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DOI
10.1016/bs.atpp.2018.07.003

Publication date
2018

Document Version
Final published version

Published in
Preparing for the New Era of Transport Policies

Citation (APA)
Pojani, D., & Stead, D. (2018). Past, Present and Future of Transit-Oriented Development in three European Capital City-Regions. In Y. Shiftan, & M. Kamargianni (Eds.), *Preparing for the New Era of Transport Policies: Learning from Experience* (pp. 93-118). (Advances in Transport Policy and Planning; Vol. 1). Elsevier. https://doi.org/10.1016/bs.atpp.2018.07.003

CHAPTER FOUR

Past, Present and Future of Transit-Oriented Development in Three European Capital City-Regions

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Contents

Abstract

The concept of Transit-Oriented Development—development near, and/or oriented to, mass transit facilities—has generated much interest in Europe over the last decade. Coined in the United States in the 1990s, the term "TOD" is frequently assumed to be a recent American import and a reaction to the consequences of mass motorization and sprawl. However, TOD is based on much older ideas of rail-based urban development that took place in many European cities during the 19th and 20th centuries. Arguably, the modern reincarnation of TOD is more focused on urban aesthetics. Other tenets, such as accessibility, density, and mixed-use, have remained more or less unchanged.

This article examines how planning policies in three European capital city-regions—Amsterdam, Stockholm, and Vienna—have been shaped by the ideas and principles underlying TOD. The three case studies were selected because all are located in European countries with mature systems of spatial planning: the Netherlands (Western Europe), Sweden (Northern Europe), and Austria (Central Europe). The article examines the extent to which planning policies from the mid-20th century to the present have

Advances in Transport Policy and Planning, Volume 1
ISSN 2543-0009
https://doi.org/10.1016/bs.atpp.2018.07.003

reflected TOD principles. The analysis is based on secondary sources (articles, books, and planning reports), and the focus of the study is on policy rather than measurements and metrics. The last three decades are explored more in depth as material is more readily available.

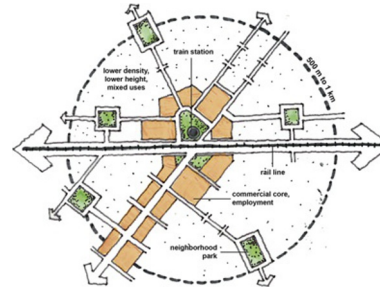
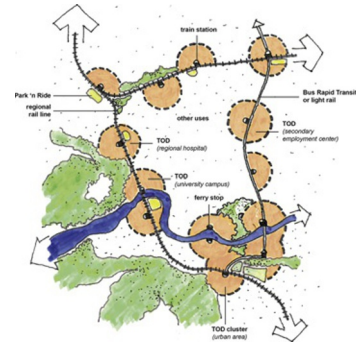
The first part of the analysis summarizes the development of spatial planning in the Netherlands, Sweden, and Austria since WWII, with an eye to highlighting policies that could be considered to be, or might affect, TOD. The second part deals with the implications of these policies in terms of past, present, and future TOD planning and practice in the respective capital city-regions: Amsterdam, Stockholm, and Vienna.

Keywords: Transit-Oriented Development, Planning, Netherlands, Sweden, Austria, City-regions

1. INTRODUCTION

The concept of Transit-Oriented Development—development near, and/or oriented to, mass transit facilities—has generated much interest in Europe over the last decade (Bertolini et al., 2012). Coined in the United States in the 1990s (Calthorpe, 1993), the term "TOD" is frequently assumed to be a recent American import and a reaction to the consequences of mass motorization and sprawl. However, TOD is based on much older ideas of rail-based urban development that took place in many European cities during the 19th and 20th centuries. Arguably, the modern reincarnation of TOD is more focused on urban aesthetics (Pojani and Stead, 2015a). Other characteristics, such as accessibility, density, and mixed-use, have remained more or less unchanged.

This chapter examines how planning policies in three European capital city-regions—Amsterdam, Stockholm, and Vienna—have been shaped by the various ideas and principles underlying TOD in its different forms (Fig. 1). The three city-regions studied are all located in European countries with mature systems of spatial planning: the Netherlands (Western Europe), Sweden (Northern Europe), and Austria (Central Europe), respectively. The chapter does not provide an analysis of direct references to TOD in planning policies in these city-regions, because the term is relatively recent and not necessarily used in local languages. Instead, it examines the extent to which planning policies from the mid-20th century to the present have reflected TOD principles. The analysis is based on secondary sources (articles, books, and planning reports), and the focus of the study is on policy rather than measurements and metrics. The last three decades are explored more in depth as material is more readily available.

Type	Key characteristics	Example of design
Single-node TOD	• Single neighborhood based around heavy rail stations • Development in circular pattern around a train station • Urban or suburban location • Optimal radius of 0.5 km (walkable distance to station)	
Multi-node TOD	• Regional network of nodes around heavy rail stations • Urban or suburban location • Circular or semi-circular nodes • Typical 'beads-in-a-string' pattern • Complementary rather than competing nodes • Work specialization at nodes (e.g., higher education node, health care node, etc.)	
Corridor TOD	• Based around Light Rail Transit or Bus Rapid Transit stops • Urban location • Linear or ribbon-like development pattern along transit line(s) • Applicable to existing urban areas or planned urban extensions (i.e., along fingers or lobes)	

Source: authors' own work.

Fig. 1 Main types, characteristics and design of TOD. *Source: Authors' own work.*

The major contribution of this chapter is in cataloging how approaches to TOD have evolved over the long term in three European cities. The chapter is divided into three main parts. The first part summarizes the development of spatial planning in the Netherlands, Sweden, and Austria since WWII, with an eye to highlighting policies that have had an influence on TOD. The second part deals with the implications of these policies in

terms of past, present, and future TOD planning and practice in the respective capital city-regions: Amsterdam, Stockholm, and Vienna. Third, the chapter identifies conclusions for the transfer of policy and practice.

