linked to the households' level of income.

The statistics of the scores on these variables are presented in table 8.1. It shows that these show a sufficiently large value variation.

Table 8.1 Summary statistics of explanatory variables for the Zwijndrecht primary school locations (N = 22)

<i>Variable</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>
Number of children from neighbourhood (size variable)	56	261	137
Average class size (children)	10	26	21
Percentage of children w. learning difficulties [%]	0	72	12
Quality of school	5	12	8
Distance beyond the closest school [m]	35	7049	2,212
Number of traffic barriers	0	7	2
Average neighborhood income (Euro's)	7,600	21,600	11,464

To explain school choice, we might have developed a comprehensive model, with numerous interaction effects in the utility function. Such a model would be difficult to interpret though. Instead we divided the *sample of pupils* into three *segments*. The segments are:

- those of western ethnic origin from a neighbourhood with a higher than modal mean income;
- those of western ethnic origin from a neighbourhood with a less than a modal mean income;
- those of non western ethnic origin (with in fact less than a modal income).

This approach makes differences in behaviour of these segments quite conspicuous. We assume in the following that all school locations are available to all households.

8.7 Impact of school and household variables on school location choice.

Using the maximum likelihood estimation technique we estimated the parameter values of the three segment models. Table 8.2 presents the outcomes for the three categories of pupils mentioned.

The results of our modelling effort are largely in line with the literature cited.

As expected there is a general resistance to a large travel distance to a primary school, which is aggravated when traffic barriers are present.

It also appears in all three segments that people are willing to accept extra travel distances to schools of a specific denominations, although the results are not significant for the most common ones, being PC, Public and RC.

However, there are considerable differences between pupils with different backgrounds.

We will discuss these outcomes using the so-called scaled coefficients, that is relative to the distance travelled. These are indicated in the right column for each category.

The *wealthier pupils* prove to be much more sensitive for traffic barriers between their home and different schools. These negatively influence the chance that the school is chosen. One more barrier is valued by these pupils as an additional 200 meters distance to the school.

We also measured in detail the willingness to travel further for a school with a certain religious background and for special teaching concepts compared to a conventional teaching concept. In some cases a significantly longer distance is accepted. This acceptance is extreme for the households that choose the Liberated-Reformed school (almost four times as far as a public school), and for the Reformational school and the school with the Dalton study plan (about twice as far).

The value attached to a good school (high school quality and low percentage of disadvantaged pupils) increases with income. An example: a yearly household income of 15.000 Euros is related to the willingness to travel an additional 200m for an extra 1 point score in quality. The average class size appears not to be an important factor. The chance, that a particular school is chosen appears to increase significantly with the size of that school.

The *households from neighbourhoods with a lower average income* show a slightly different behaviour. One of the most remarkable differences is the lack of importance of traffic barriers, being not significant. From the variables that measure the quality of the school, only the quality score has a significant influence at the 95% confidence level. For these households, the importance of quality increases with the income. The positive coefficient for the size of a classroom is positive at the 10% confidence level, indicating that less wealthy households prefer schools with larger classes. This is probably due to another school characteristic, which we could not include in the model at this moment.

The interaction variables between distance and school type show more or less the same pattern as for the wealthier households, that is, only the magnitudes are different. For a Reformational or a Liberated Reformed school people are willing to travel around two and a half times further than for a Public school, for a Dalton school 30% further. Finally, the size variable is again very small, but significant.

The last model studies the behaviour of *households with a non-western background*. Of course, we see again a large reluctance towards a large distance to school, but just like the wealthier households, also towards traffic barriers. People from a non-western background are willing to travel further for a school that has a specific teaching method (around 3 times for a Jenaplan and 50% for a Dalton school).

The religious character of a school does not lead to significantly longer (or shorter) travel distances. This group is composed largely of people with a Moroccan or Turkish i.e. a Muslim background, which prefer a public school in the absence of a Muslim school. The average class size and the school size show contradictory results. This cannot be explained without a closer look at individual schools.

8.8 Conclusions - Using the model for decision making on locations?

The established school choice models constitute a preliminary result, that should have a follow-up with more elaborated versions.

Nevertheless, the school choice models derived for the three categories of households largely confirm the general interview / questionnaire literature on this subject. It implies that this approach could be used in school planning, especially in the predictions for a term of five years, which are made yearly for the School Housing plan of the municipality (Integraal Huisvestingsplan).

In the case of new schools, like Muslim schools, which often do not attract sufficient numbers of pupils, in spite of sufficient numbers of parent's signatures, studies of a range of cases might shed light on the evident conflict between a fundamental preference for the type of school and the practical objection against a considerable distance.

As stated in the section 8.2, a reduction of the number of school locations is to be expected in many places. Given the existing distribution of pupils and the change in distances for some of these, application of the model could give a plausible idea of long term consequences.

Perhaps the most important use of the combination of pupil distribution mapping and discrete choice modelling is laying a more objective foundation for decision making by school authorities and local government.

Chapter 9.

School travel distance and transport mode as a function of spatial and socio-economic factors

9.1 Introduction

Background. In the foregoing chapters we have seen that school concentration tendencies, however modest these may be, tend to increase the minimum distances to be travelled to school, both in primary and in secondary education.

The effort to model school choice in primary education (chapter 8) demonstrated that distance is a crucial factor in school choice in a situation where parents have a free choice. Other factors though, like traffic conditions, school quality and family income, seem to be of importance as well.

School travel distances have implications for the use of the available travel modes. The larger the distance is, the smaller will be the share of travel modes that may be used independently by pupils. This is detrimental to the development of their travelling abilities and their health, by lack of physical exercise.

Therefore school travel behaviour deserves in-depth scientific analysis, in terms of both distance and travel mode.

The ideal for school travel is, that the child can travel on its own to school after initial guidance by their parents and by the school, either by walking or cycling or by taking the bus. In modern traffic this is difficult for ages under 6, because the children are too playful. *The distance to school should be such that it is walkable or cyclable* for the children who are able to go to school on their own. Physically they should be able to walk distances of at least 2 km. Physically and mentally they should be able to cycle distances of up to 4 km along familiar routes when they are about 8 years. In secondary education pupils should be able to travel on their own, be it by foot, by bike or by public transport. Cycling distances of up to 10 km should be no problem. Of course this requires minimum conditions for walking and cycling: a reasonably level roadway and separate facilities for walking or cycling outside traffic calming zones.

Subject. The analysis in this chapter has as its purposes the description of school travel in terms of both travel distance and travel mode and their explanation as a function of the demographic characteristics of the pupils and of the general characteristics of the households they belong to. It will be undertaken both for primary and secondary education

Research questions

- Which distances are travelled to school in two different age categories, indicating participation in primary education (6 – 11 years) and secondary education (12 – 18 years)?
- Which travel modes are used and what is the influence of distance on the travel mode used?

- How can differences in travel distance and related travel mode be explained by demographic and socio-economic background variables? Can differences even be determined by cultural factors?

Type of theory. The micro-economic theory of individual behaviour will be applied, like in chapter 8. It presupposes rational choice behaviour, based on full information of alternatives and their relevant qualities, which may be determined culturally. In modelling this implies the use of random utility models taking account of an unavoidable degree of irrationality or unexplained rationality (see Ben-Akiva and Lerman 1985).

Research approach. The analysis will be using data-bases concerning general travel behaviour as collected in national travel surveys. These are characterised by large samples, including persons in the relevant age categories. The surveys include the variables relevant for our theory and research questions.

A comparative analysis using data bases from different but not too dissimilar countries makes it possible to identify cultural differences like different behaviour towards travel modes and their appropriateness for user categories and trip motives. Available were the Dutch MobiliteitsOnderzoek Nederland (MON) and the Flemish OVG (Onderzoek VerplaatsingsGedrag).

Main empirical findings. The distance distributions in primary education of the two countries are significantly different in spite of similar school densities. Flemish children travel on average a 50 % further, perhaps as a consequence of lower housing densities. The distances in secondary education are similar though. The degree of urbanisation of the home Municipality is by far the most important predictor of travel distance.

Travel mode choice shows distinctive differences, especially for primary education and even for distances under 5 km, where the slow modes are used 50% more in the Netherlands than in Flanders. This may be caused partly by the differences in traffic safety and/or in the quality of facilities for the slow modes.

Most remarkable is the influence of gender, which appears to be an important explaining variable for Flanders, while being non-relevant for The Netherlands. Flemish girls do not seem to be allowed to cycle to secondary school. A distinct cultural factor!

What's new. The specific micro-economic models developed for the explanation of school travel behaviour constitute a genuine contribution to the field. The comparative analysis, using two national travel surveys, is without precedent, as far as could be assessed. The differences between the behaviour of the two sexes in Flanders and the Netherlands are perplexing. Contacts with the Belgian Institute for Traffic Safety (BIVV) taught us that it was about to publish a report on the unjust curtailment of girls in traffic.

Set-up. The next section, *theoretical considerations* (section 9.2) refers to the micro-economic approach introduced in chapter 8 and to be applied in this chapter as well. The hypotheses to be discussed are presented. Apart from a number of those developed in chapter 2 new behavioural ones are introduced.

Research approach and data used (section 9.3) introduces the international comparative approach, the data-bases used and their fitness for the comparison. Of course the outcomes for the Dutch pupils are of primary importance for our research, but the confrontation with those for neighbouring countries stimulates the reflection on the Dutch situation and development.

School travel developments (section 9.4) presents an overview of distance and travel mode developments as related to urbanization classes. It compares general Dutch developments with those of Flanders and the UK.

School travel patterns (section 9.5) presents the comparability of the national school systems studied, and general figures of travel distances and travel mode use for the two countries.

The explanation of school travel distance and travel mode use is discussed in successive sections (9.6 and 9.7).

Conclusions and discussion (section 9.8) summarises what insights the analyses yielded and what remains to be investigated.

9.2 Theoretical considerations

9.2.1 Introduction

School travel may be regarded to be the result of two central types of choice: school choice and travel mode choice. These are not unrelated. Given the preference for a certain type/quality of school, the nearest one complying with these will be chosen. The given distance is an important input for the travel mode choice.

In chapter 8 we presented a concise theory on school travel. The basic argument in the conceptual model as depicted in figure 8.1 is that a number of objective characteristics of the physical environment are conditions that are taken into consideration in school choice and, via the resulting travel distance, in travel mode choice. For the explanation of school travel distance and travel mode choice the same conceptual model is applied.

The analysis in chapter 8 has shown that micro-economic modelling of school choice is promising. On the basis of knowledge about characteristics of schools, residents and travel conditions in a certain area one may construct a mathematical model that reflects the relative predictive value of these characteristics.

It should be possible to model elements in school travel, like travel distance and travel mode use in the same fashion. Of course this will require data about actual school travel.

9.2.2 Hypotheses to be addressed

In chapter 2 three general hypotheses regarding distance and travel mode were advanced. The first one (number 2.5.10) is distance oriented. The other ones are contrasting hypotheses regarding the development in travel mode choice. These are to be discussed in section 9.4.

For the present purpose more detailed hypotheses will be scrutinised, including the relevant variables of the in transport modelling usual ones (Bovy etc. 2006, pp 16 and 17.)

Table 9.1 Hypotheses to be addressed in chapter 9

2.5.10. The development of the road system and the parallel development of car ownership make transport to school so easy that proximity to school is hardly an argument for school choice anymore.
2.5.11. The increase in car traffic has made cycling to schools in secondary education more dangerous and has therefore changed the modal split radically in favour of public transport.
2.5.12. Policies in favour of soft traffic modes will cause (a) the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and (b) to be hardly present in the modal split in the journey to secondary schools.
<i>It is likely that travel distances are influenced by:</i> - population density: being larger when living and receiving education in less densely populated areas. - age: the older the pupil the larger the distance is likely to be, mainly because of the differentiation in secondary school types, leading to lower densities. - gender: boys are participating more in special education, which has lower densities both in primary and secondary education.

- education level of the parents: the higher the level the more parents might be selective in school choice.
- car ownership: the higher the car ownership, the higher the probability of car use in school travel, making it easier to help children to bridge larger distances.

*It is likely that the choice for a certain **travel mode** is influenced by:*

- distance: the longer the distance to school, the higher usage of faster modes (bicycle and especially for the long distances: car and Public Transport).
- population density: the higher the density, the better facilities for PT are likely to be and the worse will be the safety for slow modes, in particular the bicycle.
- age: the younger the pupil, the less independent he/she will be in using travel modes, which means that travel implies more transport
- gender: girls travelling less independently than boys, because they are less prepared to confront traffic risk.
- size of the household: the larger the number of school visiting pupils, the lower the probability to be escorted by the parents. When pupils travel to the same school, the need for escorting is smaller because they travel together. When pupils travel to different schools, escorting of all pupils is more difficult to practice.
- household income: the higher the income the more frequently pupils might travel with the relatively expensive motorised modes.
- education level of the parents. The higher education the more parents might be aware of the merits of independent travelling for their children and the more the latter will use independent modes.
- car ownership: the higher car ownership, the higher the probability of car use in school travel.
- temperature: the lower it is, the lower is the probability for cycling in favour of car and PT.

9.3 Research approach and data used

9.3.1 Analysis of school travel in two countries

The core of the research approach is:

- estimating the parameters of choice models,
- using empirical data of choices and explanatory variables

This is undertaken for two countries for which national travel data were available, being The Netherlands and Flanders. The respective travel surveys will be discussed in subsection 9.3.2. Travel patterns of different countries may show large differences. This is certainly true for school travel. An earlier study demonstrated this for four countries, being Flanders, Great Britain, The Netherlands and the German Land of Niedersachsen (De Boer and van Goeverden 2007). Most remarkable are the differences in travel modes. In The Netherlands cycling is most important, but in Britain it is nearly absent. In the latter country walking and car use are the most important options. This does not imply equally large differences in the independence of travel. Young pupils may be brought not only by car, but by bike or guided by a biking or walking parent as well.

Within a country there may be cultural differences affecting behaviour, for instance in the selectiveness of school choice or in the importance being attached to independent travelling, but these may be more outspoken between different countries. Therefore we opted for an analysis of two countries, Flanders and The Netherlands that are sufficiently similar in terms of school system and geography. This similarity will be explained in section 9.4.

9.3.2 The Dutch and Flemish national travel surveys.

The analyses are based on data from the Dutch and Flemish national travel surveys, being the Dutch 'MobiliteitsOnderzoek Nederland (MON)' and the Flemish 'Onderzoek Verplaatsingsgedrag' (OVG). Data of these surveys are highly appropriate for this kind of analyses. The samples are large, especially for the Dutch surveys, and they include many characteristics of households, individual travellers and trips.

All available Dutch MON-databases (years 2004-2007) and Flemish OVG-databases (1994 and 2000) are used.

In both surveys a sample of households is selected and the members of the households are asked about their trips in a predefined period. This period is one day in the Dutch MON

survey and two days in the Flemish OVG survey. In addition to trip data, data about the persons and households are recorded.

All the types of data required to test the detailed hypotheses presented in section 9.2.3 are available.

The Flemish OVG-database of 2000 is an accumulation of data of a Flemish survey and data of a survey in the city of Gent region. Both 2000 surveys have roughly the same sample size. Because the samples of the Flemish OVG-surveys are relatively small (the 1994 and two 2000 surveys include 22,350 persons as against 236,300 persons in the 4 MON-surveys), we decided to use both the Flemish and the Gent data.

The much higher sample density in the urbanized Gent region will in principle not lead to biased results in our analyses. In the descriptive analyses of section 9.4, differences in sample densities are corrected by the projection factors. In the analyses of the influences of specific variables on behaviour (Sections 9.5 and 9.6) that are based on unweighed observations at individual person level, sample densities will affect accuracy of the results but differences in sample sizes may not produce systematically wrong results.

For the reason of small sample size of the Flemish OVG, we partly use also the 1994 data, despite the fact that these are rather dated. They will only be used if they will not cause a misrepresentation of the current reality due to major changes between 1994 and 2000.

The Flemish OVG records home-school distances and mode use on both person and trip levels. In the person survey, children visiting school are asked about the distance to school and the mode they generally use for travelling to school. The trip survey registers actually travelled distances and modes used by pupils who travel to school on one of the enquiry days. For the separate analyses we will always use only one of the two sources, indicating and motivating which one. A general argument for using the data on a personal level is a larger sample. All pupils that filled in these data in the person survey are included, while the trip-based data includes only the pupils that travel to school on one of the two enquiry days. The latter make up only 60-65% of the former. A general argument for using data on a trip level is comparability with the Dutch MON, that includes only distance and modal information on a trip level.

9.4 School travel developments

9.4.1 School travel developments in The Netherlands to be related to school concentration?

9.4.1.1 Introduction

In preceding chapter we found different distance development tendencies for primary and secondary education in town and countryside. In primary education school closures during the nineteen-nineties were found predominantly in middle sized cities. One might expect to find these in travel data for those cities.

In secondary education the general picture was less clear. Both town and countryside lost locations, but this was partly compensated for by expanding the supply of curricula at remaining rural locations.

Required school travel distances increased only modestly. Therefore one might expect a certain decrease in walking, especially in primary education, to be replaced with cycling. In secondary education a certain decline in cycling might be expected, to be replaced with public transport use.

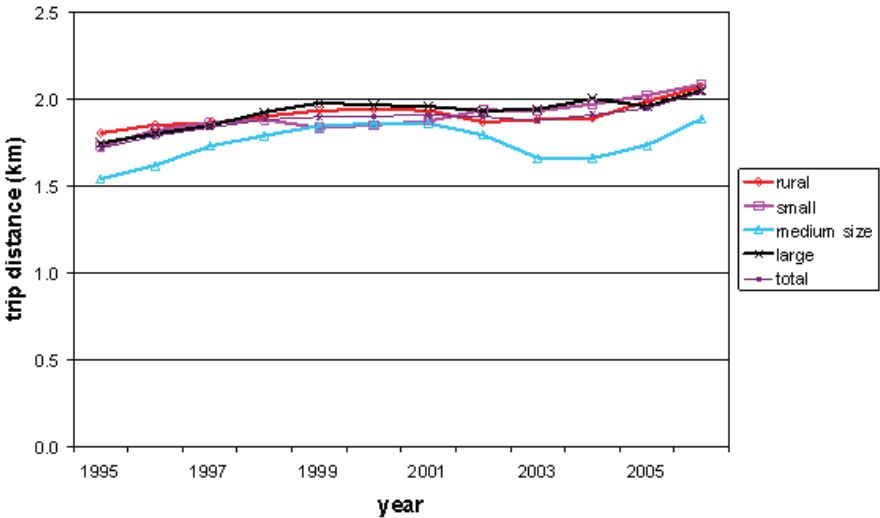
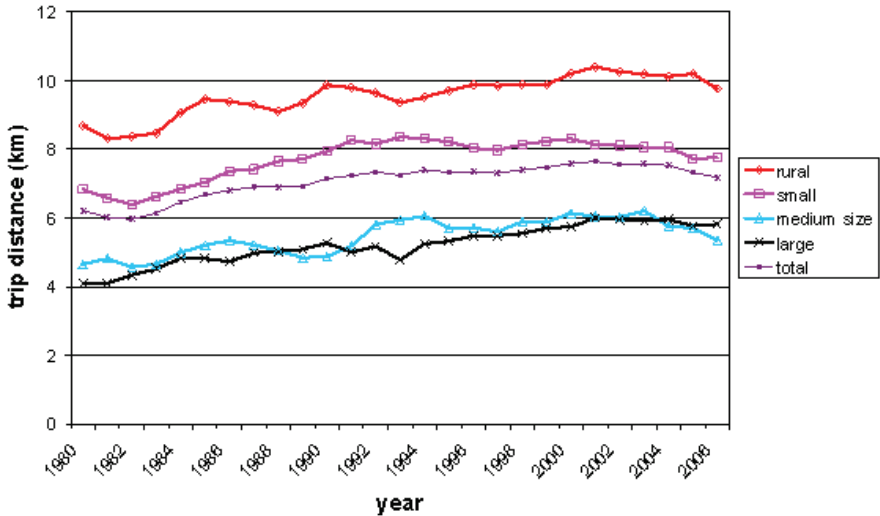


Figure 9.1. Development of average trip distances between home and school for pupils < 12 years of age from 1995 to 2006, according to urbanisation level of the home Municipality (Source: MON).

Figure 9.2 Development of average trip distance between home and school for pupils ≥ 12 years of age according to urbanisation level of the home Municipality (Source: MON).



9.4.1.2 Developments in school travel distance

Figure 9.1. shows the development of school travel distances for the children under 12, being identical to the primary school age. In medium sized cities the home-to- school distances were the shortest in 1995, being about 1.5 km. In the other urbanisation categories these were somewhat longer, up to 1.8 km in rural areas. The increase in distances by some 25% seems

to be a general phenomenon, which indicates that it is caused at least partly by consumer behaviour. Less people seem to choose for the school closest by.

Figure 9.2. shows the development of school travel distances for the children of 12 to 17 years being identical to the secondary school age. There is a general increase of travel distances, amounting to up 50% for the largest cities. We did not analyse the developments in these cities. This outcome is not unlikely to be the effect of relocation of amalgamated school communities to the urban fringe. The increase in travel distances for rural areas and small cities started before the school concentration operation. It may be regarded to be an indication of the reorientation towards more advanced general education (HAVO, VWO) present in larger settlements only (see figure 4.4).

9.4.1.3 Developments in school travel mode use

Distances both in primary education and in secondary education are still such that they will be cyclable as a rule.

In primary education the development is clear cut (see figure 9.3). Increasing travel distances are reducing the share of walking. The gain for other transport modes is divided almost equally between cycling (probably the older children) and car riding, probably for the youngest ones.

In secondary education the Dutch cycling miracle is shown (see figure 9.4). In spite of increasing distances more than 70% of the pupils are cycling still. Walking, being relatively unimportant, declined further. Car riding is still 'not done'.

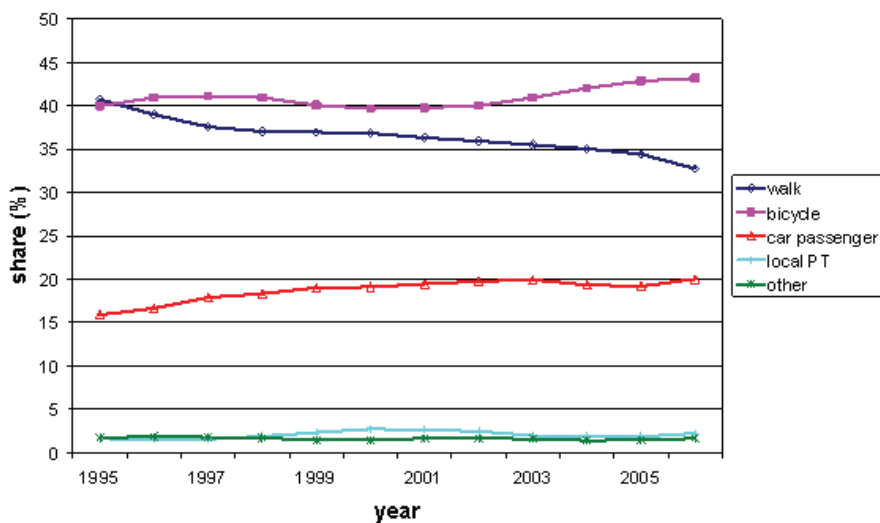


Figure 9.3 Development of the modal split for travelling to school by pupils < 12 years of age, (Source: MON).

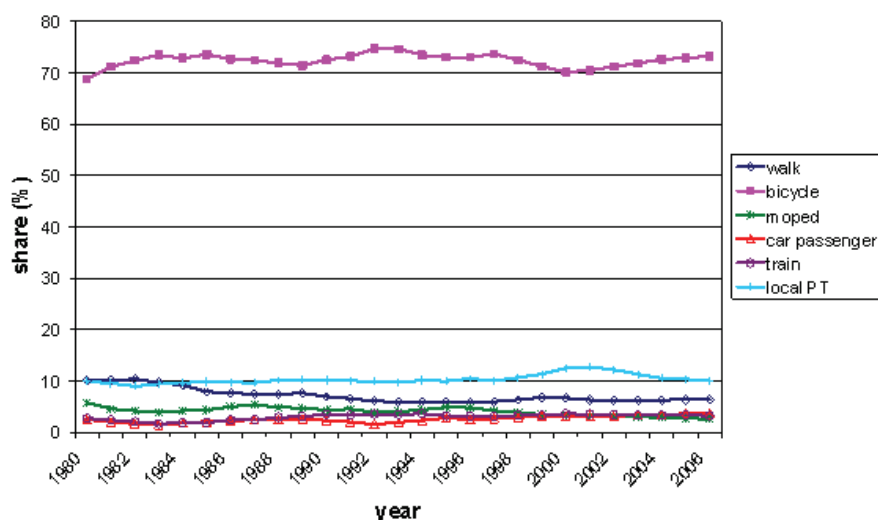


Figure 9.4 Development of the modal split for travelling to school by pupils ≥ 12 years of age (Source: MON).

9.4.2 School travel developments compared with Flanders and the UK

9.4.2.1 Introduction

A remarkable aspect of school travel is that it differs widely between countries. Countries may have quite different educational policies, affecting the numbers and locations of schools and the provision of dedicated school transport (OECD 2008). Cultural factors may play a role in behaviour too.

Jensen and Hummer note a reduction of cycling to school in Denmark by 30% from 1993 to 1999. Car use doubled, predominantly as a result of 'changed perceptions and attitudes' (J&H, 2002, executive summary).

We undertook a general comparison of school systems and school travel in four countries, being England, Flanders, The Netherlands and the German Land of Niedersachsen (De Boer and Van Goeverden, 2007). Travel data were available for all with the exception of Niedersachsen.

The ideal for school travel is that the child can travel on its own to school after initial guidance by their parents and by the school, either by walking or cycling or by taking the bus. In modern traffic this is difficult for ages under 6, because the children are too playful. *The distance to school should be such that it is walkable or cyclable* for the children who are able to go to school on their own. Physically they should be able to walk distances of at least 2 km. Physically and mentally they should be able to cycle distances of up to 5 km. In secondary education cycling distances of up to 10 km should be no problem. Of course this requires minimum conditions for walking and cycling: a reasonably level roadway and separate facilities for walking or cycling outside traffic calming zones.

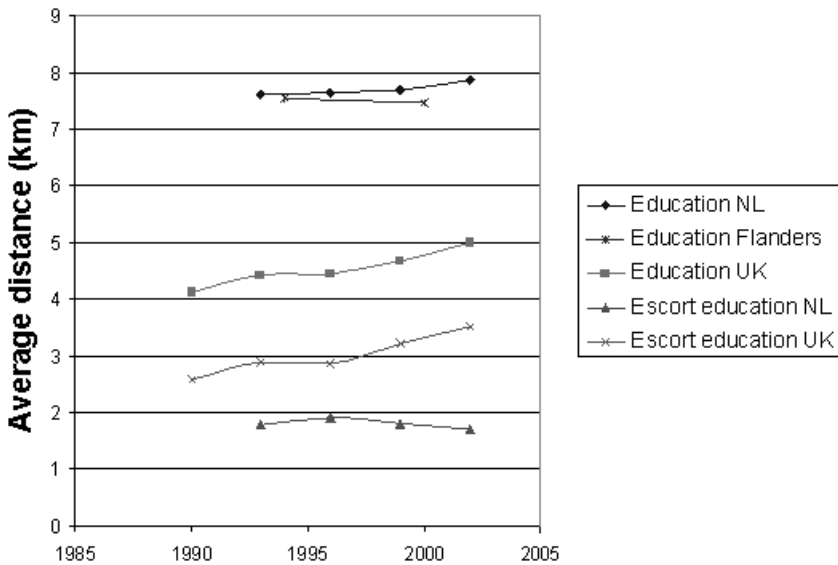


Figure 9.5 Development of the average education travel distance and of education travel escort distance in three European regions from 1990 to 2003 (Source: De Boer and Van Goeverden 2007).

9.4.2.2 Development of education travel distances in general

Figure one shows the development of education travel distances in the three remaining countries, irrespective of age.

Except for Flanders, the development shows a gradual growth, which is more pronounced in Britain. In the literature about both countries one finds no indication of outspoken school concentration policies, although rural primary school closures do occur in the UK. UK parents seem to have developed an increasing concern about the quality of education though, which implies that they tend more and more to select the best school within reach instead of the nearest one. This was no doubt stimulated by the changes introduced by the Education Reform Act (1988) and afterwards. Schools were granted a certain independence and quality assessments of their education were published to support the increased parental freedom of choice (Whitty, 2008).

Remarkable is the fact that the escort of education trips (mostly bringing children by car) is restricted to short distances in the Netherlands and that it is not growing in this country.

In Britain the mean escort distance is much larger and it grows significantly. One explanation may be a different use of transport modes, especially disuse of the bike. See the next subsection.

The Dutch and Flemish figures relate to the distance between home and place of education, the British figures relate to all trips made for education. Including all trips generally produces smaller observed distances, because pupils will be more inclined to make additional trips between home and school, for instance for lunch at home, when the distance is shorter. However, different definitions can explain only a small part of the gap between the Dutch/Flemish figures and the British ones. Either British school-home distances are considerably smaller, or the data used are not comparable. Probably the British figures exclude students travelling to higher vocational schools and universities, unlike the Dutch and Flemish figures.

9.4.2.3 Development of school travel mode use in primary and secondary education

The growth of distances in school travel and the increasing escort distance may be regarded to be indicators for increasing car use. The development of the use of different travel modes is shown in figures 9.6 and 9.7 for pupils in the primary school age (6-11 years) and in the secondary school age (12-17 years) respectively.

In these figures the data for the only two Flanders measurement years, 1994 and 2000, are compared with those for The Netherlands and the UK of about the same year.

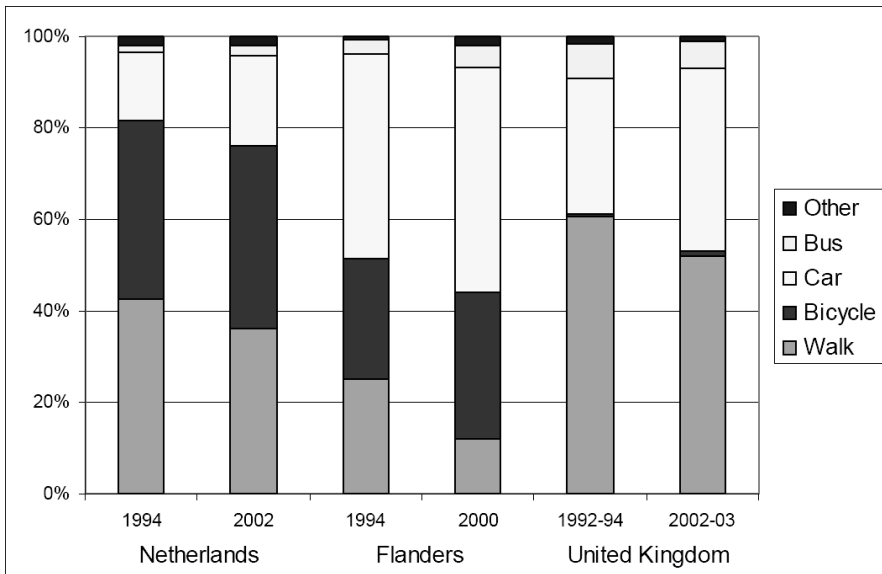


Figure 9.6 Development of mode choice on school journeys from about 1994 to 2002 in the Netherlands, Flanders and the UK for the young pupils, primary school age (Sources: Dutch, Flemish and British NTS).

The differences between the countries prove to be striking. In 1994 about 45% of the Flanders school journeys to primary education are made by car. In 2000 *car use* has increased to over 50%.

Car use is growing in the other countries as well, but it is less dominant, especially in The Netherlands (only about 20%).

The *use of the bike* is more or less stable or even growing. It is an important travel mode both in Flanders and in the Netherlands, but a negligible one in the UK, in spite of considerable cycle ownership. In the latter country the share of households with at least one bike grew from 36% in 1989/91 to 47% in 2002/2003). Active cyclists are rare though: only 6% of the population (Broadley 2005, table 2.14).

Flanders and the Netherlands both have a network of cycling facilities along main roads, but the Netherlands have improved this massively after about 1980 and extended it to urban arterials as well. Traffic calming was undertaken in the Netherlands and to a lesser degree in England

Bus transport is nearly absent in The Netherlands and, however declining most developed the UK. This reflects the differences between national arrangements, with a two mile threshold for free school transport in the UK, a four km threshold in Flanders, and a six km threshold in many Dutch Municipalities (see De Boer and Van Goeverden 2007).

Walking is declining everywhere, although it was used by more than 50% of the UK children. In Flanders it has declined to little more than 10%.

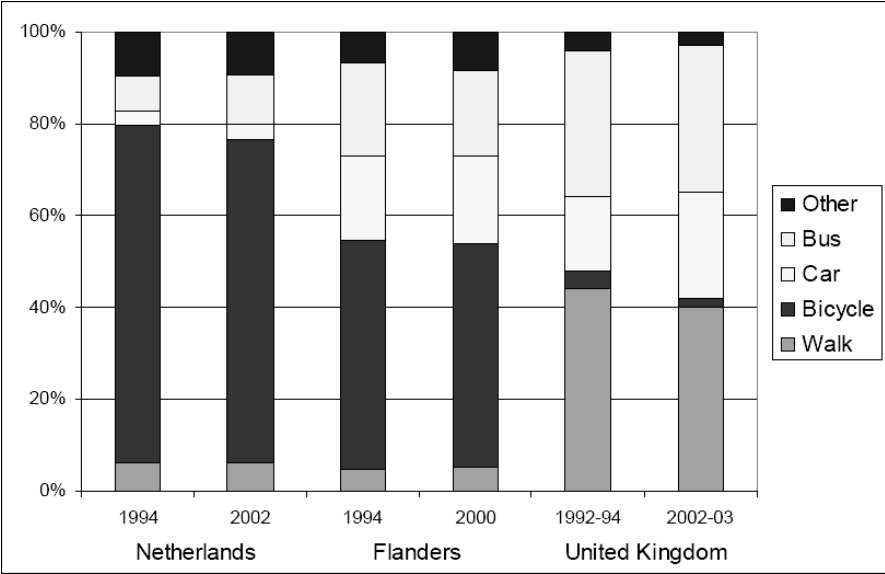


Figure 9.7 Development of mode choice on school journeys from about 1994 to 2002 in the Netherlands, Flanders and the UK for the older pupils, secondary school age (Sources: Dutch, Flemish and British NTS).

The differences in travel mode use amongst pupils of secondary schools are similarly striking. *Car use* is minimal in The Netherlands, considerable (ca. 20%) in Flanders increasing to even more in Britain. *Cycling* is very dominant in The Netherlands, about 50% in Flanders and negligible in the UK. *Bus transport* is modest in The Netherlands, more substantial in Flanders and used by about one third of the UK pupils. *Walking* is of importance only in the UK. The *other* category (train and tram) is modest and in the UK more so than elsewhere.