2. SPATIAL PLANNING POLICY IN AUSTRIA, THE NETHERLANDS, AND SWEDEN

2.1 Austria

Austria is unique among the three countries in this study in that it has a federal system of government (comprising nine *Länder*). Austrian planning proceeds according to a top-down hierarchy, which is set out in the constitution. In terms of institutional arrangements for planning, the federal government seldom deals with physical planning (Dangschat, 2015). It is responsible for transport, infrastructure, and mobility programs of national importance.

Austria's *Länder* are responsible for preparing planning laws and state-level plans. Coordination and cooperation with the federal government and neighboring states, although voluntary, is customary. State-level plans are binding for the lower administrative levels but have no direct influence on citizens and businesses. There is a regional government as well, but historically it has been irrelevant in planning. However, with the advent of EU structural funds, which are delivered at regional level, the regions have strengthened their position. Municipalities are the key players in spatial planning issues. They are granted planning autonomy provided that they comply with the rules set by higher levels of government. As a result, mayors are seen as "local emperors" (Burtenshaw et al., 1981; Dangschat, 2015).

Since the signing of the Austrian State Treaty in 1955, a major objective underlying urban and regional planning was to equalize growth between the regions. The Netherlands and Sweden also followed a similar policy of promoting regional balance in postwar decades (see below). More recently, the dominant planning discourse concerns promoting regional "identity," rather than speaking of "regional disparity"—a term that carries negative connotations.

With the fall of the Iron Curtain, Austria's geopolitical situation changed dramatically. Proximity to Eastern Europe shifted from being a problem for regional development in the east to a major economic growth opportunity. Seeking to respond to EU enlargement, Austria was instrumental in establishing a new cross-border body (Centrope) encompassing the regions

around Vienna, Brno, Bratislava, and Győr. The 60 km corridor between the twin capitals Vienna and Bratislava gained considerable importance in terms of development potential (Schremmer, 2014).

With much of the country being mountainous, urban structure in Austria is largely dictated by topography. Urban settlements are concentrated at relatively high densities in river valleys. Recent suburbanization trends have been substantial: between 1991 and 2001, suburban areas grew by 9% on average as compared to urban areas, which grew only 3% on average. Suburbanization has led to increasing car dependence and pollution but urban environment and traffic issues have only very recently been seen as tasks for spatial planners (Rubitzki and Schrenk, 2008).

At present, both objectives of economic growth and sustainability are centerpieces of planning discourse. Sustainability is articulated in terms of active and public transport promotion, pollution reduction, and quality of life enhancement. However, planning practice still strongly relies on quantitative evidence and scientific, technical, and expert-driven approaches. Meanwhile, NIMBYism is on the increase. Economic growth has led to population pressures and segregation, especially in the attractive Vienna region, which in turn has resulted in popular dissatisfaction and resistance (Dangschat, 2015).

2.2 The Netherlands

The Dutch government structure is a three-tiered, decentralized unitary model, based on the self-government of provinces and municipalities. Cogovernment between tiers is an underlying principle. Compared to many other European countries, the subnational levels of government have considerable responsibility and independence. Cooperation between Dutch municipalities is very common. Planning is a key institution in Dutch society and culture (Shetter, 1988). Unlike the Austrian technical approach, planning in the Netherlands has traditionally been based on doctrines or norms to guide politicians and practitioners (Roodbol-Mekkes et al., 2012).

The underlying philosophy of the Dutch planning doctrine has been "rule and order." This is the product of environmental conditions (e.g., flood risk due to low elevation and land reclamation from the sea), past economic hardships (i.e., famines during and after WWII), land scarcity, the Calvinist tradition of community orientation and cultural submission to governing authorities, and, in the postwar period, the presence of a strong and prosperous welfare state, somewhat similar to Sweden's. A selected

number of interest groups are incorporated into the state system and are consulted at an early stage of planning procedures. In this system, planners are shielded from direct political interference. The "rule and order" doctrine primarily concerns urban growth control (and thus TOD) through policies that affect the location, intensity, and timing of development (Alexander, 2002; Faludi and van der Valk, 1994). Decision-making follows the so-called "polder model," a collaborative but time-consuming process aimed at reaching nearly universal consensus on any issue (Alpkokin, 2012). The dominant Dutch planning doctrine has been articulated in several different ways since WWII. The main stages, all of which are very relevant to TOD, are summarized below.

In the immediate postwar period, a "concentric growth" policy was in place, which aimed at preserving open spaces and minimizing the costs of servicing land. The First (postwar) Planning Memorandum was produced in 1960. The concept of the Randstad (a ring of cities including Amsterdam, Rotterdam, The Hague, and Utrecht, with a "green heart" in the middle) complemented the concentric growth policy (Burtenshaw et al., 1981).

In the 1960s and 1970s, a policy of "concentrated deconcentration" was followed which allowed for suburban development but only in designated growth centers and new towns outside existing cities. Through the Second and Third Planning Memorandum (1966 and 1974, respectively), the national government sought to take a powerful stand against sprawl, which reflected the middle-class desire to suburbanize. While successful in terms of concentrating suburban growth in designated areas, these policies also led to declines in urban population, public services, and employment. By the 1980s, "concentrated deconcentration" was terminated (Alpkokin, 2012).

In addition to spatial concepts, extensive regulations were developed around this time, which not only provided certainties for property owners but also helped to maintain an urban–rural divide and to distribute growth equally and equitably throughout the Netherlands. The latter policy was followed in Austria and Sweden as well. In the 1970s, national legislation was enacted to prohibit the construction of out-of-town shopping malls which were seen as a threat to the vitality of city centers. However, by the 1990s, legal restrictions on the location of big-box stores began to take the blame for decreasing retail competitiveness and creating barriers to the market entry of new firms. Meanwhile, car ownership continued to grow.

The 1980s and 1990s witnessed a revival of the "compact city" policy, which aimed at reconcentrating development in major urban centers and increasing density in existing suburbs. This policy was delineated in the

Fourth Planning Memorandum (1988) and its supplement, known locally as *Vinex* (1991). In conjunction with *Vinex*, the densification of station areas, especially in key *knooppunten* ("urban nodes"), was advocated as the logical corollary of the compact city policy. The dominant rail operator, Dutch Railways (NS), was strongly in favor of this redevelopment strategy which would increase its profits (Bertolini and Spit, 1998; Cavallo, 2007). In combination, the "compact city" and the "urban nodes" policies sought to stir development toward brownfield and wasteland sites in existing cities and greenfield sites adjacent to built-up areas (so-called *Vinex* locations). However, *Vinex* locations often comprised homogeneous housing. Public transport provision lagged behind; therefore, residents were dependent on private automobiles to reach necessary destinations. In parallel with *Vinex*, substantial urban renewal funds were made available to upgrade the quality of the housing stock in the urban cores of larger cities. Infill growth reduced open space and rising real estate prices in the central areas of expanding cities led to social segregation. Meanwhile, rural communities and small towns were left in limbo. These multiple shortcomings produced mounting criticism (Schwanen et al., 2004).

In addition to residential location policies, the Fourth Planning Memorandum produced a well-known business location policy called "ABC." Locations were labeled A, B, and C, according to the level of accessibility by public transport and automobile (i.e., city centers were A locations, first-ring suburbs were B locations, and exurban sites were C locations). Lack of parking and limited car access at premier A and B locations led businesses to relocate to toward cheaper, car-oriented C locations in the urban outskirts. Due to reasons of impracticality, the ABC policy was quietly shelved at the end of the 1990s (Gerrits et al., 2012; Spaans, 2006). Sweden also adopted an ABC policy but of a different form (see below).

In the new millennium, a decentralization and deregulation agenda strongly influenced planning in the Netherlands. The interventionist role of Dutch planners transitioned toward a facilitating and supporting role. The concepts of horizontal cooperation, "communicative planning," and "governance" (as opposed to "government") were introduced and became widespread.

The Fifth Planning Memorandum (2001) sought to introduce urban growth boundaries and no-growth zones whereas its successor, the National Planning Strategy (2006), marked a departure from earlier restrictive planning discourses. It also made a radical break with the centralist tradition in which the national government determined what would get built and

where. This document also signaled a shift in emphasis from comprehensive planning to piecemeal development. The Strategy sought to fall in line with social trends rather than combat them. Unlike earlier policies that had striven for balanced growth throughout the country, now the focus was on the "mainports" of Amsterdam and Rotterdam (Van Duinen, 2013).

In terms of physical planning, the Strategy proposed that urban growth be accommodated along major transport corridors in order to reduce congestion and thus enhance economic performance. The Strategy also introduced the concept of "urban networks" and the Delta Metropolis (*Deltametropool*). *Deltametropool* was meant to conceptually replace the Randstad, the "green heart" of which had gradually filled with development. In the housing arena, large-scale residential projects were abandoned in favor of small-scale housing developments led by local and regional authorities. In conjunction with the National Planning Strategy, a new Spatial Planning Act was adopted in 2008, paving the way for a more decentralized and flexible planning milieu but also creating scope for competition and tension among cities. While developers still had to submit to stringent procedures, more freedom was allowed to the market and private initiatives than ever before (Anderton and Goedman, 2008; Waterhout et al., 2012).

The 2012 National Structural Vision took a more laissez-faire approach to development and renounced some physical planning duties at the national level. A key priority was to strengthen the country's economic growth poles (i.e., larger cities), by allocating priority funding, based on the "trickle-down theory." Concerns have been raised by environmental and poverty advocacy groups that this policy orientation will exacerbate spatial and economic inequalities in the country: the Randstad will absorb a disproportionate amount of people and jobs, peripheral regions will shrink and their resources would deplete, and most new urbanites will choose to live in ever-expanding suburban areas thus consuming green spaces and contributing to traffic congestion (Gerrits et al., 2012). Overall, this reorientation has somewhat eroded the Dutch planning tradition and quality (Ache, 2015).

2.3 Sweden

Local self-government and a communitarian spirit are central foundations of Swedish society. These notions are underpinned by the traditional right ("all men's right") of the public to enter and enjoy private property as long as no direct harm results. Compared to the Netherlands and Austria, Swedish municipalities are even stronger and more independent. In planning, a basic

notion is the "local planning monopoly." For several decades (since 1987), municipalities have been in charge of comprehensive physical planning—which is seen as the heart of the profession, although efforts have been made to integrate other aspects (Khakee, 1996; Persson, 2013; Rydén et al., 2008; Strong, 1971). The solid municipal position is supported by a system of direct income tax, which constitutes more than 60% of the local budget.

In terms of the institutional structure of planning, two other levels of government (the county and state levels) are involved planning as well, but their policy instruments are only adopted on a voluntary basis. Proper "regional plans" are only prepared if municipalities agree to it, and at any rate, they are not binding. So far, Stockholm is the only county with a clear and sustained regional vision (see below). On planning matters, the national government is comparatively weak too. In relation to planning, its guidelines are advisory—not mandatory. Overall, the links between different levels of the planning system are either loose or entirely absent (Newman and Thornley, 1996; Schmitt, 2015).