9.4.2.4 Conclusions and implications for our hypotheses

There are certain tendencies to an increase of school travel distances in the European countries under study, especially in the UK. These seem to be caused only partly by school concentration policies.

There are development tendencies in school travel mode use as well, being increasing car and bus use, but starting from very different modal split situations. These differences may result especially from the supply of both dedicated road space (cycle tracks) and the public attitude towards cycling.

These outcomes are insufficiently outspoken to regard hypothesis 2.5.10 to be confirmed.

2.5.10. The development of the road system and the parallel development of car ownership make transport to school so easy that proximity to school is hardly an argument for school choice anymore.

2.5.11. The increase in car traffic has made cycling to schools in secondary education more dangerous and has therefore changed the modal split radically in favour of public transport.

2.5.12. Policies in favour of soft traffic modes will cause (a) the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and (b) to be hardly present in the modal split in the journey to secondary schools.

The supposed radical change from bike to bus in secondary education (hypothesis 2.5.11) was hardly to be expected in fact for the short period under study. Bus transport increased only in The Netherlands and only marginally. The hypothesis is rejected.

Hypothesis 2.5.12 is twofold in content and of a comparative nature. The change in the modal split on the journey to primary school might be called substantially in favour of car use and this only slightly less outspoken than in the other countries. In Dutch secondary education the change in favour of the bus is indeed only marginal and it will be caused partly by increased distances. This part of the hypothesis is confirmed.

The Dutch and Flemish data will be analysed in more detail to identify demographic and socio-economic variables of importance for school travel behaviour.

9.5 School travel patterns

9.5.1 Introduction

It is not unlikely to find dissimilarities in school travel of different countries, as indicated in the last section. These may be caused by dissimilarities in the school system, including the geographical distribution of school locations. They are not unlikely to be caused as well by differences in travel habits to be explained by tradition (or perhaps traffic conditions) and/or by demographic and socio-economic factors.

Flanders and the Netherlands are comparable, both in terms of school system and geography, as will be demonstrated in section 9.4.2. This implies that differences in travel behaviour cannot be caused by differences in these important causal categories. Of course the transport system may have its impact as well. Its general features in Flanders and The Netherlands are presented in section 9.4.3.

Most important for the comparison of travel behaviour is the availability of highly similar data bases, the Dutch MON (formerly OVG) and the Flanders OVG, both general travel surveys based on diaries and questionnaires. The data bases will be discussed in section 9.4.4. The analysis of travel behaviour starts with a descriptive analysis of school travel distance and travel mode (sub sections 9.4.5 and 9.4.6). Presented are the distributions of distances and travel mode choice for two distance categories, being those of under and over 5 km.

These descriptive figures present a general picture that will be helpful for the interpretation of the multi variate analyses in sections 9.5 and 9.6. The figures show travel behaviour in one period of time, being the most recent period that can be represented with the MON- and OVG-data. The developments in time are no subject of this section.

Detailed information about these can be found in De Boer en van Goeverden (2008), which may be downloaded from the ETC site.

9.5.2 Comparing school systems and school densities in Flanders and The Netherlands

The development of the Dutch *school system* was described in chapter 3.

A school system is characterised by a number of characteristics that are relevant for travel patterns. These will be discussed shortly for both countries to assess their potential contribution to differences in school travel.

The following characteristics are considered important in comparing the school travel patterns of different countries:

- the entrance age and duration of the *school duty* explains the volume of participation in school travel and the kinds of travel modes used, because there is an entrance age for these as well,

- the educational structure with different successive or parallel *curricula*, called the vertical and horizontal structures, explaining the spatial distribution of school locations. Separate *successive* curricula are likely to lead to different densities, being higher for earlier ones, because these are serving younger pupils with lesser abilities for travelling to school. *Parallel* curricula (for one and the same age category) will lead to lower densities because schools will have to recruit pupils from larger areas to achieve sufficiently large groups for each curriculum. This will cause longer travel distances.
- the degree of *freedom in supplying curricula* explains the presence of parallel provision of similar curricula, which will lead to lower densities because The highest degree of freedom is found where government subsidises parallel provision completely. Both the freedom and the resulting lower densities will cause longer travel distances. The freedom of supply is likely to imply a *freedom of geographical choice*, even within the network of one providing agency. In the absence of it a school of the competitor might be chosen.
- the *scale of supply*: pupils/school ratio. This is partly the result of the factors mentioned before, but it may be affected by population density and by philosophies on desirable minimum school size.

The school system characteristics for Flanders and The Netherlands are presented in Table 9.2. In Flanders the *school duty* starts at 6 years, but nearly all children (98%) enter the school at 5 at last. Approximately 75 % do so at the age of four. In The Netherlands the school duty starts at the age of 5. The four year old do participate for 98%. (inferred from OECD (2008)). Both countries have *curricula* with a uniform set of subjects for the two-year 1st phase of secondary education. The subjects are presented at different levels though. In the 2nd phase there is a distinction between 'theoretical' and vocational training, the theoretical type being supplied at different levels. These curricula may be provided at a 'school community' but at different locations. The Netherlands have separate schools for the third phase vocational curricula (MBO).

Both countries have a *competitive school system* with religious and non religious schools that are government financed. There are *no formal school districts*, but schools may refuse pupils in case of lacking capacity. Giving priority to children living close to school is possible (see for Flanders Pannecoucke 2005).

Disregarding the Flemish toddler schools (4 and 5 year of age) the *scale of primary schools* is similar.

The *scale of secondary schools* is strikingly dissimilar. This is likely to be a matter of registration though, because institutions can have their different successive and parallel curricula registered separately (information Flanders Ministry of Education).

We compared a Dutch and a Flemish regional education centre to assess a characteristic essential for travel, being the number of *locations for secondary education*. Selected were Hasselt (72,000 inhabitants), capital of the Flemish Province of Limburg and Leeuwarden (94.000 inh.), capital of the Dutch Province of Fryslân.

Using the sites www.schoolinbeeld.nl and www.hasselt.be and the sites of the individual institutions mentioned, the number of locations with individual curricula for secondary education were counted, including those for Dutch MBO. Hasselt proved to accommodate 16 institutions with 22 locations in the city. Leeuwarden counts 6 institutions only, but 19 locations of those.

On the basis of this evidence we concluded that the school systems and their geographical and demographical features are sufficiently comparable for our purpose. Therefore the travel data to be used in the following analyses will be affected hardly by differences in these conditions.

Table 9.2 School system characteristics for Flanders and the Netherlands.

Sources: www.ond.vlaanderen.be/onderwijsstatistieken/2007-2008, www.ond.vlaanderen.be/onderwijsaanbod/so and www.stamos.nl/jaarboek2

	Netherlands	Flanders
School duty (full time)	5 - 16	6 - 16
Curricula structure vertical	primary/second.**	primary*/second.
Curricula structure horizontal (sec)	level/application***	level/application***
Freedom of school supply	yes	Yes
Freedom of school choice	yes	Yes
Pupil/school ratio primary ed. 6 – 11	158	177
secondary ed. 11+	1417 (ex MBO)	468***
School density: primary ed. per km ²	0.17	0.18
Population density per km ²	399	450

* separate toddler schools, not for new schools

** separate vocational 3rd phase in MBO

*** different levels for the less and more gifted pupils and different degrees of practicality (general and vocational)

**** different phases and curricula often registered separately! (Info Flemish Dept. of Education).

9.5.3 An outline of school travel conditions in the two countries

Differences in behaviour between the two populations or samples in the national travel surveys may be caused by the following three factors:

- availability of the different travel modes, assessed for private vehicles in the surveys,
- infrastructure provided for the different types of transport,
- traffic safety,

The latter factors can be inferred from national sources

Characteristic figures concerning these factors are included in Table 9.3.

Table 9.3 Availability of vehicles in the analysed households (MON, OVG) and available road infrastructure (in 1000 km) and the number or traffic fatalities in the 0 – 14 years category for Flanders/Belgium and the Netherlands, the latter factors also corrected for differences in the size of the country and of its population

		Netherlands	Flanders
Vehicles/household	Car	1.1	1.2
	Bike	2.2	2.4
Road length	Car	115.6	69.8
	Corrected		181.4
	Bike	18.9	4.8
	Corrected		12.4
Traffic fatalities	Number	35 all modes	32 all modes
	Corrected		50

Road data Fla 2005, NL 1997, Fatalities 2006 (SWOV, BIVV)

The table gives both absolute figures and figures that are corrected for differences in population and area. The Dutch population is a factor 2.4 larger than the Flemish population, the territory a factor 2.6. To make the figures more comparable the vehicle data for Flanders are multiplied by 2.4 and the road data by 2.6. The Dutch population is a factor 1.6 larger than the entire Belgian population.

The corrected figures show that both *car ownership* and *bike ownership* are of a similar level. *Flanders* however has much more *road length* and much less *cycle way length*. This difference is a probable cause of the differences in car and bicycle use. This is confirmed by the remarkable degree of dissatisfaction with cycle facilities that Flemish respondents showed

in a 2001 questionnaire survey on public provisions. The satisfaction score was 68.2 on a scale where 100 stands for 50%! For the nation as a whole it was 48.3, being the lowest score for the examined kinds of infrastructure (http://statbel.fgov.be/census/localres06b_nl.asp). A more recent survey of cycling facilities confirms the dear state of part of the Flanders cycling facilities (Konincks 2007). The relative lack of traffic safety in Flanders is likely to be an additional motive for motorized transport.

The level of public transport in the two countries may be considered to be similar. Both have dense railway and bus networks, even in the deep countryside. Flanders demands a minimum service frequency for all official settlements. It has numerous demand responsive line services. In The Netherlands the collective 'regio-taxi' is a common phenomenon.

Separate school bus networks are the exception in both countries although the Flanders Community (national) secondary schools have their own buses. Dutch orthodox-protestant schools, like the Gorinchem Gomarum College (chapter 4) may have dedicated public transport lines.

A document of the Flemish Council (the Flemish Parliament Vlaamse Raad) presents figures of dedicated bus transport. It is restricted to 9100 pupils in regular education, 2900 of those visiting schools of the national network (Martens, 1994, p.5). The national bus company 'De Lijn' transported 190.000 pupils in its regular services according to the same source.

In the Netherlands cycling is relatively popular, not only because of the extent of the facilities but too, because there are only negligible *financial facilities for the use of public transport* by pupils in secondary education. There is moreover a culture of cycling to school in groups, as illustrated by picture 9.1. In Flanders a 'buzzy pass' is sold to young people from 6 to 24 years old. See www.delijn.be/vervoerbewijzen/types/.../buzzy_pazz.htm. A year pass for the entire Flemish network is 162 Euro's only. *Using the bus is in fact promoted explicitly.*

On the basis of the differences found in travel conditions one may expect relatively much cycling in The Netherlands and relatively much car and public transport use in Flanders

9.5.4 Data used for the analyses

The analyses are based on data from the Dutch and Flemish national travel surveys, as described in section 9.3.

The trip level data from these surveys can be used only restrictedly for the description of school travel patterns. There are two problems, being the incidence of more than one school trip per day for a share of the pupils and the lack of information on the type of school they are visiting.

When data on trip level are used for the analyses, *only the first observed home-school or school-home trip of each pupil in the survey is selected*. All other registered trips between home and school are skipped. Therefore, the analyses are on personal level though they are based on trip data. Figures on trip level that would be obtained if all trips between home and school were included would show a relatively higher frequency of shorter distances and modes particularly used for these distances. The reason is that pupils are inclined to travel more frequently between home and school when distances become shorter, especially for having lunch at home.

It is useful to distinguish between primary and secondary schools, because travel behaviour is likely to be different. Distances to secondary schools are usually larger, and the older pupils visiting these schools are better equipped for travelling independently. However, information about the kind of education enjoyed by the pupils is lacking in the surveys. *As a proxy for the distinction between primary and secondary schools, a distinction will be made between age*

classes. Pupils from 6 to 11 years old are assumed to visit primary schools and those from 12 to 17 years old are assumed to visit secondary schools.

9.5.5 School travel distances in the Netherlands and Flanders

Primary schools are widely spread and they are present in many smaller settlements. It may be expected therefore that the home to school distances generally are short, less than five km. Yet some pupils in the age of 6-11 may be faced with (substantially) larger distances, particularly when they visit special schools or when they opt for either education of a certain denomination (like Roman Catholic) or of a distinct approach like Montessori. Secondary education is generally provided only in the regional or higher centres. Distances to secondary schools may therefore frequently be significantly larger than those to primary schools

These expectations are confirmed by Table 9.4 and Figures 9.8 and 9.9. Table 9.4 gives some statistics about the frequency distributions of home to school distances, while the Figures 9.2 and 9.3 display these distributions for pupils under 12 years old and for the older pupils respectively.

The Flemish figures are based on the person enquiry of the OVG 2000 only. The pupil-based data give almost the same results as the trip-based data; however, the graphs based on the former are smoother, probably due to the larger number of observations.

Table 9.4 Some statistical indicators for the home-school distances

Indicator (km)	6-11 years old		12-17 years old	
	Netherlands	Flanders	Netherlands	Flanders
Average	2.02	2.97	7.13	7.34
Modus	0.8	1	2	2
Median*	1 (0.6)	2 (1.2)	4.5 (3.9)	5.4 (5.0)
85-percentile*	3 (2.5)	6 (5.2)	12	12

*between brackets the figures as these might be inferred from the figures 9.2 and 9.3.

The modus, median and 85-percentile figures are based on frequency distributions of distances measured in 100 m. The 100 m unit is the registration unit of distances in the enquiries. However, respondents are strongly inclined to round off distances to half or whole kilometers. This has most severe consequences for the modus. Some of the values for the modus in the table are not the most frequently reported distance in the survey but estimates of the most frequent travelled distance in reality. Values for the median and 85-percentiles are adapted, indicating the values in figures 9.9. and 9.10.

The table demonstrates the large differences between the distances to primary and to secondary schools. In addition, it shows significant differences between distances travelled by Dutch and Flemish pupils under 12. These differences can clearly be seen in Figure 9.9. Young Flemish pupils travel longer distances, on average 1.5 times longer than the Dutch.

Possible explanations for these differences in travel distances are the distances to be travelled to the nearest school and the selectiveness of parents in choosing a school for their children. Differences in distances to be travelled may be the result of differences in land use, given an identical school density. The Netherlands traditionally have a more restrictive urbanisation policy than Flanders with a more compact urbanization as a result. Statistics indeed show that, the population density of Flanders being 12% higher than that of The Netherlands, the share of areas belonging to municipalities with a population density of over 300 per km² is 50% higher in Flanders! (57% versus 38%; CBS/Statline and Statistics Belgium).

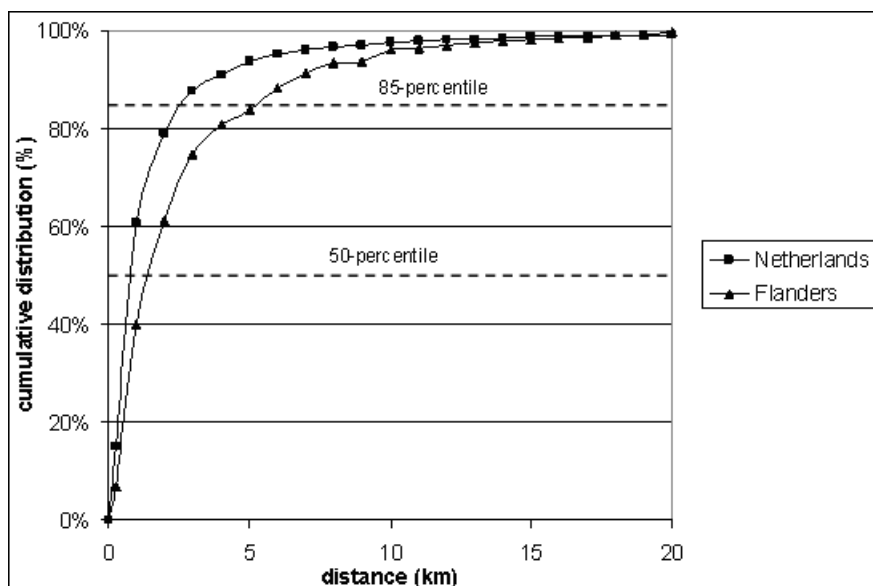
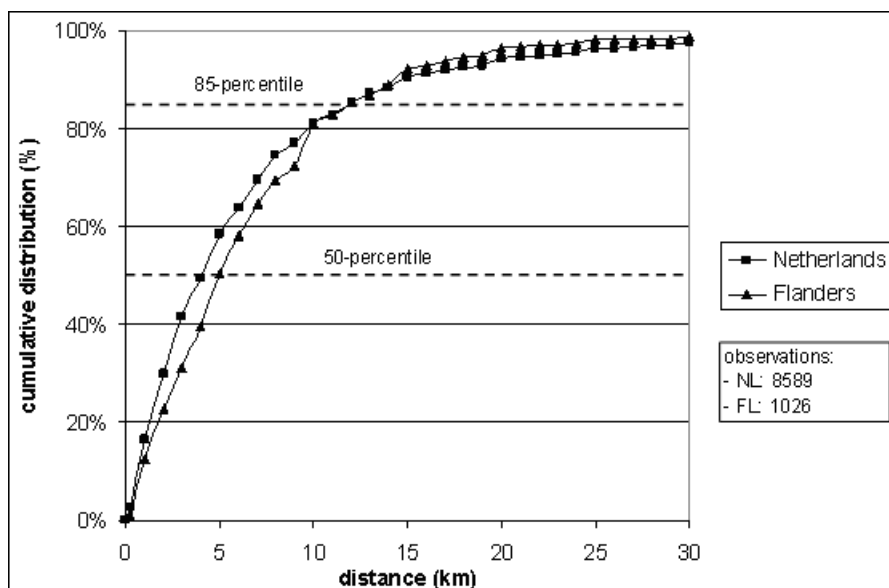


Figure 9.8 Home-school distances for pupils 6-11

Figure 9.9 Home-school distances for pupils 12-17



The distance curves for secondary schools of the two countries are similar. Dutch pupils travel slightly more frequently on short distances (<10 km) and also more frequently on large distances (>15 km). The average distances are rather the same. The differences in land use mentioned before might have a minor effect for the shorter distances and explain the observed difference between the Netherlands and Flanders. For the larger, inter urban trip distances,

they may play no role anymore. The slightly higher distances in the Netherlands could be explained by a bit lower density of school locations, corresponding to a bit lower population density. The latter can not be controlled however because of a lack of data about school location densities.