Less emphasis on plan hierarchy makes Swedish planning very different from planning in Austria and the Netherlands. It creates controversy at the regional level in cases when sectorial interests must be balanced or when the impacts of large projects (such as shopping centers or transport infrastructure) must be assessed. This was particularly problematic in the 1990s, an era when large investments in roads and rail dominated the scene (Schulman and Böhme, 2000). Another difference with the Netherlands is the Swedish hands-on planning approach. Unlike the Dutch focus on planning doctrines and guiding principles, Swedish planning often has a more problem-based approach and a technical and pragmatic bias in which policies to address specific societal challenges are developed. This is also reflected in academic planning research, most of which focuses on physical rather than governance issues. However, the Dutch and Swedish planning systems are similar in other respects. As in the Netherlands, a tenet of Swedish society is consensus building, sometimes termed "corporate pluralism." The Swedish consensus orientation is closely linked to the concept of welfare society, which has been widely accepted in the postwar period and integrated into planning processes. Sweden's development of a welfare state has been guided by a so-called pragmatic "middle way" (Bourne, 1975; Khakee, 1996).

One similarity between Sweden, the Netherlands, and Austria is the tradition of public land ownership. In Sweden, a national land purchase grant was only introduced in 1968, which allowed municipalities to purchase land

for future expansion decades in advance of need. However, the City of Stockholm (like Amsterdam and Vienna) has a much longer history of land purchase, dating from 1904. In 1980, the city owned 70% of land within its boundaries and nearly 600 km^2 outside the city limits. In some cases, Stockholm's aggressiveness in land purchase was seen as an encroachment on the rights of surrounding municipalities and created scope for conflict (Gullberg and Kaijser, 2004). However, other Swedish municipalities followed a similar practice of land consolidation, until the land purchase grant was abolished in 1981 (Khakee, 1996).

The Netherlands, Sweden, and Austria are also similar in their historical policy objective to maintain a regional balance in terms of resource and service distribution (Bourne, 1975). However, in the last few decades, all three countries have moved away from this approach toward a neoliberal one favoring larger urban agglomerations (Khakee, 1996). In Sweden, the parity principle has been particularly difficult to implement in practice because the country's urban network is largely dictated by climate. While its land area is large by European standards (450,000 km^2), most of the population is concentrated in the south where winter temperatures are more temperate.

Three main periods are discernable in postwar planning in Sweden. In the first period, starting with the enactment of the 1947 Building Act, planning was geared toward the production of mass housing and various forms of physical and social infrastructure. The public sector expanded considerably during this period but this expansion took place mostly at the local level. Municipalities were allocated legal and economic powers to prepare comprehensive plans. However, the most ambitious planning program of the 1960s—the construction of 1 million housing units to shelter new urbanites—was launched and managed by the Social Democratic national government. It aimed to overcome the general housing shortage while at the same time preventing speculators from making excessive profits (Burtenshaw et al., 1981; Rydén et al., 2008). The program resulted in high-rise, high-density new suburban towns, which followed TOD principles in the sense that they were served by transit. In terms of aesthetics, however, they were sterile and monotonous (Cervero, 1995; Khakee, 1996). The construction of new towns was complemented by informal controls on the siting and expansion of specific uses, relying primarily on negotiation and persuasion (Bourne, 1975).

The second period in postwar Swedish planning followed the economic downturn of the mid-1970s. This was primarily a time of crisis management. Large-scale housing construction came to a halt (Höjer et al., 2007).

However, national planning guidelines were introduced in this period. Environmental protection became a serious planning issue in response to a dramatic increase in car ownership. The economic recession, the energy crisis, as well as an influx of non-European migrants forced planners to move away from the assumption of a unitary public interest and introduce more flexibility into formerly rigid comprehensive plans. From the 1980s onward, Swedish planning switched focus from grand plans to individual projects. This turn was justified by a growing economic and political uncertainty and an intensified competition among municipalities for increasingly scarce resources (Khakee, 1996; Rydén et al., 2008).

In the contemporary era, starting around the departure of the Social Democratic Party in 1991, Swedish planning is primary concerned with environmental protection and economic development. As such, it has become more piecemeal, incremental, and reactive rather than proactive. Parts of the welfare state are being dismantled, competition among municipalities is growing, land in public ownership is being privatized, and many services, including public transport, are being contracted out. The national railway company (SJ) was privatized in 1988, ahead of most others in Europe. However, despite the growing market orientation of the public sector, sustainability is a dominant theme in urban development. While acknowledging a longing for cultural heritage and local character, local planners also view Sweden as a pioneer of new urban models including "eco-friendly planning," "carbon neutral cities," and "green urbanism," which are sometimes (but not always) coupled with TOD. As in Austria and the Netherlands, Swedish planning is increasingly driven by process than outcome (Cervero and Sullivan, 2011; Persson, 2013; Qviström and Bengtsson, 2015; Schmitt, 2015).

3. TOD POLICY AND PRACTICE IN VIENNA, AMSTERDAM, AND STOCKHOLM

3.1 Vienna

Vienna is a primate city whose region encompasses more than one-fourth of Austria's population of 8 million, while Graz, the second largest city, has only 300,000 inhabitants (Schremmer, 2014). As well as being a municipality, Vienna is one of Austria's nine *Länder*. This special independent status enables the capital to be in control of many spatial and economic development matters (Lichtenberger, 1993) and is an important dimension of the institutional structure of planning. From the end of WWI until the

1930s, providing affordable social housing and strictly controlling rents were cornerstones of urban policy in Vienna. Its municipal socialism ethos continued for decades afterward and influenced the general types of planning policy measures that were pursued in the city (Novy et al., 2001).

Vienna suffered greatly during WWII when a substantial proportion of the housing stock was destroyed. From 1945 and through the 1960s, urban planning was heavily preoccupied with reconstruction. At the time, Vienna was an exemplar of a top-down, corporatist form of social democratic urban governance. State and corporatist clientelism, based on party membership, played an important role in providing housing. Given that rent controls applied, urban location was of little monetary consequence. Planning was mainly seen as a technical exercise to be carried out by experts. The main instrument was the masterplan, which did not provide any procedural mechanism for public participation or conflict resolution. As a consequence, conflict avoidance became the leitmotif of social partnership at the top echelons of society, while antagonism persisted at the bottom (Novy et al., 2001). Dutch and Swedish planning processes were also historically guided by similar cultural preferences for consensus but unaccompanied by clientelism.

Due in part to the aid received through the Marshall Plan, Vienna embarked on an economic recovery process soon after the war. New housing projects were built throughout the 1950s and 1960s. Large housing estates were developed on vacant land south and east of the city, the dimensions of which were reminiscent of Eastern European socialist estates. During this time the capital no longer used its own funding for housing provision as it had done during the interwar years: the main source of funding was from the national government (Novy et al., 2001). Housing projects did not overwhelm the city, and a large amount of parkland was retained: more than half of Vienna's surface area is still green. The inner city was reluctant to adapt to the car: most streets remained narrow, the main exception being the monumental *Ringstrasse*, a 19th century boulevard, which replaced the historic city walls (Buehler et al., 2017).

In the 1960s, planning activities concentrated largely on the extension of the public transport network, in particular the underground railway (*U-Bahn*) under the leadership of Mayor Bruno Marek, although car ownership grew too in this period. These interventions were relatively easy to perform as a large portion of the city's area was in public ownership through the 1990s (Lichtenberger, 1993). By the 1970s, new construction in the inner city declined sharply in favor or urban expansion areas. Unlike Amsterdam and Stockholm, which opted for urban expansion patterns in

fingers or lobes (see below), Vienna expanded in a circular fashion along the historical radial structure of the city. A crescent-shaped outer city formed beyond the *Ringstrasse*. This expansion pushed out into the agricultural zone immediately adjacent to the city border. The expansion area was not only designated to accommodate housing but also employment centers with good access to both railway stations and highway exits (e.g., north of the Danube Canal and along the southern tangential motorway). Large exurban, car-oriented, shopping centers were built in this period (e.g., Shopping City Süd, which opened in 1976), leading to retail blight in the inner city (Lichtenberger, 1993). The result was worsening roadway congestion, parking problems, air pollution, noise, and traffic injuries and fatalities.

In terms of housing, architect Harry Glück's social housing projects (so-called "fully adequate housing") with ample green roofs and sports facilities, located along public transport lines, were a trademark of the era. Affordable for a majority, they were also well-liked by developers due to their low resident turnover and low maintenance costs. However, Glück's *Wohnpark Alt-Erlaa* project was less popular. Modeled after Le Corbusier's *Ville Radieuse*, it was one of the largest residential complexes in Austria, packing 9000 people in three blocks of skyscrapers. Located to the south east of the city center, it was considered a flagship self-sufficient satellite town, compete with public transport and social infrastructure (Lichtenberger, 1993). Detractors criticized its high-rise and standardized architecture. Amsterdam and Stockholm also embarked on similar modernistic experiments (see below).

In the 1970s and 1980s, Vienna experienced a wave of urban renewal to counter urban deterioration, which was becoming visible in the cityscape of the center. Here urban renewal took a gentler form than the demolition and rebuilding works occurring elsewhere. The hallmark of this era was a planning tool called "area care center." Dense, industrial neighborhoods in need of housing upgrades were targeted for intervention. Renovations were sensitive to the local social and physical structures. Generally, planning sought to provide an integrated package of mass transit, shopping centers, pedestrian zones, parks, social service facilities and attractive layouts for the apartment buildings and their immediate surroundings. Hundertwasser's expressionist architecture is also associated with this stage of urban renewal. The extension of public transport lines in Vienna was slower than in Amsterdam and Stockholm—partly due to a lack of cooperation between the City of Vienna and Austrian Railways. On the other hand, the development of a new road network was slow too, but this had the beneficial side effect of containing car traffic (Lichtenberger, 1993). Transport plans envisioned the construction of

urban highways (*autobahns*) but widespread public opposition—including demonstrations—blocked nearly all these proposals. The main exception was the 18 km *Südosttangente*, a cross-town motorway (A23) in the south-eastern part of the city, which at its closest passes 5 km from the historic city center (Buehler et al., 2017).

One major TOD project was built during the period: UNO City. Located on the left bank of the Danube River along the U1 underground line, UNO City consisted of three large office buildings visually aligned with St. Stephen's Cathedral. It was built with the intention of creating a symbolic architectonic showpiece to reinforce Vienna's status as a world city. Completed in 1979, it was the last project built almost entirely by the state and implemented through a top-down, rational approach (Novy et al., 2001). This type of planning was encouraged by the fact that all mayors of Vienna have been Social Democrats since 1945, and all transport ministers were Social Democrats until 2010, when a Green became transport minister and vice-mayor (Buehler et al., 2017).

During the 1980s, social-democracy began to establish new forms of urban governance in line with the neo-liberal political restructuring of other European countries. Municipal socialism began to transform into municipal capitalism. Within the context of an increasingly internationalized and deregulated economy, political affiliations and corporatist and clientelist networks became less relevant. Rents were deregulated and, as a result, urban land values became more sensitive to location and accessibility. Forms of old and new urban governance were articulated into a hybrid ensemble, which was physically expressed through large urban development projects. In contrast with the publicly-funded TODs of the past, new urban development projects were planned as public–private partnerships. In 2000, the national government allowed Vienna to divert housing funds to infrastructure projects, which signaled a defeat of the corporatist model (Novy et al., 2001).