9.5.6 Modal splits in school travel in the two countries

The (explanation of the) modal split in school travel is a central topic of this chapter. It is most important for children to travel to school independently and especially using slow transport modes, walking or cycling. Travelling under guidance might be called the next best option. Distinctly undesirable is being transported per car by parents. The full range of not unusual options is indicated in table 9.5. Not mentioned is the possibility to travel as a group of equals which is not uncommon in cycling and public transport. It is regarded to be independent.

Table 9.5 plausible range of school travel options per age category

Age		6 - < 12 years			≥ 12 – 18 years		
Dependency		independ.	guided	transported	independ.	guided	transported
travel mode	Walk	X	x		x		
	bicycle	X	x	X	x		
	Moped				(x)		
	Car			X			x
	Taxi			X			x
	publ. tr	X	x		x		

Legend. Independent = by oneself; guided = by oneself but accompanied; transported = by someone else, (x) = only pupils of ≥ 16, both in Flanders and The Netherlands (Gysen 2006).

The distance to school and the availability of travel modes are basic explanatory factors in travel mode choice. Because the quality of travel modes depends heavily on distance, two distance classes will be distinguished: ≤ 5 km and > 5 km. The 5 km distance may be regarded as an upper threshold for the change from walking to cycling, while public transport is generally only a feasible mode for larger distances. Therefore, the modal split figures are divided in three respects: two countries, two age classes and two distance classes.

The selection of data from the available sets constituted a problem for the Flemish data (see De Boer and Van Goeverden 2007) that is explained in textbox 9.1.

We decided to use trip-based data for two reasons, being

- a) the more detailed registration of modes, and
- b) the feeling that in a society with increasing car ownership the increase in car use reported by the trip-based data is a better representation of reality than the decrease reported by the person-based data.

The modal splits are displayed in Figure 9.10. The category ‘other’ is especially taxi. Public transport (PT) in the figure includes special school buses. The numbers of pupils are several thousands for the Dutch data and several hundreds for the Flemish data, except for the relatively small category of pupils aged 6-11 and travelling > 5 km. Values for this category are based on 742 and 108 observations for the Dutch and the Flemish respectively.

The figure shows large differences in the modal splits of the two countries. Dutch pupils are more inclined to travel by bike, where Flemish pupils are carried more frequently by car and are using public transport more often. The differences are more pronounced for the larger distances. The high share of the ‘other’ mode for Dutch pupils 6-11 travelling > 5 km is mainly due to an extensive use of the taxi, most likely for visiting special schools.

Remarkable results are that, in contrast to the Netherlands, in Flanders a) hardly any pupil younger than 12 will use the bicycle for distances > 5 km, and b) it is rather common to carry pupils older than 11 to school by car still. The difference in car use indicates that Dutch pupils travel more independently to school than Flemish pupils.

Nevertheless only 8% of the Dutch 6 year old pupils are going to school on their own. The majority is guided in walking or cycling to school (70%) For the 9 year old these percentages are 54% and 32% respectively (Van der Houwen etc. 2004, p.22).

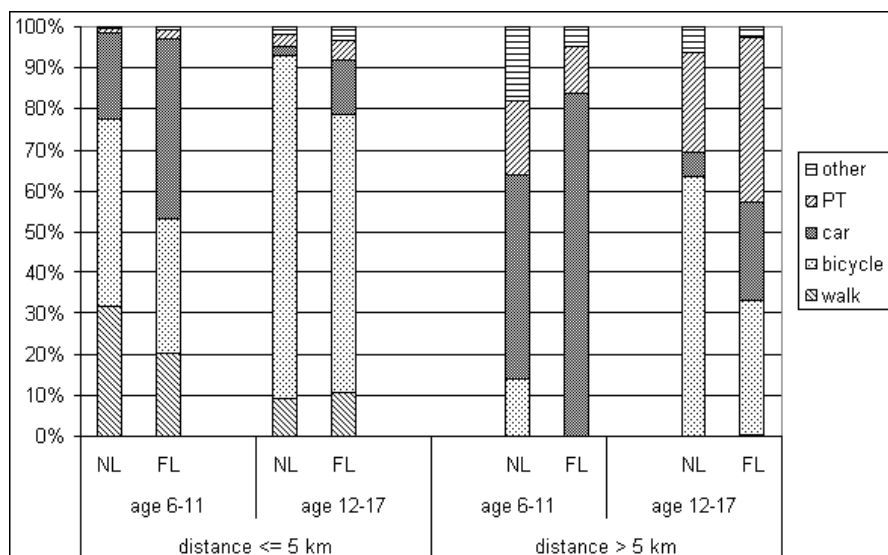


Figure 9.10 Modal splits in home-school trips in the Netherlands and Flanders, by age category and distance class (trip-based data. NL, 2004-2007, FL, 1994/2000).

These differences between the behaviour of the two populations are likely to be caused by two factors to be presented in section 9.5.3, being

- the infrastructure provided for the different types of transport, in Flanders less favourable for biking
- the traffic safety, in Flanders much worse than in The Netherlands.

Even then the differences in biking for the older pupils at distances larger than 5 km are surprisingly large. The share of cycling for the Dutch is about twice as large as that for the Flemish.

9.5.7 Conclusions

Concerning distance. The distance distributions in primary education of the two countries are significantly different in spite of similar school densities. Flemish children travel on average a 50 % further, about 3 km as compared with 2 km for the Dutch. The 85-percentile shows even a 100% difference, being 6 km for Flanders and 3 km for The Netherlands.

The degree of urbanisation in the two countries is similar, but home to school distances are likely to be longer because of lower housing densities in Flanders.

The distances in secondary education are about the same in the two countries, being slightly more than 7 km, the 85-percentiles are even identical. Evidently the housing densities are of no effect in the larger catchments of secondary schools.

Concerning travel mode. Travel mode choice shows distinctive differences, especially for primary education and even for distances under 5 km, where the slow modes are used 50% more in the Netherlands than in Flanders. This is not caused by differences in vehicle ownership, but by the differences in traffic safety and/or in the quality of facilities for the slow modes.



Picture 9.1 City of Gorinchem (NL), a company of girls of the 'Gomarus College' waiting for the ferry on their home trip (2007).

9.6 School travel distance explained

9.6.1 Introduction

The preceding section presented actual school travel patterns in both Flanders and The Netherlands, as far as we could derive it from the available data. Some remarkable differences between the two countries were found.

This section and the following one will explore the possible explanations for differences in travel distance and travel mode choice that are rooted in micro-economics and are worded in the hypotheses, presented in section 9.2.3.

These analyses should make clear to which extent choices are determined by hard factors like locations of schools and availability of travel modes, and, on the other hand to which extent socio-economic factors play a role. By comparing two different countries with their own cultural traditions, insight in the impact of culture may be obtained as well. This knowledge is relevant for predicting future travel behaviour, assuming certain developments in the

influencing variables. It is also helpful for defining policies intended to affect the travel choices.

This section includes two substantial sub sections.

Section 9.6.2 discusses the hypotheses for the explanation of school travel distance and their translation into variables as available in the MON and OVG data bases. It explains the type of analysis/modelling applied, being individual linear regression.

Section 9.6.3 discusses similarly the hypotheses for the explanation of school travel mode choice. Given the fact that this type of choice between two or more options is non-linear, the type of analysis/modelling applied is binary logistic regression analysis.

9.6.2 Factors affecting travel distances to school: hypotheses

In the theoretical section of this chapter (9.2) a set of simple hypotheses concerning determinants of school choice were presented. Before testing the hypotheses these will be explained and made operational.

It is likely that *travel distances* are influenced by:

- population density. Distances will be larger when pupils are living and receiving education in less densely populated areas
- age. The older the pupil is the larger the distance is likely to be, mainly because of the differentiation in secondary school types, leading to lower densities
- gender. Boys are likely to travel further than girls, because they are participating more in special education, which has lower densities both in primary and secondary education
- education level of the parents. The higher their educational level the more parents might be selective in school choice
- car ownership. The higher the car ownership, the higher is the probability of car use in school travel, because it makes it easier to help children to bridge larger distances

In school choice travel distance is no doubt an important argument. In earlier chapters we have seen that the majority of primary school pupils visit the closest school irrespective of the character of its education. It is the most important feedback relationship not indicated in figure 9.1(section 9.2.1).

A higher *population density* is likely to implicate a higher school density and shorter home to school distances. The degree of urbanisation of an area is an indicator for this, although we have seen that it is an imperfect one (section 9.5.4).

A higher *age*, and especially one above 11 years is an indicator for participation in secondary education. This type of education is diversified in character and therefore a larger population is required for the supply of it.

In emancipated societies as the Dutch and Flemish ones, *gender* is unlikely to play a role in school choice. Separate schools for boys and girls are extinct. In Roman-Catholic areas these used to be common, but usually with a boys school next door. In RC Flanders only six girls schools were left in 1995/96 (Prof. Brutsaert in Trouw journal 19-02-02). In the Netherlands secondary schools with female oriented curricula were integrated into general schools (see chapter 3). A remarkable exception is special education. This education type for children with certain faults is provided at significantly fewer locations than regular education and therefore it will require travelling longer distances. Boys enjoy special education to a much higher extent than girls. The ratio is about 2:1 in Flanders and even 2.5:1 in The Netherlands. (see

<http://www.ond.vlaanderen.be/onderwijsstatistieken/2006-2007/jb0607/jb1-hdst3.pdf> and for the Netherlands CBS, Statline).

The parental *education level* is likely to influence the level of ambition for the education of their children. This is likely to be effective both in primary education (teaching quality) and in secondary education (curriculum level).

The factor *car ownership* seems to be self evident, but especially the presence of more than one car may be regarded as an indicator. The first car might be used primarily for commuting. The second car is likely to be more available for school transport. It might even be necessary for that purpose when it is used for commuting as well!

9.6.3 Operational variables used in the analysis

The analysis will be based on trip data in the national travel surveys of both the Netherlands and Flanders. Using person-based data would exclude the possibility to assess the influence of trip-related variables. For Flanders, both the 1994 and 2000 data are used. We assume that the disadvantage of old data is small in this kind of analyses because the relationships between influencing variables and travel choices are constant in time or changing only slowly.

Both surveys include detailed information about the socio-economic variables presented in section 9.6.2. However, information about the hard factors is poor. The distance is strongly connected to the locations of relevant schools. However, these locations are not indicated in the surveys. These do not even provide information about the type of school as we saw before. The surveys also give no accurate information about the service levels of the different modes, although they (roughly) include the actual travelled distance that in itself defines the modal qualities to a large extent.

The variables present in the surveys and to be used in the analysis are partly related to the locations of home and (chosen) school and partly to the school choice (age etc.)

The assessed location-related variables are

- *Province of the home address*; different provinces might have different spatial conditions and policies that are relevant for the location of schools and homes. This may be the difference between new land with a strictly planned development (the Dutch Province of Flevoland) and 'old land' with a traditional structure and less concentrated development, like the Province of Overijssel.

- *Degrees of urbanization of the home and school municipalities*. For both the Netherlands and Flanders degrees of morphological urbanization by municipality are published. Additionally, for Flanders figures about the functional hierarchy of municipalities are published. We found that, if both Flemish urbanization indicators are included in the model, never more than one has a significant influence for either the home or school municipalities. Based on this finding, we decided to include only one urbanization indicator in each model. Selection of the indicator is based on significance in the model when both indicators are examined together. The result is selection of functional hierarchy for both home and school municipalities in the distance analyses, and morphological urbanization for the home municipality as well as functional hierarchy for the school municipality in the modal choice analyses (in 9.7).

- *Age of the pupil*. Even within the two distinguished age classes, pupils can change to a different type of school that has a different location pattern.

- *Gender of the pupil.* The characterisation of gender as a location related variable is due to the observation that boys enjoy special education to a much higher extent than girls (see section 9.6.2).
- *Year of the survey.* The location patterns of homes and schools can change in time.

The other, choice related examined variables, present in the data bases, but only partly in the hypotheses are:

- Car ownership.
- Household income (not in the hypotheses)
- Size of the household.
- Education level of the parents.

The additional variables are not expected to have a strong influence. Income is likely to indicate both the level car ownership and that of education. A larger household size may make it more difficult to organise transport to distant schools.

9.6.4 Individual-level linear regression used for the analysis

The appropriate method for the analysis of trips is individual-level linear regression. Parameters of the following model are estimated:

$$y = b_0 + \sum_k (b_k * x_k) \quad (1)$$

where:

- y : home-school distance
- x_k : k^{th} explanatory variable
- b_k : parameter describing the influence of x_k
- b_0 : constant

The dependent variable is home-school distance, expressed in kilometres. The other variables mentioned above are the explanatory variables; their influences are examined simultaneously. Categorical variables are redefined by a set of dichotomous variables each indicating whether a certain class of the categorical variable is valid or not. For reasons of redundancy, one class of a categorical variable is not represented and has the function of reference class. This means that the values of the parameters are relative to that assumed for the reference class (always taken as zero). In ordinal variables, always one of the two extreme classes is chosen for a reference class because differences in impacts will be most apparent then. Sometimes the lowest value is chosen, sometimes the highest, dependent on which class has the largest number of observations. The year of the survey is calculated relative to the year 2000.

9.6.5 Outcomes

9.6.5.1 The Netherlands

Table 9.6. presents the results for the Dutch situation. Parameters that have a significant influence on a 5% level are displayed in boldface. The parameter of a continuous variable indicates the distance increase in km if the variable increases by one unit (*ceteris paribus*). For example, if the age of a young pupil increases by one year, the distance to the primary school increases by ± 100 m, since the distance is expressed in km. In the case of a categorical variable, the parameter of a certain category indicates the difference in weight between this category and the reference category (again *ceteris paribus*). For example, the distance to the

secondary school travelled by a pupil living in the province of Flevoland exceeds by 3.886 km the home-school distance of a pupil living in Zuid-Holland (the reference).

The statistical performances of this model and that of the Flemish model, measured by R^2 , seem relatively low. This could mainly be due to the fact that probably the most important factor, the actual locations of homes and schools, is not well included in the model. On the other hand, these levels are not unusual for individual-level regression models.

Table 9.6 Influence of explanatory variables on home-school distances of Dutch pupils

variable	class of categorical variable	6-11 years old			12-17 years old		
		param.	t-value	observ.	param.	t-value	observ.
province home address	Drenthe	0.445	2.06	394	3.045	4.82	304
	Friesland	0.359	1.75	458	3.037	5.06	368
	Zeeland	0.544	2.43	357	3.615	5.93	352
	Limburg	0.047	0.24	487	0.484	0.92	496
	Gelderland	0.231	1.39	835	1.383	2.96	751
	Groningen	0.078	0.35	345	1.279	2.14	331
	Overijssel	0.216	1.86	597	2.502	4.87	533
	Noord-Brabant	0.144	0.89	916	1.019	2.27	872
	Flevoland	0.861	4.06	387	3.886	6.55	349
	Utrecht	0.083	0.46	578	1.821	3.58	488
degree of urbanization home municipality	Noord-Holland	-0.055	-0.36	884	0.878	2.08	836
	ref.: Zuid-Holland	0		1232	0		1120
	very highly urb.	-9.276	-17.78	660	-12.414	-19.09	671
	highly urbanized	-7.508	-18.69	1890	-9.534	-20.51	1702
	fairly urbanized	-5.469	-14.40	1684	-6.276	-14.46	1560
	little urbanized	-0.651	-1.74	1907	-3.246	-7.55	1749
	ref.: not urbanized	0		1329	0		1118
	very highly urb.	9.753	18.88	685	12.697	18.60	938
	highly urbanized	7.732	19.28	1919	8.393	15.06	2301
	fairly urbanized	5.551	14.60	1694	4.456	8.31	1784
degree of urbanization school municipality	little urbanized	0.482	1.28	1878	2.473	4.31	1285
	ref.: not urbanized	0		1294	0		492
age		0.099	4.16		1.277	18.81	
gender	ref.: male	0		3807	0		3507
	female	-0.303	-3.71	3663	0.027	0.12	3293
car ownership household	ref.: no car	0		283	0		318
	1 car	0.199	0.84	3863	0.001	0.00	3630
	2 cars	0.325	1.31	3184	0.445	0.72	2601
	3 or more cars	1.122	2.94	140	2.760	3.31	251
annual income household (euro's)	< 7500	0.388	0.95	82	0.634	0.49	54
	7500-15000	0.559	2.51	340	0.351	0.57	288
	15000-22500	0.327	1.98	566	-0.192	-0.41	483
	22500-30000	0.529	4.09	932	0.474	1.29	785
	ref.: ≥ 30000	0		5550	0		5190
size of household	1 or 2 members	0.029	0.09	149	-0.499	-0.71	211
	3 members	-0.055	-0.37	768	-0.627	-1.73	964
	4 members	-0.195	-2.21	3671	-0.849	-3.41	3138
	ref.: > 4 members	0		2882	0		2487
education level parent(s)	primary school	-0.504	-1.20	76	-1.413	-1.49	103
	lower sec. school	-0.593	-0.45	1065	-0.198	-0.59	1169
	higher sec. school	-0.151	-1.65	2980	-0.051	-0.20	2646
	ref.: academic	0		3349	0		2882
year-2000		0.091	2.41		-0.034	-0.33	
Constant		0.503	1.15	7470	-12.016	-8.46	6800
R^2		0.10			0.19		

Relevance of the location related variables. A number of the variables used were qualified as location related, because these can lead directly to different locations and distances. This category of variables have the largest predictive value.

Of those the both 'degree of urbanisation' variables have a large influence with the shortest distances for very highly urbanised municipalities. These two variables are more or less each other's opposites, and compensating each other. In fact the school municipality is the output of a choice rather than an input for the choice. Leaving the first variable out does annihilate the effect of the other one in primary education but not in secondary education.

The *province variable*, indicating a degree of contrast between town and countryside, does have a predictive value both for primary and secondary education, distinguishing Flevoland and to a lesser degree Zeeland from the other ones. Zeeland too is characterised by urbanised zones (the island of Walcheren and central Zeeuws-Vlaanderen) and strictly rural areas like the island of Tholen.

The *age variable* is effective even within the two age categories, probably because it is not a strict border between participation in primary and secondary education. Moreover, in second education pupils may change to a more advanced (more distant) school before reaching the age of 18.

The *gender variable* shows that boys do travel further than girls in primary education. For the older pupils this is no longer the case, probably because distances to the most common types of special secondary education are similar to those in regular secondary education.

Relevance of the choice related variables

The remaining variables were qualified as choice related, because these do not dictate distance, but rather indicate an inclination to travel longer distances to school.

Household car ownership shows only a significant relationship with school distance in the category with three and more cars, where maybe three grownups are available.

Annual income does show a relationship but only for the 6-11 year category and reverse to the prediction: lowest for the highest income category

Household size has a certain predictive value but only significant for the larger households (4 members)

Education level does indeed imply larger distances, but insufficiently significant.

9.6.5.2 Flanders

Table 9.7 shows the results for the *Flemish pupils*. There are fewer variables with a significant influence, being those printed in bold. This is caused in great part by the relatively small number of observations.

Relevance of the location related variables

As for the Dutch pupils, location-related variables have relatively strong and significant influences, with the same problem in the urbanisation variables for home and school municipality, the one being ineffective when the other one is removed.

A remarkable difference with the Dutch analysis is the lack of influence of the *province variable*. It can be explained by a smaller range of population densities in Flanders. The population density per Flemish province (residents per ha) ranges in Flanders from 3.36 (Limburg) to 5.89 (Antwerpen), and in the Netherlands from 1.83 (Drenthe) to 12.25 (Zuid-Holland). In 5 Dutch provinces the density is lower than 3.0, while it exceeds 8.0 in 3 other provinces.

Age has a significant influence but only in the category of 12-17 year old.

Table 9.7 Influence of explanatory variables on home-school distances of Flemish pupils

variable	class of categorical variable	6-11 years old			12-17 years old		
		param.	t-value	observ.	param.	t-value	observ.
province home address	Limburg	-1.168	-1.53	53	-0.303	-0.31	67
	West-Vlaanderen	-1.021	-1.57	74	0.433	0.50	93
	Vlaams-Brabant	0.249	0.34	54	0.488	0.50	66
	Oost-Vlaanderen	-0.293	-0.59	292	0.682	0.98	346
	ref.: Antwerpen	0		131	0		126
functional hierarchy home municipality	High	-2.955	-4.59	255	-5.422	-9.39	325
	moderate	-0.682	-0.58	76	-1.468	-1.51	79
	ref.: low	0		273	0		294
functional hierarchy school municipality	High	3.200	4.96	277	4.658	6.18	497
	moderate	1.317	1.12	78	2.485	2.32	92
	ref.: low	0		260	0		109
age		-0.090	-0.79		0.421	2.92	
gender	ref.: male	0		314	0		365
	female	-0.102	-0.28	290	-0.155	-0.32	333
car ownership household	ref.: no car	0		25	0		38
	1 car	1.828	1.93	343	0.103	0.09	402
	2 cars	2.537	2.53	231	0.700	0.59	251
	3 or more cars	2.489	1.13	5	0.687	0.26	7
monthly income household (BEF)	≤ 75000	0.670	0.93	171	0.500	0.57	221
	75001- 125000	0.326	0.57	335	0.628	0.89	354
	ref.: > 125000	0		98	0		123
size of household	1 or 2 members	0.400	0.26	9	3.830	2.25	16
	3 members	-0.869	-1.56	93	0.201	0.29	147
	4 members	-0.493	-1.21	281	0.837	1.49	284
	ref.: > 4 members	0		221	0		251
education level parent(s)	primary school	4.976	3.08	8	-1.581	-0.80	11
	lower sec. school	0.980	1.41	61	-0.151	-0.18	91
	higher sec. school	-0.496	-1.08	173	-0.198	-0.34	221
	ref.: academic	0		362	0		375
year-2000		0.099	1.23		-0.165	-1.60	
Constant		1.934	1.20	604	-1.336	-0.50	698
R ²		0.10			0.16		

Relevance of the choice related variables. The estimates for other variables hint at

- a distinctly positive relation between *car ownership* and distance to primary schools,
- a negative relation between *size of the household* and distance to secondary schools (which is *contrary to the Dutch results*), and relatively short distances to primary schools if the *parents* have only primary *education*. However, the significance of the last result is doubtful because it is based on only 8 observations; these may include an exceptionally high share of pupils enjoying special education. The tendencies in secondary education are pointing in a different direction.

9.6.5.3 Summarising

Home-to-school distances to primary and secondary education can only modestly be explained within the relevant age categories.

Implications for the hypotheses

The conclusions are drawn for the Dutch situation. Where the Flemish analysis produced contrasting results these will be mentioned.

Population density. Distances will be larger when pupils are living and receiving education in less densely populated areas

* this hypothesis seems to be *confirmed* at the very general level of the Province, both for primary and secondary education. Distances may differ considerably though between Provinces that have clearly different settlement patterns, especially with regard to the contrast between town and countryside. The outcomes of the *Flemish* analysis demonstrates that the relative population density is an important explanatory factor.

* the hypothesis has to be *rejected* when the urbanisation degree of a municipality is used as in indicator

Age. The older the pupil is the larger the distance is likely to be, mainly because of the differentiation in secondary school types, leading to lower densities

* this hypothesis is *confirmed* for both age categories, most likely because the two categories are not strictly related to school type (primary, secondary basic, secondary continued)

Gender. Boys are likely to travel further than girls, because they are participating more in special education, which has lower densities both in primary and secondary education

* this hypothesis is confirmed but only for primary education, most likely because the school density in secondary special education was underestimated. In *Flanders* only the tendency point in the predicted direction.

Education level of the parents. The higher their educational level the more parents might be selective in school choice

* this hypothesis cannot be accepted, although there is a tendency into the predicted direction. In *Flanders* the tendency is in the counterdirection!

Car ownership. The higher the car ownership, the higher is the probability of car use in school travel, because it makes it easier to help children to bridge larger distances

* this hypothesis can be accepted, although the prediction is true only for household with more than two cars. In *Flanders* the hypothesis is confirmed, with only a tendency for the older children.

9.7 School travel mode use explained

9.7.1 Introduction

In the section on school travel patterns (9.5) we have seen that there are large differences between the modal splits in school travel for Flanders and The Netherlands. These could not be explained by differences in travel distances. In this section we will seek to explain travel mode choice controlling for distance.

Sub-section 9.7.2 discusses the hypotheses presented in the theoretical section of this chapter. The presentation of operational variables is short only, because nearly all were presented in section 9.6 already.

The method of analysis applied, being binary logistic regression is presented concisely in sub-section 9.7.4.

The outcomes of the exercise are presented in sub-section 9.7.5. Most remarkable is the influence of gender, which appears to be an important explaining variable for Flanders, while being non-relevant for The Netherlands. Flemish girls do not seem to be allowed to cycle to secondary school. A distinct cultural factor!

9.7.2 Factors affecting modal choice / hypotheses

In section 9.2.3 the following hypotheses concerning travel mode choice were presented.

It is likely that the choice for a certain *travel mode* by parent and/or pupil is related among other matters to:

- distance: the longer the distance to school, the higher the usage of faster modes will be (bicycle and especially for the long distances: car and PT)
- population density: the higher the density is, the better facilities for PT will be, and the worse will be the safety for slow modes, in particular the bicycle
- age: the younger the pupil, the less independent he/she will be in using travel modes
- gender: girls will be travelling less independent than boys, because they are less prepared to confront traffic risk
- size of the household: the larger the number of school visiting pupils, the lower the probability to be escorted by the parents. When pupils travel to the same school, the need for escorting is smaller because they travel together; when pupils travel to different schools, escorting of all pupils is more difficult to practice.
- household income: the higher the income is, the more frequently pupils will travel with the relatively expensive motorised modes.
- education level of the parents. The higher the education of the parents is, the more they will be aware of the merits of independent travelling for their children and the more the latter will use independent modes
- car ownership: the higher car ownership is, the higher the probability of car use will be
- temperature: the lower the temperature is, the lower will be the probability of cycling and the higher that of car and PT use

9.7.3 Operational variables used in the analysis

In the modal choice analysis the influence of the same explanatory variables are examined as in the travel distance analyses, except for the province of the home address. These are operationalised as before.

The operationalisation of 'travel independence' constitutes a problem. None of the transport modes is inherently independent. The data bases used do not include information on the degree of independence in walking, cycling and using public transport. The extensive survey by Van der Houwen etc (2004) shows that only from the age of 9 onward independent school travel is dominant in The Netherlands (p. 25). In Flanders the turning point is likely to be even later.

This implies that at least 50% of the pupils in the 6 – 11 age category is guided to and from school.

Initiatives to redress car use seem to have modest results only. There are initiatives like 'cycle pooling' (fietspooling) intended to stimulate cycling to school by providing guidance for groups, but their impact is probably modest. 'Mobiel 21' mentions participation of 12% of the 2160 schools it regards to be candidates, with 20 to 25 pupils per school (Mobiel 21, 2006).

An initiative like the 'walking bus' (loopbus), walking a group of pupils to school, being fairly common in Great Britain does not seem to be introduced at any scale in the two countries. See <http://www.loopbus.nl/pdfs/artikel-loopbus.pdf>.



Picture 9.2 Cycle pooling in Flanders. Cover picture of Mobile 21, 2006.

Two new variables are introduced, being distance and period of the year.

The periods of the year are classified as cold, moderate and hot, and indicated as 'temperature' in the tables. In the Dutch analysis, these periods are represented by the months of January, November, and May respectively. In the Flemish analysis where rejection of a large part of the sample would be unfavourable, the periods are represented by the month ranges from December to February (cold), March-April and October-November (moderate) and May to September (hot).

9.7.4 Modelling by binary logistic analysis

For the explanation of distance behaviour we used linear regression analysis, because distance is a linear variable. Travel mode is not. In the choice of travel mode one has different options. This may be regarded as a set of binary options. One has the choice of walking or not, of biking or not etc.

The appropriate method of analysis then is binary logistic regression, based on trips. Parameters of the following model are estimated:

$$p(m) = \frac{\exp(b_0 + \sum_k (b_k * x_k))}{1 + \exp(b_0 + \sum_k (b_k * x_k))} \quad (2)$$

where:

$p(m)$: probability that mode m will be chosen (values are between 0 and 1)

x_k : k^{th} explanatory variable

b_k : parameter describing the influence of x_k

b_0 : constant

This model does not describe the full modal choice but just the choice for a specific mode as function of the explanatory variables. Therefore, separate analyses for each mode have to be performed. We limit the analyses to the most frequently used modes, depending on the case. Which modes are selected depends on the case. Walking for instance is no option for distances of over 5 km. As before, categorical explanatory variables are split into dichotomous variables where one class is the reference class.

The results regarding categorical variables of the linear regression analysis used for estimating distances in section 9.6.4 relate only to the differences in influences between classes of the same variable. The binary logit procedure gives also results about the significance of the whole variable and a ranking of variables with respect to their influence.

The analyses are performed separately for the primary and secondary age categories of pupils and for two distance classes: ≤ 5 km and > 5 km, partly because of the differences in relative qualities of the modes for these distances (see section 9.5.6) and partly because of the fact that increasing distance may have opposite effects on the choice of a certain mode within short and long distance classes. Observations with distances exceeding 150 km are excluded. The results are presented in a condensed way. For each segment and choice for a certain mode just the significant variables are listed with the direction and importance of their influence. Individual parameter values and their statistical significance are left out for reasons of space.

9.7.5 Outcomes

9.7.5.1 The Netherlands

Tables 9.8 to 9.11 present the estimation outcomes. For all analysed choices, the significant variables are listed, ordered according to inclusion in the step-wise built model. The order reflects the decreasing importance of variables. Behind the name of each variable, the direction of the influence on the analysed choice is indicated between brackets. The next column reports the contribution to the X^2 -value when the variable is added to the model. This indicates to which extent inclusion of the variable improves the model.

In one case the contribution is ambiguous. Table 9.8 shows (+/-) that both small and large Dutch households have larger car use in primary education travel than medium size households do!

Table 9.8 shows the results for the *Dutch pupils in the primary school age*. More than in secondary education the modal choices for young pupils will often be made by the parents. See section 9.7.3 and table 9.5. The mode “collective transport” in the table includes both public transport and special school transport.

Looking at the results for trips ≤ 5 km, many variables show significant influences:

- Distance has significant influence on all analysed choices and is by far the most important variable for explaining walking and car use. Increasing distance seems to bring about a modal shift from walking to car and, to a lesser extent, from walking to bicycle.
- The second most important variable for trips ≤ 5 km is age. Increasing age lowers car use to the benefit of the bicycle. This is a plausible result because older pupils have a higher capability to travel independently.
- Car ownership is an important variable for explaining car use. Increasing car ownership seems mainly to convert bicycle trips into car trips. This will have to do with the fact that both modes are competitive for the larger distances (even within the short distance segment) where walking takes too much time.

- When the temperature goes up Dutch pupils seem to shift from walking to the bicycle.
- If the education level of the parents is high, pupils more frequently use a bicycle to the detriment of walking.
- Pupils living in large cities are more inclined to walk rather than using the bicycle.
- A high urbanization level of the school municipality decreases bicycle use. The opposite might be true for PT use; however, this is not analysed.
- Increasing household income decreases car use. One should note that this result excludes the influence of car ownership that might be related to income, because both variables are included in the model.
- Increasing household size decreases car use.
- The 'year' variable shows that car use increases significantly over time. This finding is in line with the observed long term increase by de Boer and van Goeverden (2007).

Table 9.8 Significant variables influencing modal choice in primary school trips in the Netherlands

Distance ≤ 5 km (N = 1816)		Distance > 5 km (N = 109)	
Variables	decrease X ² -value	Variables	decrease X ² -value
<i>choice for walking</i>		<i>choice for walking</i>	
distance (-)	943.83	not analysed	
temperature (-)	14.54		
education level parents (-)	15.73		
urbaniz. home mun. (+)	10.09		
<i>choice for bicycle</i>		<i>choice for bicycle</i>	
age (+)	62.55	urbaniz. home mun. (+)	23.37
distance (+)	64.36	distance (-)	20.07
urbaniz. school mun. (-)	22.88	age (+)	5.55
car ownership (-)	21.37		
temperature (+)	11.70		
education level parents (+)	12.75		
<i>choice for car</i>		<i>choice for car</i>	
distance (+)	169.23	education level parents (+)	23.79
age (-)	92.55	size of household (+/-)	13.58
car ownership (+)	83.48	car ownership (+)	14.90
household income (-)	16.50	year (+)	4.87
size of household (-)	11.49	urbaniz. School mun. (-)	11.31
year (+)	4.68		
<i>choice for coll. transport</i>		<i>choice for coll. transport</i>	
not analysed		car ownership (-)	9.40
		urbaniz. School mun. (-)	15.07

Legend. + = contributes positively to the choice, +/- = ambiguous, - = negative

Most findings are in accordance with the relationships assumed in the introduction of this section. Just one observed relationship is the opposite, being the influence of income on car use. The assumed positive relation proves to be negative. Possibly the assumed higher awareness of parents regarding the merits of independently travelling relates more to income than to education level of the parents.

Let us now have a look at the trips > 5 km of pupils in the primary school age. This is a relatively small segment with possibly a high share of pupils enjoying special education. The following significant influences are observed:

- Distance has a significant influence on bicycle choice only. In contrast to the trips ≤ 5 km, the influence is now negative. Where at small distances the bicycle has to compete with walking, at larger distances it has to compete the faster motorised modes.

- The urbanization of the home municipality has an opposite (positive) influence on bicycle choice compared to the smaller distances.
- The urbanization of the school municipality has negative influences on both car use and use of collective transport.
- Higher age again increases bicycle use.
- Car ownership increases car use at the detriment of collective transport.
- The education level of the parents increases car use.
- Size of the household has an ambiguous influence on car use. Car use is high in both small and large households.
- Finally, car use increases significantly over time, similar to the development in the trips ≤ 5 km.

Some observed relationships are in accordance with our expectations (section 9.7.2). However, several findings are the opposite. These regard the influence of urbanization on the choices for bicycle and collective transport, the influence of parental education on car use, and the finding that car use is high in large households. We have no explanation for these. However, the significance of the influences is never very high while the number of observations is rather low. More observations in this segment as well as the possibility to exclude special education might produce different results.