Similar to Amsterdam and Stockholm, Vienna's TOD focus shifted to inner city areas from the 1980s onward. Part of the shift was driven by the desire of city leaders to promote Vienna's image as an internationally competitive city and a gateway to Eastern Europe, and motivate the private sector to implement this vision. Architectural competitions and international workshops began to take place in order to create a public sphere for business. After the Cold War, many firms operating in post-communist countries chose Vienna as a convenient location for their headquarters. Easily accessible and visible locations along the U-Bahn were particularly popular choices. Meanwhile, three sites near underground stations, U3

Ottakring, U3 *Simmering*, and U6 *Siebenhirten*, experienced densification and diversification. High-rise towers became increasingly important elements of the Viennese skyline, which until then had been defined by church roofs and six-story apartment buildings (Novy et al., 2001).

More recently, two sites in the urban periphery—*Liesing* and *Aspern Seestadt*—are undergoing transformation according to TOD principles. *Liesing* is currently dominated by highways, large shopping centers, unattractive apartment blocks, and low-density development. Renewal plans for the area include housing for 20,000 additional residents and office space to accommodate 10,000 new jobs. *Aspern Seestadt* (under development) is embedded within the existing urban structure of Vienna's *Donaustadt* district, in close proximity to a national park and a lake. Plans for *Aspern Seestadt* seek to accommodate 24,000 new residents and 20,000 new jobs in greenfield development in order to create a multifunctional city of the future and the high-tech center of the Centrope region. The proposed new amenities combine green urbanism and TOD elements: half of the total available area is reserved for public open spaces, with streets, squares, gardens, and cycle lanes. The lake with its landscaped shoreline, promenade, and surrounding park is the centerpiece of the development. An efficient, high-capacity public transport link (an extension of the U2 line) has been put in place prior to the overall development. In the future the station will become a multimodal node, with long-distance trains also stopping there (Schremmer, 2014). The 60 km corridor between Vienna and Bratislava presents further opportunities for TOD creation. The twin capitals are combining efforts to improve infrastructure at the same time as retaining green space along the corridor.

Administratively, these contemporary TODs are an expression of a new forms of entrepreneurial governance. While marking a break with traditional corporatism, they represent an elitist approach with coopted public participation. The approach is also in line with the deeply entrenched hierarchical structure of Vienna. The key actors involved include real estate businesses, international investors, and public opinion leaders (Novy et al., 2001).

3.2 Amsterdam

Amsterdam has a dense multimodal public transport system based on metro, tram, bus, and bicycle. Its metropolitan region is an exemplar of relatively successful, albeit complex, development control which has attracted interest from planners around the world (Pojani and Stead, 2015b). However, the

regional spatial structure has not been achieved without tensions between Amsterdam and the neighboring municipalities, where perceptions of Amsterdam as an arrogant domineering player striving to annex surrounding territories have been felt (Alexander, 2002). This can be seen as a consequence of specific decision-making approaches.

In the postwar period, the city expanded out from its historic fan-shape. The expansion was based on the spatial concept of "lobe city": a series of built-up urban extensions along public transport corridors, alternating with wedges of open space at walking and cycling distance (Bertolini, 2005). During the 1970s, the inner city remained the epicenter of development while the overspill housing was accommodated in regional growth centers in the lobes (Alexander, 2002). Many new housing projects built in the 1950s, 1960s and 1970s took the form of multi-story apartment blocks. While their scale grew over time, they remained smaller than in Vienna and Stockholm. A substantial number of townhouses were built as well during this period. Housing construction and transportation planning were strongly connected.

In the early 1980s, the underlying doctrine of planning in Amsterdam began to move away from lobed urban development to interconnected metropolitan centers, reflecting the growing importance of new, peripherally-located TOD nodes which concentrated population and social and economic activity and were not unilaterally reliant on the central city. The largest of these nodes was Almere, a new town of about 200,000 people, located north-east of Amsterdam, which became a municipality in 1984 (following the national "concentrated deconcentration" and *Vinex* policies, mentioned earlier). Many middle-class residents relocated to Almere and other suburban satellites in search of larger owner-occupied housing, while an influx of non-European immigrants boosted the city's population (Salet, 2005).

Another important node which originates from this era is IJburg, a housing expansion site for 18,000 dwelling units, built on six artificial islands raised from the IJ Lake. Amsterdam had sought to develop it since 1978, but construction only started 20 years later after much discussion and deliberation. Construction is ongoing at the time of writing. The area is connected to Amsterdam via tram but the line did not reach IJburg until 2000, after the first bridge was put in place. With the arrival of the tram, IJburg can also be considered as a TOD location. However, its "island" location with limited connections to the city is the root of transport bottlenecks (Alexander, 2002).

In the 1990s and 2000s, interest in urban living revived, and the traditional inside-out expansion policy was exchanged for an outside-in approach. The City of Amsterdam regained population to reach about 800,000. The compact city approach made a comeback. At the same time, the concept of "urbanity" came to the fore, which was to be achieved through better urban design (Bertolini and Salet, 2003). However, with decentralization of planning powers, conflicting views and tensions between the City of Amsterdam and the province (*Provincie Noord-Holland*) surfaced. The City believed that it deserved a majority of transportation and housing funding, while the province adopted a view that development should be spread around the regional transit network, not just in the city (Salet, 2005).

Within Amsterdam, an attempt to establish a central business district in the city along the shores of the IJ River did not materialize (Salet, 2005). Several secondary nodes emerged. *Zuidas*, an interchange station located in the south of the city, became a major redevelopment node. The success of the area has been ascribed to the availability of large amounts of office space, a concentration of prestigious law firms, the proximity to the Schiphol airport, an international allure, and excellent accessibility by car (including the necessary parking facilities). These traits are absent from the central city, which is highly accessible by train only. However, the general quality of the *Zuidas* urban environment, especially its public spaces, is mediocre. The area remains largely mono-functional and dominated by high-rise office buildings—similar to *La Défense* in Paris or *Docklands* in London. A railway ring and a highway sever the area functionally and visually from the rest of Amsterdam. Generous public investments to upgrade *Zuidas*' urban design have not been forthcoming because they would demand a hard political choice in favor of one location in one city which would signify a break with the Dutch tradition of distributing investments and benefits (Bertolini and Salet, 2003; Bertolini and Spit, 1998).