Table 9.9 Significant variables influencing modal choice in secondary school trips in the Netherlands

Distance ≤ 5 km (N = 1077)		Distance > 5 km (N = 828)	
Variables	increase X^2 -value	Variables	increase X^2 -value
<i>choice for walking</i> distance (-) age (-) size of household (-/+)	283.58 18.12 8.34	<i>choice for walking</i> not analysed	
<i>choice for bicycle</i> distance (+) urbaniz. home mun. (-/+) age (+) household income (+)	56.50 15.53 5.67 10.40	<i>choice for bicycle</i> distance (-) age (-) car ownership (+/-) urbaniz. home mun. (-) education level parents (+) temperature (+)	314.20 26.27 24.54 15.11 14.32 10.03
<i>choice for car</i> not analysed		<i>choice for car</i> not analysed	
<i>choice for coll. transport</i> not analysed		<i>choice for coll. transport</i> distance (+) education level parents (-) urbaniz. school mun. (+) urbaniz. home mun. (+) temperature (-) size of household (-) age (+)	310.13 17.31 24.78 13.09 7.70 9.36 4.43

Let us now switch our attention to the pupils in the secondary school age. Table 9.9 presents the results for the Dutch pupils. The findings for this category are as follows:

- Distance is by far the most important variable for all choices. An increasing distance induces a shift from walking to cycling on the short distances and from bicycle to collective transport on the longer distances.
- Age influences all choices as well, and in the same direction as distance.

- The urbanization of the home municipality is the third variable with a rather strong influence. For short distance trips, bicycle use is high in medium sized cities. For long distance trips, an increasing degree of urbanization brings about a shift from bicycle to collective transport.
- The urbanization of the school municipality has only a significant influence on collective transport use on the longer distances. The effect is positive, just like the effect of the urbanization of the home municipality.
- A higher temperature is conducive for bicycle use at the detriment of collective transport, for trips on the longer distances.
- The education level of the parents works in the same direction; the higher it is the more cycling and the less public transport use.
- The size of the household has an ambiguous effect on walking and a negative influence on collective transport use. The probability of walking is highest in medium sized households.
- Household income has a positive effect on cycling on short distances.
- Car ownership affects the choice for bicycle use in an ambiguous way. Bicycle use is highest if there is no car or if there are several cars in the household.

Most findings are in line with the assumed relationships (see 9.7.2). Unexpected results are the influence of age for long distance trips, the low probability for walking by pupils of large households, the positive impact of household income on bicycle use, and the high bicycle use on longer distances when car ownership is high.

The main reason for lowered bicycle use when pupils grow older may be that they are permitted to travel by moped when they are 16 years old. Why at the same time use of collective transport increases is unclear. Maybe there is a statistical reason. When pupils grow older, the average distance to school increases (see section 9.5). Increasing distances raise the use of collective transport. The modal choice analysis assesses simultaneously the influences of distance and age on the use of collective transport. It is thinkable that a part of the influence of the distance is erroneously ascribed to the correlating variable age.

A possible and highly hypothetical explanation for the increasing bicycle use on short distances with an increasing income is that in fact not income but the related variable culture plays a role. In the Netherlands non-natives are less familiar with cycling than natives are, while many of the non-natives earn low incomes. For the other two unexpected results we have no explanation.

9.7.5.2 Flanders

The influences for the young Flemish pupils are displayed in Table 9.10.

Just as for the Dutch, many variables explain the modal choice at the short distances:

- Distance is by far the most influencing variable for walking and car use. It has also a small influence on cycling. Increasing distance decreases walking and cycling, and increases car use.
- Increasing age lowers car use at the benefit of the bicycle.
- Car ownership raises car use at the detriment of walking. It has also a small positive influence on bicycle use.
- When temperature goes up Flemish pupils seem to shift from car to bicycle.
- The education level of the parents is positively related to car use.
- Pupils living in medium sized cities are more frequently carried by car.
- Those travelling to a school in a city of regional importance are more inclined to use the bike instead of walking than those travelling to schools in rural areas or in large cities.

Unexpected results are the small positive influence of car ownership on bicycle use, the positive relation between education level of the parents and car use (not found in The

Netherlands), and the low car *and* bicycle use in low urbanized areas. ?? We have no explanation for these findings.

Table 9.10 Significant variables influencing modal choice in primary school trips in Flanders

Distance ≤ 5 km (N = 521)		Distance > 5 km (N = 82)	
Variables	increase X^2 -value	Variables	Increase X^2 -value
<i>choice for walking</i>		<i>choice for walking</i>	
distance (-)	202.92	not analysed	
urbaniz. home mun. (+)	36.19		
car ownership (-)	24.07		
hierarchy sch. mun. (+/-)	7.41		
-/- urbaniz. home mun.	-3.31		
<i>choice for bicycle</i>		<i>choice for bicycle</i>	
age (+)	12.77	not analysed	
urbaniz. home mun. (-)	12.63		
temperature (+)	9.52		
distance (-)	8.89		
hierarchy sch. mun. (-/+)	6.87		
-/- urbaniz. home mun.	-2.18		
car ownership (+)	9.95		
<i>choice for car</i>		<i>choice for car</i>	
distance (+)	135.50	household income (+)	12.33
car ownership (+)	36.22	gender (female +)	6.87
age (-)	12.15		
temperature (-)	12.17		
education level parents (+)	11.59		
urbaniz. home mun. (-/+)	7.06		
<i>choice for coll. transport</i>		<i>choice for coll. transport</i>	
not analysed		household income (-)	14.68
		gender (male +)	7.55
		age (+)	5.28
		education level parents (+)	9.49

Modal choice on the longer distances is significantly influenced by only four variables:

- Most important is household income. Increasing income raises car use and lowers use of collective transport.
- Second is gender. Females are more frequently carried by car, while males more frequently use collective transport.
- Age has a positive influence on the use of collective transport.
- The education level of the parents has a positive influence on the use of collective transport as well.

Assuming that the higher use of collective transport at higher ages is due to a shift from car use, all results are plausible. The influence of gender is additional to our assumptions. The outcome that boys are more inclined to use the bicycle is in strange contrast with The Netherlands where girls are biking nearly as much as boys. Evidently parents discourage girls to take the bike. This protective behaviour towards daughters is confirmed by the Belgian Institute for Traffic Safety (BIVV).

Finally, Table 9.11 shows the results for the older Flemish pupils.

The number of significant variables is smaller than for the young pupils. They include:

- Distance; this has a strong negative influence on walking, while in the larger distance class increasing distance brings about a shift from bicycle to collective transport.

- Gender; boys are more inclined to use the bicycle than girls, while girls more frequently use collective transport. Gender is the only significant variable that explains bicycle use on short distances.

Table 9.11 Significant variables influencing modal choice in secondary school trips in Flanders

Distance $\leq$ 5 km (N = 327)		Distance > 5 km (N = 368)	
Variables	increase X^2 -value	Variables	Increase X^2 -value
<i>choice for walking</i> distance (-) car ownership (-)	80.35 7.64	<i>choice for walking</i> not analysed	
<i>choice for bicycle</i> gender (male +)	5.85	<i>choice for bicycle</i> distance (-) hierarchy sch. mun. (-/+) gender (male +)	50.44 14.94 9.18
<i>choice for car</i> household income (+) car ownership (+)	19.36 9.61	<i>choice for car</i> household income (+) age (-) urbaniz. home mun. (-)	8.99 5.39 6.42
<i>choice for coll. transport</i> not analysed		<i>choice for coll. transport</i> distance (+) gender (female +) hierarchy sch. mun. (+/-)	24.18 13.68 9.52

- Car ownership; this is positively related to car use on short distances and negatively related to walking.

- Household income; this is the most influencing variable for car choice, both for the short and the longer distance class. Increasing income increases the probability of car use.

- Age; increasing age decreases car use on longer distances.

- Hierarchy of the school municipality; when travelling to a school in a municipality that is high or low in the hierarchical ranking, the use of collective transport is relatively high. Pupils travelling to a municipality in the middle of the ranking are more inclined to use the bicycle.

- Urbanization of the home municipality; increasing urbanization decreases car use on the longer distances.

One result is opposite to the hypothesized relationships. This is the finding that for longer distance trips to schools in low urbanized municipalities the use of collective transport is relatively high and bicycle use is low. Possibly collective transport to these municipalities is to a large extent special school transport, where the high collective transport use to the large cities is mainly due to public transport patronage.

9.7.5.3 Summarising

The outcomes of the analyses as presented in the tables 9.8 to 9.11 are summarised in table 9.12.

Included are for all age, distance and travel mode categories the dominant explanatory variable, and the second one listed. Those printed in bold have a high predictive value. In all seven cases it is *distance*. Those listed secondly and printed in a small font size have a relatively weak predictive value. The contribution of the factors distance, age, and degree of urbanisation is clear. Differences between boys and girls are prominent only in Flanders.

Table 9.12 The two most important variables for describing the modal splits in Dutch and Flemish school travel for two age categories and two distance categories

	Dutch pupils				Flemish pupils			
	6 – 11		12 - 18		6 – 11		12 - 18	
Distance	≤ 5km	> 5km	≤ 5 km	> 5km	≤ 5 km	> 5km	≤ 5 km	> 5km
Walking	Dist – Fem –		Dist – Age –		Dist – UrH –		Dist – Cow –	
Cycling	Age + Dist +	UrH + Dist –	Dist + UrH ±	Dist – Age –	Age + UrH –		Male + Dist – UrS ±	
Car use	Dist + Age –	EdL + HhS ±			Dist + Cow +	HhI + Fem +	HhI + Cow +	HhI + Age –
PTr use		Cow – UrS –		Dist + EdL –		HhI – Male +		Dist + Fem +

Legend: Cow = Car ownership, EdL = Education Level, Fem = female, HhI = Household income, HhS = Household size, UrH = Urbanisation degree Home municipality, UrS = Urban ... School municipality, **Cow** = dominant variable $\geq 100 X^2$, Cow = second important variable, Cow = second but less important variable.

When comparing the results for the Dutch with those for the Flemish in a little more detail, one will find many similarities. For both groups of pupils, distance has an important influence on modal choice. Increasing distance decreases the probability of walking on short distances and cycling on longer distances, while it increases the probability of car use on short distances and use of collective transport on longer distances. Age has a strong influence for young pupils on short distances. When pupils grow older they will be carried by car to a lesser extent and use more frequently the bicycle. Car ownership generally increases the probability of car use. High urbanization of the school Municipality is conducive for use of collective transport. In medium-sized cities bicycle use is high. A final common result, not visible in table 9.12, is that increasing temperature raises bicycle use of young pupils on short distances.

There are also several differences between the Dutch and the Flemish. Noticeable differences are the following ones:

- Gender is an important explaining variable for the Flemish, whereas it has no significant influence for the Dutch.
- The influence of distance on bicycle use on short distance trips is positive for the Dutch and negative for the Flemish
- When temperature goes up the young Dutch pupils seem to shift from walking to bicycle while the Flemish shift from car to bicycle.
- The increase of car use on short distance trips due to an increase of car ownership seems to be at the detriment of the bicycle for the Dutch and of walking for the Flemish.
- Increasing household income decreases car use on short distances for the Dutch (young pupils) while it increases car use for the Flemish (older pupils).
- If the parents are highly educated, Dutch pupils are more inclined to use the bicycle while Flemish pupils tend to travel more by car (short distances) or collective transport (long distances).
- Car use increases significantly over time for the Dutch young pupils in the short period 2004-2007, while no significant influence can be noted for the Flemish in the longer period 1994-2000. This observation might be due to a smaller number of observations for the Flemish. Another explanation is that the initial much higher car share in Flanders (see (figure 9.11) has reached a saturation level.

The general conclusion is that many variables have significant impacts on modal choice, but only a few dominate the impacts. The most important variable is distance. Distance is strongly related to the quality of the several modes. For those travelling to primary schools, age is a

second highly influential variable. For Flemish pupils travelling to secondary schools, also gender and household income have substantial impacts. Boys are more inclined to use the bike and less inclined to use collective transport than girls, while increasing income raises car use.

9.7.5.4 Implications for our hypotheses

The conclusions are drawn for the Dutch situation. Where the Flemish analysis produced contrasting results these will be mentioned.

Distance: the longer the distance to school, the higher the usage of faster modes will be (bicycle and especially for the long distances: car and PT)

* this hypothesis is *confirmed*

Population density: the higher the density is, the better facilities for PT will be, and the worse will be the safety for slow modes, in particular the bicycle, and the less their use.

* this hypothesis was *confirmed only for Flanders* and within it only for the shorter distances

Age: the younger the pupil, the less independent he/she will be in using travel modes

* this hypothesis is *confirmed* convincingly but for *cycling only*, both in Flanders and The Netherlands.

Gender: girls will be travelling less independent than boys, because they are less prepared to confront traffic risk

* this hypothesis is *confirmed but only for Flanders*, where the girls are using the car and public transport more at the *longer distances*.

Size of the household: the larger the number of school visiting pupils, the lower the probability to be escorted by the parents. When pupils travel to the same school, the need for escorting is smaller because they travel together; when pupils travel to different schools, escorting of all pupils is more difficult to practice.

* this hypothesis has to be *rejected*. It is only a factor of importance for car use by young pupils and one with contrary results

Household income: the higher the income is, the more frequently pupils will travel with the relatively expensive motorised modes.

* This hypothesis is *confirmed for Flanders only*, mostly for the car and in primary education.

Education level of the parents. The higher the education of the parents is, the more they will they be aware of the merits of independent travelling for their children and the more the latter will use independent modes

* This hypothesis cannot be confirmed. It is a factor of some influence but with contradictory directions.

Car ownership: the higher car ownership is, the higher the probability of car use will be

* This hypothesis is *confirmed, but only for primary education and for Flanders short distance travel in secondary education*

Temperature: the lower the temperature is, the lower will be the probability of cycling and the higher that of car and PT use

* This hypothesis is *confirmed but in Flanders only for short distance bike – car exchange and in The Netherlands only for longer distance bike – bus exchange.*

9.8 Conclusion and discussion

Comparative analysis for different regions is very useful for understanding travel behaviour assuming that the general conditions are similar. In the case of Flanders and the Netherlands, population densities, school systems, school densities, and car ownership are comparable.

The more travel-directed conditions exhibit some differences though. These concern the locations of home and school and the quality of the alternative travel modes. Our analysis demonstrates that such ‘hard’ factors determine travel choices to a large extent. The lower density in the urban lay-out in Flanders is likely to be one of the explanations for the larger distances to primary schools. Dutch traditional traffic policies, including dense cycle networks and local traffic calming, are likely to have contributed to the high share of the bicycle in travel.

The influence of socio-cultural factors is modest. These factors seem to play a more pronounced role in Flanders than in the Netherlands. Flanders, unlike the Netherlands demonstrates a significant influence of gender on modal split. Bicycle use of boys and girls are similar on the short distances, but strikingly dissimilar for distances over 5 km. Girls hardly cycle longer distances, most likely because their parents don’t allow it.

The Flemish ambition to create a coherent bicycle network (Ministerie van de Vlaamse Gemeenschap, 2001) as well as the Flemish efforts to ban the car from school transport (“Duurzaam naar school”, see www.ond.vlaanderen.be) might bring bicycle and car use closer to the Dutch situation.

Chapter 10.

Concluding

10.1 Purposes of the study

This study aimed at providing both a systematic understanding of location and travel developments that took place in Dutch primary and secondary education from about 1980 and a general empirical description and explanation of these developments, especially in regions with a considerable degree of competition in supply between public education authorities and in particular, mostly religious education authorities. This competition is typical for the greater part of The Netherlands, as it is for Belgium and Great Britain.

More specifically the quantitative relationship between school authority, school institution and school location developments was to be assessed for secondary education and primary education with a focus on rural areas, because these were likely to have suffered the most from school concentration.

The development of locations and of curricula provided at these location impact heavily on travel behaviour. These decide the change in distances to the nearest education opportunities and because of this they are likely to have in impact on the use of the different transport modes

Given increasing distances the normative problem of a 'reasonable distance' rises. Of course this problem is not unrelated to travel time, travel mode and safety problems related to specific modes.

There was a distinct need to acquire basic explanatory insights into three important related elements in school travel: being school choice, school travel distance and modal choice. For these a quantitative explanation was sought.

10.2 A variety of approaches and their value

The concentration studies and the school travel studies were directed by sets of hypotheses. The concentration hypotheses were included in the theoretical chapter on school concentration (chapter 2). Detailed travel hypotheses were included in the chapter on school travel (chapter 9).

A range of different sources was used to acquire quantitative insights, including literature surveys, dedicated quantitative case studies and statistical analyses of databases. Of course the hypotheses were functional in getting answers to straightforward questions.

The *literature* on both school location concentration and related school travel developments proved to be extremely poor in an empirical sense, especially with regard to before and after studies of school concentration.

Dedicated quantitative case studies were a very useful instrument with which to acquire an insight into authority-institution-location developments. Publications with detailed information on education supply in the before situation (the early 1980's) were essential for these studies.

Databases like those of the CFI institute of the Ministry of Education provided an overview of the present state of location density. The municipal database of the Municipality of Zwijndrecht with data about both schools and neighbourhood population was essential for the school choice modelling exercise. National travel surveys could be used fruitfully for the analysis of developments in school travel and opened up the opportunity of a Flanders – Netherlands comparison.

10.3 Essential outcomes

The results of the scrutiny of our hypotheses are shown in table 10.1, including indications of the sections of chapters yielding these results.

The results were presented in some detail in the introduction (chapter 1). Therefore only general remarks are made.

The complexity of developments is impressive. There is no simple causal relationship between the development of the number of authorities and that of institutions and locations. Moreover it is fundamentally different for secondary and primary education. In secondary education we found an average of less than two school institutions per authority. In primary education there used to be authorities with large numbers of schools. They were large Municipalities acting as authorities for public education. At present the authorities in particular education may govern 30 and more schools as well, most likely in order to bear the budgetary responsibility transferred to them by the Ministry.

Table 10.1 shows the result of our discussions on the series of hypotheses in chapter 2.

It is remarkable how often contradictory conclusions are found in different case studies (hypothesis number in brackets):

- a growing concentration of control is usually inspired by its opportunity to continue the use of more locations (2.4.1 / 2.4.2),
- school locations with less advanced secondary education curricula frequently manage to survive by broadening education supply, even when this seems to be unfeasible (2.5.4)
- ongoing secularization in society should imply a gradual decline of religious education. This is not the case however, because a specific religious attitude is not required for access to the most of these schools.
- Municipalities may continue multi-locations of primary schools while creating multi institution locations in new neighbourhoods. These in particular may cause nasty traffic jams.

The complexity of (developments in) travel behaviour is similar. It is valid for school choice behaviour, where accessibility characteristics, family characteristics and school characteristics play a part. It is valid too for the weak relationship between school location density and distance behaviour. There seems to be an autonomous growth in school travel distances, caused by changes in school choice. Cultural factors do play a role as well, as shown by the relevance of gender for school travel mode choice in Flanders and the irrelevance of it in The Netherlands.

10.4 Recommendations for further research

We believe that some of the analyses as presented in this volume deserve to be applied to other regions and to other types of education.

Concentration processes in regions dominated by public education or Roman-Catholic education are not unlikely to show different location pattern developments than the ones we found. It might imply that school travel distances have increased more.

Concentration processes in primary education in larger cities, losing many school institutions, were moderated by continuing many locations as satellites, but these might be gradually left for common locations. Many Municipalities have a clustering of two or more institutions at a common location as a policy already. In large new neighbourhoods especially it creates long distances often bridged by car, at clusters with over a thousand pupils, causing dangerous traffic situations. It is important to investigate these developments. Even in the countryside locations might be vacated because of decay/neglect of buildings, in spite of the finance for such institutions being made available by the Ministry of Education. See <http://www.borger-odoorn.nl/kernenkader>

Concentration processes in secondary education were moderated by the new possibility to conserve locations as satellites.

Processes within cities were studied only incidentally (the city of Gorinchem) and the increase of travel distances in the larger cities might be explained by movements of schools or even school clusters to the urban fringe. We found indications for this in explorations of the city of Groningen (not reported).

One of our most remarkable contributions is the modelling effort for school choice. In a competitive school system as present in The Netherlands modelling should be used to support decision making on school planning and local transport planning.

Table 10.1 Results of discussing the hypotheses

Hypotheses	Sections	3.4	3.5	3.8	4.2	4.3	4.4	5.4	5.5	5.6	6.2	6.3	6.4	6.5	9
2.4.1. A higher and growing geographical concentration of control naturally leads to a higher school concentration because educational institutions then have better opportunities to create a qualitatively more attractive and affordable supply of education.								+		-					
2.4.2. A higher and growing geographical concentration of control will slow down and even reverse school concentration because educational institutions have better opportunities to maintain locations and to even de-concentrate certain curricula, making these better accessible and thereby more attractive.								+	+						
2.5.1. Technological developments in agriculture, especially mechanisation, have caused a strong decline of employment at farms. This has caused a reduction of demand for basic agricultural education and, through that, a strong school concentration, being a reduction of the number of locations for this type of education.	++														
2.5.2. The increasing participation in more advanced secondary education causes an increase of the number of locations where these are supplied (selective school de-concentration).					-	+	++								
2.5.3. The decreasing participation in less advanced secondary education causes a decrease of the number of locations where these are supplied and even a reduction of the number of school locations (selective school concentration).					+	++									
2.5.4. School locations with less advanced secondary education curricula like MAVO will survive by the addition of a more advanced curriculum like HAVO (mitigating school concentration by selective de-concentration).					+	++									
2.5.5. Secularisation causes a decrease in demand for religiously oriented education and an increase in demand for non-religious education, leading to a relative concentration of religious schools and a relative de-concentration of non-religious schools.				-	±	+	-	+	±	-					
2.5.6. Emancipation of immigrated ethnic minorities leads to the foundation of schools on a non-Christian religion base and therefore to school de-concentration.															
2.5.7. Declining birth rates lead to a decrease of the population of primary and secondary schools, increasing the education cost per pupil which is an important motive for school concentration.		++		x											
2.5.8. In new town quarters cities try to reduce the number of school institutions and of school locations to a minimum in order to reduce the impact of uncertainty and temporary demand on school locations.											-	±	±		
2.5.9. A bad state of public finance causes existing tendencies of school de-concentration and of a relative rise in cost per pupil to become acute problems and is therefore a most important factor in school (re)concentration.								+	+	+					

Legend. ++ = firmly confirmed; + = confirmed; ± = contrasting evidence; - = not confirmed; x = evidence lacking;

Table 10.1 (Continuation) Results of discussing the hypotheses

Hypotheses	Sections	3.4	3.5	3.8	4.2	4.3	4.4	5.4	5.5	5.6	6.2	6.3	6.4	6.5	9
2.5.10. The development of the road system and the parallel development of car ownership make transport to school so easy that proximity to school is hardly an argument for school choice anymore.															-
2.5.11. The increase in car traffic has made cycling to schools in secondary education more dangerous and has therefore changed the modal split radically in favour of public transport.															-
2.5.12. Policies in favour of soft traffic modes cause the change in the modal split of the journey to primary schools to be only modest (much less than in other countries) and to be hardly present in the modal split in the journey to secondary schools.															+
2.6.1. The freedom of supplying education causes a relatively low (sectoral) school density since the suppliers have to attract pupils from a large area in order to collect a sufficient number of pupils.								-	-	±					
2.6.2. In a school system with strong central government control, school concentration by reducing the number of school locations is an attractive instrument for reducing cost, but it is vulnerable to collective action causing parliamentary rejection even if access is guaranteed by school transport.								x	+						
2.6.3. In a school system with a division of competences between central government, local government and school organizations, as in the Netherlands, national government is no longer interested in school locations, since it finances only the cost of education proper. Economising on this cost is less vulnerable for public action on a national level since locations are affected only indirectly.										+					
2.6.4. In a school system with an important role for local government in providing school locations and buildings it will be likely to reduce the number of school locations for instance by developing collective locations. Relocation to these will be proposed when several school buildings require substantial structural maintenance.										-	-	-	-	+	
2.6.5. The central motive to amalgamate school authorities into units governing several schools in a region (geographical control) is the possibility to maintain individual school institutions and locations despite insufficient pupil numbers.					++	++					-				
2.6.6. Local competition is an important factor in maintaining institutions and locations with insufficient pupil numbers. Where competition is absent these are more likely to be closed.											+				
2.6.7. Closure of a school is likely to be prevented by changing the denomination of the school or by changing the denomination of remaining schools in a common denomination.					+	+		x		+					

Legend. ++ = firmly confirmed; + = confirmed; ± = contrasting evidence; - = not confirmed; x = evidence lacking;

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Appendix A. Abbreviations

AOC = Agrarisch Opleidingscentrum (Agricultural Education Centre for preparatory and secondary vocational training).

AVO = Algemeen Voortgezet Onderwijs (General Secondary Education)

BLO = Buitengewoon Lager Onderwijs (Extraordinary Lower Education) for those with physical, sensory, intellectual or behavioural deficiencies making participation in standard lower education impossible.

CBS = Centraal Bureau voor de Statistiek (Central Statistical Bureau).

CFI = Centraal FinancieringsInstituut (Central Financing Institute) of the Dutch Education Ministry

HAVO = Hoger Algemeen Vormend Onderwijs (higher general education), secondary school type created to bridge the gap between MULO and HBS, which were renamed MAVO and Atheneum.

HBO = Hoger BeroepsOnderwijs (Higher Vocational Training)

HBS = Hogere BurgerSchool (former ‘modern school’ for the 12 to 17 years old, preparing for technology studies).

HEFVO = Herstructureren en Fusie in het Voortgezet Onderwijs, operation aiming at restructuring and amalgamating in secondary education.

HIA = Hendrik Ido Ambacht Municipality

HOB = HerstructureringsOperatie Basisonderwijs (operation restructuring basis education).

LAO = Lager Agrarisch Onderwijs (Lower Agricultural Education).

LAS = Lagere Agrarische School (lower agricultural school), former secondary school type intended for youngsters from 12 to 15 years old.

LBO = Lager BeroepsOnderwijs (lower vocational training), describing the family of first phase vocational curricula (similar to VBO and VMBO).

LEAO = Lager Economisch en Administratief Onderwijs (lower economical and administrative education) former curriculum for basic vocational training.

LHNO = Lager Huishoud en Nijverheidsonderwijs (lower household and industry education) former curriculum for basic vocational training (for girls)

LTO = Lager Technisch Onderwijs (lower technical education) former secondary education type for basic vocational training in construction and mechanics.

LTS = Lagere Technische School (lower technical school) former secondary school type for basic vocational training in construction and mechanics.

LHS = Landbouw HuishoudSchool (agricultural household school), former secondary school for basic vocational training, intended for female youngsters to work in a farmer's household and profession.

LOM = (school voor) Leer- en Opvoedingsmoeilijkheden, former curriculum/school for children with learning and behavioural problems now integrated in the special primary school.

MAVO = Middelbaar Algemeen Vormend Onderwijs, former secondary general education school type).

MBO = Middelbaar BeroepsOnderwijs (secondary vocational education), type of education regulated apart from secondary education, unlike VMBO.

MDGO = Middelbaar Dienstverlenings- en Gezondheidsonderwijs (Secondary Service and Health Education) former curriculum for secondary vocational training

MEAO = Middelbaar Administratief en Economisch Onderwijs, ditto for administrative and economic vocational training.

MLK = (school voor) Moeilijk Lerende Kinderen, former school/curriculum for children with modest intelligence.

MHNO = Middelbaar Huishoud- en NijverheidsOnderwijs (Secondary Household and Industry Education), former curriculum for secondary vocational training

(M)ULO = (Meer) Uitgebreid Lager Onderwijs (more) extended lower education) former secondary school type indicated with either MULO or ULO.

MMS = Middelbare MeisjesSchool (secondary girls' school), former secondary school type for girls from 12 to 16 years old.

MTO = Middelbaar Technisch Onderwijs (Secondary Technical Education), former curriculum for secondary vocational training

NIDI = Nederlands Interuniversitair Demografisch Instituut

(Het) Nut = Maatschappij tot Nut van 't Algemeen (Society for Common Benefit).

PC = Protestant-Christian

PO = Primair Onderwijs (Primary Education)

PRO = Praktijk Onderwijs (Practical special secondary Education)

RC = Roman-Catholic

SCP = Sociaal Cultureel Planbureau (Dutch Institute for Social Research).

SG = Scholengemeenschap (School Community)

ULO see: MULO

VBO = Voorbereidend BeroepsOnderwijs (preparatory vocational education), describing the family of vocational curricula during the nineteen-eighties, recognizing the incomplete character of the training.

VGLO = Prolonged Ordinary Lower Education (Voortgezet Gewoon Lager Onderwijs), a former school type for 'repetitive' primary education.

VHMO = Preparatory Higher and Secondary Education, 19th century (Voorbereidend Hoger en Middelbaar Onderwijs), including Gymnasium, HBS and MMS.

VMBO = Voorbereidend Middelbaar Beroepsonderwijs (preparatory secondary vocational education), category of curricula for the 12 to 15 years old

VMBO-T = VMBO-Theoretisch, successor of MAVO

VO = Voortgezet Onderwijs (Secondary Education)

VSO = Voortgezet Speciaal Onderwijs (secondary special education), former curriculum for participants in special education, now integrated into VMBO

VWO = Voorbereidend Wetenschappelijk Onderwijs (Preparatory Scientific Education), including Atheneum, Gymnasium and its combination in Lyceum

WPO = Wet Primair Onderwijs, Law on Primary Education

WVO = Wet Voortgezet Onderwijs, Law on Secondary Education

ZMLK = (onderwijs voor) Zeer Moeilijk Lerende Kinderen (education for Very Difficultly Learning Children) now to be found in Expertise Centres

ZMOK = onderwijs voor Zeer Moeilijk Opvoedbare Kinderen (education for Very Difficult to Discipline Children) now to be found in Expertise Centres

Appendix B. Definition of concepts

-The term school may have different meanings:

*A **standard special method of teaching**, like Montessori or Dalton, a Montessori school etc.*

*A **curriculum**: a specific supply of education, a standard set of knowledge, insights and skills taught to the students, a Gymnasium for instance*

*A **formal institution**, a legal person, be it public or private, providing a curriculum to those in need of it. One institution may provide more than one curriculum.*

*A **facility**, an edifice or building dedicated to teaching a curriculum.*

*A **school location** is a coherent area where at least one curriculum is offered and which is uninterrupted by non-related functions*

- We define a school as a formal institution

We may characterise the **school system** as a set of institutions organising and providing one or more curricula, maybe applying different schools of teaching and doing so in one or more facilities at one or more locations.

- The concept of school concentration will be reserved for the degree of and the change in the spatial distribution of locations and of curricula about these.

Different **types of school concentration** may be distinguished. Relevant for this study are:

a. *A reduction of the number of school sites, where certain educational activities take place, by either*

- a reduction of the number of school locations, or
- a reduction of the number of locations where specific curricula are provided

b. *A relative increase of the use of locations (without a corresponding increase of their geographical size.?)*

- an increase of the number of curricula provided at specific locations
- an increase of the number of parallel curricula at certain locations

- For individual cases the concepts of school closure and school foundation will be used.

***School closure** is termination of the use of a school location for supplying one or more curricula, maybe all.*

***School foundation** is the introduction of a curriculum at new school location or of an additional curriculum at an existing school location.*

***Preservation policy (instandhoudingsbeleid)** is the policy with regard to school closures.*

*Consolidation (USA) or **amalgamation** (UK) or fusion (Dutch: fusie) are terms for an integration of two or more education organisations, either school authorities or school institutions, which does not necessary imply closure of one or more locations.*

- **The change in the geographical pattern of organisations** (institutions and authorities) **will be called geographical concentration of control**. It is defined as *the concentration of regional supply and power in the hands of fewer institutions.*

Three different organisational levels of control can be distinguished (see figure 2.2):

- the level of the *individual school institution*, public or private, controlling one or more school locations,
- the level of the *school administration or school authority*, controlling one or more school institutions,
- the level of *general government administration*, controlling the conditions for school administrations, institutions and locations.

The degree of control at each level is a matter of

- *the number of units controlled*, which is the sheer size of the organisation in numbers of locations, and pupils,
- *the distribution of competences* between the different organisational levels and actors, being their degree of independence in terms of curricula, quality of education, budget for education and for locations,
- *competition from other, similar organizations* (authorities and institutions).

- **The liberty to found and visit schools at government cost is called the freedom of supplying and enjoying education**

Education may be organized along different lines in terms of type of authority and type of ideology

Public education (*Openbaar onderwijs*): *education provided by government as both administration and authority on a non-ideological and non-religious base* At present only municipal government does play the role of administration for primary education. It may delegate its authority to a separate public body to avoid the appearance of partiality in the competition between public and particular education.

Particular education, being the translation of ‘bijzonder onderwijs’, that is *education provided by private authority (foundation or association) without a commercial purpose and fully subsidised by government.*

National government plays the role of an administrator for these schools. The overwhelming majority of these schools have a religious background, but there is a category of ‘particular neutral’ (bijzonder neutraal).

Summary

The purpose of the research as described in this Doctor's thesis is twofold. Firstly it is to define in how far Dutch facilities for primary and secondary education were subjected to spatial concentration during recent decades. Secondly it is intended to assess what this concentration implied for the development of the minimum necessary travel distances to school, with its consequences for school choice and for school travel mode use.

The phenomenon of 'school concentration' is explored and defined in its different shapes. Concentration may occur at the level of school authorities (fewer authorities), at the level of school institutions (fewer schools), at the level of school locations (fewer locations) and that of curricula (fewer locations with a certain curriculum). Only locations and curricula are relevant from the perspective of travel and transport.

Developments leading to school concentration and partly to school concentration policies are described. A gradual reduction of the scale of schools by declining birth rates and population densities are relevant factors, but these are becoming acute especially by problems in government finance, like these were occurring during the 1980's.

In the Netherlands the spatial density of education facilities is remarkably high, no doubt stimulated by the freedom of education. This principle implies that education is supplied as much as is feasible along different lines of theology and teaching systems.

Under pressure of interested parties, school concentration during the 1990's was moderated for the countryside by relatively low minimum pupil number norms. There VMBO school concentration was of a modest volume as well. Crucial for the degree of physical concentration though, was the opportunity for school institutions to continue supply at locations of institutions that were dissolved by amalgamation with a second one.

Research into regional school concentration of *secondary education* in the Provinces of Groningen and Friesland shows that the number of school authorities was reduced by about 75%, not by the desire to create larger school authorities, but because the number of school institutions was reduced to the same degree. Of the original locations, more than half are left though. Most important for the distances to be bridged by the pupils was the expansion of the supply of curricula at several rural locations. At these former VMBO-T schools, basic education on the higher HAVO and VWO levels was introduced. This serves the interests both of the pupils concerned and of the central institution, having an advanced base in the competition for pupils. The city of Sneek Bogerman College is a characteristic case.

In a more urbanised region like the Alblasserwaard/Vijfheerenlanden the longer term development is one of a remarkable increase of the density of HAVO and VWO supply.