Schiphol Airport, one of the busiest airports in Europe, became another extremely important node. Located about 9 km southwest of Amsterdam, the airport area has attracted a range of activities including offices, conference centers, hotels, warehouses, and retail outlets which employ 50,000 people (Alexander, 2002).

An attempt was made to develop other urban TOD nodes which would be specialized in terms of land-use, including *Amstel*, *Sloterdijk*, and *Bijlmer*. Initially, the businesses that located in these nodes, which are also accessible via road, benefited from proximity to the regional labor markets (Bertolini, 2005). However, these mono-functional places are currently considered less

attractive to businesses, as witnessed by high office vacancy rates. Their aesthetic quality, with modernist buildings, lacks variety. While relatively convenient for office workers in terms of access, these spaces are empty after working hours. Their look is perhaps "too American" for the taste of the Dutch public, accustomed to historic buildings, tree-lined canals, and intimate squares with cozy cafés (Pojani and Stead, 2014b). Small-scale professional services, retail shops, and entertainment and cultural venues remain attached to Amsterdam's convivial and nearly car-free historic city (Bertolini, 2005), while the attempts to promote TOD in *Amstel*, *Sloterdijk*, and *Bijlmer* resulted in less attractive urban environments in the eyes of the public.

The current situation does not bode well for the implementation of contemporary TOD in the Amsterdam region. Although a highly knowledgeable "TOD lobby" has formed, it has failed to reach a wider audience and frame the TOD concept for the planning community. Local planners are searching for (a) ideas related to the urban design of areas in the immediate proximity of train stations, and (b) financial tools that would make TOD viable without substantial investment from the public sector (Pojani and Stead, 2014a).

The economic crisis in the first decade of the 21st century has been particularly problematic for the City of Amsterdam which found itself owning a large amount of land away from TOD zones. Before being able to develop TOD sites, the city needed to find a way of disposing of its current stock of land. While train station areas were seen as convenient work places, families and individuals did not perceive them as high-status living environments. Because bicycle use is widespread, the standard distance for non-motorized travel to train stations is much higher than in TODs in other countries (Pojani and Stead, 2015a). Despite these difficulties, many Dutch planners are still positive about the future of TOD in the Amsterdam region and view it as one of the most efficient urban and regional development policies (Pojani and Stead, 2014b).

3.3 Stockholm

While planning at the regional scale is generally weak in Sweden, Stockholm is arguably a leading example of coordinated rail transit and urban development. In the postwar period, the city was transformed from monocentric to a polycentric transit-dependent metropolis. Although the term TOD has not been used, TOD has been a guiding concept of Stockholm's (and other

Swedish regions') regional development for many decades (Qviström and Bengtsson, 2015). While no longer a cornerstone of planning, TOD is still present in planning visions for the future (Höjer et al., 2007, 2011; Qviström, 2015).

The Stockholm metropolis has a star-shaped form. About half of its 800,000 inhabitants live in central neighborhoods, while the rest is spread among several master-planned satellite communities. Built after WWII, these satellites were radially linked to the core by a regional rail system (*Tunnelbana*), currently 106 km long. The historic island city (*Gamla Stan*) has been preserved as a tourist center (Strong, 1971). The satellites are not necessarily self-contained, nor balanced in terms of jobs and housing. Despite the fact that car ownership rates are high in the Stockholm region, and car use has steadily grown over the years, car commuting is relatively low and rail use is high compared to many other European cities (Höjer et al., 2007). Many of the new towns' residents and workers commute by train because of the well-developed rail network and pedestrian-friendly designs in the proximity of stations (Cervero, 1995; Gullberg and Kaijser, 2004; Höjer et al., 2007).

Industrialization, economic growth, and urbanization following WWII did not result in very high levels of sprawl, car dependence, and highway-oriented development in Stockholm. Rather, the settlement pattern and the rail network became more strongly connected. The first plan that laid the ground for urban development in Stockholm after WWII was Sven Markelius' General Plan of 1945–52, which envisioned a series of dense satellite centers where most residents would be within walking distance of a train station. These satellites would be placed "like pearls on a necklace" along the rail lines. This deconcentrated structure was continued in a political decision of 1969 to control Stockholm's growth and "overpopulation." In addition to the planners' efforts in orchestrating and coordinating land-use and transportation, postwar TOD was made possible because of the Swedish tradition of public land ownership and the commitment of the Swedish government to improving urban housing. As in Vienna and Amsterdam, land consolidation was in favor of TOD in the sense that, much postwar public housing could be accommodated around train stations (Bourne, 1975; Cervero, 1995; Höjer et al., 2007; Strong, 1971).

The first generation of new satellite towns, including Vällingby, Farsta, Skärholmen, Jârva, and Täby, was designed and built between 1950 and 1970 based on a policy called ABC. It should be noted that the Swedish ABC policy was very different from the Dutch one (see above) in that it

provided guidance on the local land-use mix rather than on regional location. The formula was: A = *Arbete* (jobs), B = *Bostad* (housing), C = *Centrum* (services). Each new town contained 80,000–100,000 residents with 10,000–15,000 housed within 1 km of each subway station. This density was estimated to be large enough for the station to be profitable (Strong, 1971). Between 75% and 90% of new suburban housing was multi-family, in the form of large modernist blocks, initially much praised but later vilified. Such a large share of multi-family housing construction in Stockholm was unique among European capitals at the time. While aesthetically dull by contemporary standards, Vällingby became the prototype of the application of the ABC policy within Sweden and gained an international reputation (Gullberg and Kaijser, 2004; Höjer et al., 2007). Between the satellite cities were farms, canals, or forest land (Strong, 1971).