Research into *regional school concentration in primary education* (Province of Friesland) shows that large school authorities were created, especially for the locally relatively small Liberated-Reformed and Roman-Catholic denominations, but for other denominations as well. This development was most likely incited by the budgetary responsibility of authorities that was introduced.

Historical explorations of the development of the regional set of institutions in parts of the Province led to the conclusion that public education, once explicitly 'general Christian' in character, was ousted greatly by Protestant-Christian education. In the face of the general decline in religious participation this is harrowing.

In some Municipalities this process has proceeded that much that municipal government might use the strongly reduced opportunity for the founding of new schools to the advantage of public education.

School concentration in primary education was applied mostly to middle sized cities. The city of Zwijndrecht was the subject of a case study in this *local school concentration*. There one third of the existing institutions was dissolved. The capacity of the buildings of the remaining institutions was insufficient to accommodate the pupils concerned though. The Ministry of Education did not provide the means to adapt these however. Instead, it transferred the responsibility for school accommodations and the available yearly budget for this purpose to the Municipalities.

This development led to continuation of education at many old locations in cities throughout the country, being positive for supply of the various denominations and for the distances to be travelled by the pupils.

The perspective for the continuity of these locations is not without uncertainty though, because the Municipality may use the available means for other than education purposes.

It has an obligation to keep school edifices in repair, but it may neglect this duty that much, that constructing new buildings may become financially more attractive.

This is not unlikely to incite the construction of buildings for more than one school institution, a school cluster with maybe additional child related facilities in a so-called 'broad school'. This 'postponed school concentration' does imply an increase of minimum necessary travel distances after all, since school choice is decided in considerable degree by travel distance and the desire to avoid crossing major roads.

As school authorities, Municipalities might even choose to dissolve school institutions for reasons of economising on the cost of buildings in spite of the provision of financial means for both education and school precincts.

Clustering of school locations is not a new phenomenon. A dedicated exploratory study showed that many Municipalities constructed school clusters in new neighbourhoods. In so-called major 'VINEX'-neighbourhoods, counting several thousands of dwellings, these clusters may cause concentrations of more than 1,500 pupils with a home-to-school distance inviting car use. This will cause problematic traffic conditions around the schools.

The increase of school travel distance as a consequence of school concentration policies was less spectacular than might have been expected. Locally it may be called worrying though, both in town and countryside. This concerns both a potential 'wrong' school choice and time losses as well as the potential danger of longer home-to-school journeys.

The concept of 'reasonable distance' as applied in our country and in neighbouring ones for decision making on founding of schools and/or providing school transport is subjected to a conceptual analysis. The amount of time spent on the journey to school proves to a factor in decisions on the first subject, but the safety of school routes is a factor in decisions on school

travel in fact. It is obvious though to apply both to school location founding and closure. We propose to grant the school a travel time budget for the school journeys of its pupils. This budget should be the product of minimum school size in pupil numbers and of maximum individual travel time. If an existing school would exceed this budget, for instance by the addition of a number of pupils of a closed school location, either continuation of the use of that location or faster school transport should be considered.

For one urban Municipality we tried to explain school choice from 22 available locations for primary education, knowing a number of characteristics of the pupils, locations and the travel itineraries from their homes to their schools. Of the schools, the relative quality of education was known, but not the 'school climate'. The outcome, being a micro-economic model, proves to be an interesting opportunity to objectify often misty discussions on this subject.

Home-to-school travel behaviour with regard to distance and travel mode were subjected to an analysis utilising the databases of the MON, being the Dutch national travel survey. This analysis shows that in 2006 pupils in primary education travelled a 10% longer mean distance to school than in 1995. The result for secondary education is roughly similar. These developments cannot be related unambiguously to the concentration tendencies in different types of area. It seems that part of the increase in distances is related to the choice of a more attractive school than the nearest one of the desired type.

In primary education, cycling to school is more or less constant over time with a share of about 40%. Walking to school is decreasing gradually, being less than 30% nowadays. More than 25% of the children are brought by car.

In secondary education, cycling is as dominant as it used to be, being the only independent mechanised transport available up to the age of 16. There is a certain shift to bus transport though. These developments could not be related to the different degrees of school concentration in areas with different degrees of urbanisation.

These developments in school travel behaviour were compared with those in the Belgian 'Community' of Flanders for the period of 1994 to 2000, utilising the databases of the OVG, being the Flanders national travel survey. Flanders did not develop school concentration policies during this period.

An increase in distances travelled for going to school was not found. Yet car use for this trip purpose increased to about 50%. In contrast to The Netherlands a substantial part of the pupils are brought to school by car (some 20%), in spite of better facilities for bus transport, as compared to the northern neighbours. Even more pronounced is the difference in cycling by girls in secondary education. Dutch girls are participating in cycling to primary school and secondary school in numbers similar to those of the boys. Flemish girls do so in primary education, but in secondary education they hardly do. This is a distinctly cultural feature. Evidently, over-concerned Flemish parents forbid their daughters to take the bike. Yet traffic safety and especially biking facilities are less highly developed than in The Netherlands.

Summarising one may conclude that school concentration in Dutch primary and secondary education since 1980 caused a modest increase in home-to-school distances only. The new opportunity to continue the use of school satellites was no doubt helpful in restricting increase. The continuity of many of these satellites is uncertain yet.

Decision making on founding and closing of schools and school locations and the provision of school transport should include more systematically considerations of traffic safety. Car use in school travel should be distinctly discouraged, because this type of travel constitutes the most important opportunity for children to develop the ability to participate in traffic.

Samenvatting

Het doel van het onderzoek dat in dit proefschrift is beschreven is tweeledig. In de eerste plaats vaststellen in hoeverre voorzieningen voor basis- en voortgezet onderwijs in de afgelopen decennia zijn onderworpen aan ruimtelijke concentratie en in de tweede plaats wat deze concentratie betekent in termen van minimaal noodzakelijke afstanden tot scholen met zijn mogelijke consequenties voor de schoolkeuze en de vervoerwijze naar school.

Het verschijnsel ‘schoolconcentratie’ is in zijn algemeenheid verkend en in zijn uiteenlopende verschijningsvormen gedefinieerd. Concentratie kan feitelijk voor komen op het niveau van schoolbesturen (minder besturen), op het niveau van instellingen (de school als erkend opleidingsinstituut), op het niveau van locaties (lesplaatsen) en curricula (het palet van opleidingen). Uit een oogpunt van verkeer zijn alleen locatie en curriculum van belang.

Ontwikkelingen die leiden tot schaalvergroting en die deels ook tot een beleid van schaalvergroting voeren zijn beschreven. Sluipende schaalverkleining door daling van geboortecijfers en vermindering van ruimtelijke dichtheden zijn factoren van belang, maar deze worden vooral acuut door problemen met overheidsfinanciën, zoals in de jaren tachtig.

De spreiding van onderwijsvoorzieningen in Nederland is opmerkelijk goed, ongetwijfeld mede als gevolg van de vrijheid van onderwijs, die inhoudt dat men zoveel mogelijk onderwijs naar de levensbeschouwing en zelfs onderwijsaanpak mogelijk maakt.

Onder druk van plattelandspovincies en onderwijsorganisaties heeft het Ministerie van Onderwijs bij de schaalvergrotingsoperaties in de jaren negentig op het platteland de normen voor minimumleerlingenaantallen van instellingen in het basisonderwijs laag gehouden en heeft het Ministerie ook in het VMBO een matige schaalvergroting doorgevoerd. Cruciaal voor de fysieke concentratie was echter dat het instellingen de gelegenheid bood de oorspronkelijke locaties te handhaven na gedwongen fusie met een andere instelling.

Onderzoek naar regionale schoolconcentratie in het *voortgezet onderwijs* in de Provincies Groningen en Friesland leert dat tussen 1985 en 2008 het aantal schoolbesturen met ca. 75% verminderd is, niet door een lust tot vorming van grotere besturen, maar omdat het aantal instellingen in dezelfde mate verminderd is. Van de oorspronkelijke locaties bestaat echter nog meer dan de helft. Cruciaal voor de afstanden die de leerlingen moeten afleggen is de uitbreiding van het onderwijsaanbod op verscheidene plattelandslocaties, die naast VMBO-T nadrukkelijk basisvorming op HAVO en VWO niveau zijn gaan aanbieden. Daarmee dient men de leerlingen maar ook de centrale instelling, die in de concurrentie om leerlingen een vooruitgeschoven post heeft. Het Bogerman College in Sneek is er een goed voorbeeld van.

In een meer verstedelijkt gebied als de Alblasserwaard/Vijfheerenlanden is over een wat langere termijn (vanaf 1965) het aanbod aan volledig HAVO en VWO zelfs aanmerkelijk toegenomen.

Onderzoek naar regionale schoolconcentratie in het basisonderwijs (Provincie Friesland) leert dat grote schoolbesturen zijn ontstaan, met name voor de kleinere Gereformeerd-vrijgemaakte en Rooms-katholieke denominaties, maar ook bij de andere denominaties. Dit zal in belangrijke mate zijn aanleiding hebben gevonden in de opgelegde budgettaire verantwoordelijkheid van schoolbesturen.

Historische verkenningen van de ontwikkeling van het scholenbestand in delen van de Provincie leiden tot de conclusie dat het openbaar onderwijs, ooit nadrukkelijk 'algemeen-christelijk' verregaand is verdrongen door het Protestants-Christelijk onderwijs. In het licht van de voortschrijdende ontkerkelijking is dat navrant. Het proces is in sommige gemeenten zover voortgeschreden dat gemeentebesturen de sterk ingeperkte mogelijkheden voor stichting van nieuwe scholen zouden kunnen inzetten voor het openbaar onderwijs.

De schoolconcentratie in het basisonderwijs werd vooral gericht op middelgrote steden. Voor een stad als Zwijndrecht, onderwerp van een case-study, betekende dat het verlies van een derde van de bestaande instellingen. De ingreep was echter dermate radicaal, dat men de getroffen leerlingen niet in de gebouwen van de resterende instellingen kon onderbrengen. Het Ministerie van Onderwijs verstrekke geen middelen voor herhuisvesting, maar droeg de verantwoordelijkheid voor huisvesting en de daarvoor jaarlijks beschikbare middelen over aan de gemeente. Dat bevorderde op tal van plaatsen de handhaving van bestaande locaties, die ook positief was voor het aanbod van de denominaties en de verplaatsingsafstanden van de leerlingen.

Het perspectief voor de handhaving van deze nevenvestigingen is niet zonder meer positief, omdat de gemeente niet verplicht is om de haar toegekende middelen te besteden aan schoolgebouwen. Zij heeft wel de plicht tot onderhoud van de buitenzijde van een gebouw, maar kan dat zodanig verwaarlozen, dat nieuwbouw voordeliger wordt.

Deze gang van zaken kan leiden tot nieuwbouw voor twee of meer instellingen in een gebouwencomplex, een scholencluster, eventueel samen met andere kindgerelateerde voorzieningen in een 'brede school'. Deze 'uitgestelde concentratie' leidt alsnog tot afstandsvergroting omdat de schoolkeuze in aanmerkelijke mate wordt bepaald door de afstand in relatie met de noodzaak tot oversteken van hoofdwegen. Gemeenten kunnen als openbaar schoolbestuur zelfs instellingen opheffen om op gebouwen te bezuinigen in weerwil van de beschikbaarheid van middelen voor de huisvesting en van financiering van het onderwijs door het Ministerie van Onderwijs en Wetenschappen.

De clustering van scholen is geen nieuw verschijnsel. Een afzonderlijke verkenning wees uit dat vele gemeenten in uitbreidingswijken scholenclusters hebben gerealiseerd. In VINEX-wijken leidt dat in combinatie met hoge stichtingsnormen tot concentraties van meer dan 1500 leerlingen met een woon-school-afstand die uitlokt tot autogebruik. Dit veroorzaakt ongewenste verkeerssituaties rond de scholen.

De afstandsvergroting als gevolg van schoolconcentratie was minder spectaculair dan men zou verwachten. Plaatselijk kan zij niettemin zorgelijk worden genoemd, zowel in de stad als op het platteland. Dat heeft betrekking op een mogelijke 'verkeerde' schoolkeuze alsook op het tijdverlies en het potentiële gevaar van langere woon-schoolverplaatsingen uit een oogpunt van verkeersveiligheid.

Het begrip redelijke afstand, gehanteerd in ons land en buurlanden in de argumentatie voor schoolstichting en/of toekenning van schoolvervoer is onderworpen aan een conceptuele

analyse. De tijdbesteding gemoeid met de woon-school-verplaatsing blijkt een factor voor de beoordeling van het een, maar de veiligheid van de schoolroute een factor voor het ander. Het ligt voor de hand om beide factoren te betrekken in de afweging van stichting of instandhouding van een school. Ons voorstel is een school een tijdsbudget voor de woon-school-verplaatsingen van zijn leerlingen toe te kennen. Het budget zou het product van minimale schoolgrootte en maximale reistijd van de leerlingen moeten zijn. Bij overschrijding daarvan voor een bestaande school of bij sluiting van een school voor de ontvangende school zouden de verantwoordelijke partijen (overheid en schoolbestuur) tot vervoermaatregelen of tot handhaving van een locatie moeten overgaan.

Voor één stedelijke gemeente (Zwijndrecht) is geprobeerd de schoolkeuze van de leerlingen/ouders voor een bepaalde school(locatie) uit een aantal van 22 te verklaren op basis van de kenbare kenmerken van de leerlingenpopulatie, van hun weg naar school en van de school zelf. Bij dat laatste hoort wel de objectieve kwaliteit van de school maar niet 'het klimaat'. Het resultaat, een micro-economisch keuzemodel, blijkt een interessante mogelijkheid tot objectivering van veelal schimmige discussies over deze kwesties.

Het afstandsgedrag en de vervoerwijze in de woon-school-verplaatsing zijn onderworpen aan een analyse middels de bestanden van het MON, het MobiliteitsOnderzoek Nederland. Hieruit blijkt dat de leerlingen in het basisonderwijs tussen 1995 en 2006 ruwweg 10% verder zijn gaan reizen en die in het voortgezet onderwijs niet veel meer. Een relatie met de schoolconcentratie is niet eenduidig te leggen. De indruk is dat een deel van de afstandvergroting te maken heeft met de keuze voor een meer aantrekkelijke school op grotere afstand.

In het basisonderwijs is het fietsgebruik min of meer constant met circa 40%, maar er wordt geleidelijk minder naar school gelopen (minder dan 30%) en meer met de auto gebracht (zeker 25%). In het voortgezet onderwijs is het fietsen als vanouds dominant met een aandeel van ruwweg 75%, maar is een zekere verschuiving naar busvervoer opgetreden. Een relatie met de mate van schoolconcentratie kon niet gelegd worden.

De ontwikkelingen zijn globaal vergeleken met die in Vlaanderen in de periode 1994 - 2000, gebruik makend van de bestanden van het OVG, Onderzoek VerplaatsingsGedrag. In Vlaanderen was geen sprake van een beleid gericht op schoolconcentratie, noch van een vergroting van feitelijke verplaatsingsafstanden. Toch groeide daar het autogebruik op weg naar de basisschool tot ca. 50% en werd ook zo'n 20% met van de leerlingen in het voortgezet onderwijs met de auto naar school gebracht, ondanks betere voorzieningen voor busvervoer. Zeker dit laatste is deels het gevolg van een verschil in cultuur. Vlaamse meisjes fietsen wel naar de basisschool maar nauwelijks naar het voortgezet onderwijs. Dat wordt ze kennelijk door (over)bezorgde ouders verboden.

Resumerend kan men stellen dat schaalvergroting in het basis- en voortgezet onderwijs sinds 1980 slechts tot een bescheiden afstandsvergroting heeft geleid, mede door de mogelijkheid nevenvestigingen in stand te houden. Het voortbestaan van vele daarvan is in het basisonderwijs echter niet gegarandeerd. Bij besluitvorming over stichting, sluiting en de inzet van leerlingenvervoer zou men meer systematisch overwegingen van verkeersveiligheid moeten betrekken. Het gebruik van de auto voor vervoer naar school zou net als in Vlaanderen nadrukkelijk bestreden moeten worden. Voor het kind biedt de woon-school-verplaatsing bij uitstek een leerschool voor deelname aan het verkeer.

About the author

Enne de Boer was born in 1948 at Garyp, Municipality of Tytsjerksteradiel (Friesland). He was educated at the PC HBS Gorinchem (now School Community 'De Hoven'), leaving it with a HBS-B diploma in 1965. He entered the University of Utrecht for a study in Sociology, rounded off with a Master's thesis on Government information policies.

In September 1970 he joined the staff of the Technische Hogeschool Delft (now TU Delft), Sub-Department of Philosophy and Social Sciences, to teach Planning Sociology to Engineer-Planners (Civiel-Planologen) and Transport-Planners (Verkeerskundigen) at the Faculty of Civil Engineering.

Teaching developed into Transport Sociology and via Civil Engineering and Society, Infrastructure Planning.

Research was directed at Transport Sociology, resulting in general publications in the Aula 'Applied Sociology' (Toegepaste Sociologie, two volumes, 1981) and Pergamon Regional Planning Series (nr.35, 1986). This research yielded two central research topics, being 'transport deprivation' and social impact assessment.

The first topic was introduced in a 1978 study of the KIVI 'Future of Technology Foundation' (STT), leading to studies for the Dutch SVV II Transport Plan and VINEX Physical Plan and to contributions to the Flanders Mobility Plan.

The second topic was elaborated for the Dutch Ministry of Transport for application in Environmental Impact Assessment, resulting in guidelines, a manual and numerous applications, like the A4 Midden-Delfland (1995) and the High Speed Link South (1994).

Economising operations in the field of education incited studies with features of both types of activity, being studies into school concentration and school and travel.

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