Planners sought to avoid dormitory environments by distributing jobs (industry and offices) and services (shops and civic buildings) to the satellites in proportion to the residential population. Public ownership of land allowed this to occur. Tax incentives were also used to attract non-residential uses to new towns. The resulting towns were only "half-contained": half of the working inhabitants would commute out of town and half of the workforce would be drawn in from elsewhere. This was seen as positive because it allowed for a bi-directional flow of passengers rather than overloading the transit system in one direction only (Cervero, 1995; Gullberg and Kaijser, 2004).

The rail system was developed in parallel with the suburbs. Its construction was crucial for regional development as the center of Stockholm was largely located on islands, which were poorly connected to the suburbs by roads. The existing tramways were discontinued in 1967 (when driving on the right side of the street was introduced in Sweden). At the outset—before the new settlement pattern had taken form—the rail system incurred huge operational deficits. To help counter deficits and supply passengers for the new system, higher densities were planned in suburban TOD areas and neighborhood centers. In addition, the main commercial and civic centers were placed in station areas. Pedestrian and bicycle paths were separated from automobile traffic throughout the towns. In addition to the regional railway, new motorways were built in order to connect the suburbs to the inner city (Cervero, 1995).

The second generation of new satellite towns, including Spånga, Kista, and Skärpnack, was designed and built between 1970 and the late 1980s. These new towns broke with the ABC tradition as the monumentality

and dreariness of housing in the earlier suburbs came under sharp criticism. Each town was planned or evolved as a more specialized community. A mostly residential community, Spånga, attracted a large number of low-income industrial workers often of non-European origin; it is now an ethnically mixed town. Kista emerged as a technopolis (i.e., Sweden's Silicon Valley), whereas Skärpnack's design followed New Urbanist principles of human scale, including mid-rise apartments, narrow streets, sidewalk cafés, and other neotraditional elements. While multi-family housing construction continued, the rhythms were much slower and nearly matched single-family housing construction rates. In the second generation of new towns, very small shares of workers live and work in the same community. Many residents commute to inner city neighborhoods. Conversely, a large portion of the suburban workforce lives in central urban areas and commutes outward. Overall, the new satellites are heavily dependent on the rest of the region. Rail serves a large share of work commuting but car use is higher than in the first generation suburbs. In addition to master-planned satellites, this period also witnessed some scattered, low-density development but to a much lesser degree than North America (Cervero, 1995).

Starting in the late 1980s, the planning focus (an aspect of the *planning environment*) in Stockholm shifted from greenfield new town construction to brownfield redevelopment in existing urban areas. Infill development became an explicit policy in Stockholm's 1999 City Plan. This strategy was a response to a population decline in the inner city, which had been driven by the suburbanization of upper-income households that desired spacious housing. Two infill TOD projects stand out from this period: Ericsson Globe and the Southern Station project. Ericsson Globe (originally known as Stockholm Globe Arena) is a spectacular indoor sports arena built near a *T-Bana* station just outside the city. The arena is combined with commercial and office space. The Southern Station project has a housing focus. A large apartment complex was built on the site of the old station while the station itself was modernized. The project, designed in a post-modern style by Spanish architect Ricardo Bofill, comprises a large semicircular building enclosing a neighborhood park. Both projects attracted worldwide attention and helped spark Stockholm's urban renaissance (Gullberg and Kaijser, 2004; Höjer et al., 2007).

Notwithstanding these efforts, deteriorating transport infrastructure and traffic congestion in the inner city emerged as major concerns in the 1990s. Support for roads resurrected (Newman and Thornley, 1996). With the rise of neoliberal economic policies, municipalities were placed under political

pressure to sell publicly-owned land to the highest bidder, setting aside other considerations such as land-use or social mix (Schmitt, 2015). In contrast to earlier policies to contain Stockholm's physical and economic growth, a sentiment emerged that "the Stockholm region is the country's engine" and needed to be modernized and made more efficient (Newman and Thornley, 1996). In a climate of market orientation and governmental retreat (Khakee, 1996), the national government appointed a special mediator, Bengt Dennis, the governor of the Bank of Sweden, to garner stakeholder support for a package of traffic investments in the region. The "Dennis package" proposed the construction of a new ring road and a new high-speed tram line around the city and the introduction of tolls along new motorways. These proposals proved to be extremely controversial. Opponents, including the environmental lobby, argued that the package's overarching goal was economic growth, for which the improvement of car access was set as a precondition. In view of the strong opposition, as well as rising construction costs at the time, the Dennis package was shelved. A considerably abridged version was adopted later (Gullberg and Kaijser, 2004). By now, the majority of the ring road had been built. Around the same time, efforts were made to redevelop the Stockholm Central Station area by inserting new buildings and services and refurbishing public spaces (Bertolini and Spit, 1998).

The new millennium found Stockholm without a clear TOD policy despite urban sustainability having a prominent role in planning discourse and the property management division of the national railway company (SJ) lobbying for development around railway stations (Bertolini and Spit, 1998). Overall, the capital's visions for the future are uncertain and conflicting, while the automobile lobby has gained ground. Individual development projects have come to dominate the development scene. Their siting often appears to be accidental rather than based on careful planning and coordination with public transport (Gullberg and Kaijser, 2004). Various new projects have been built along regional motorways and offer ample parking. This laissez-faire approach has blurred the previously sharply defined borders of the inner city (Höjer et al., 2007). TOD is seen as one of several complementary tools which could potentially be adopted but by no means the leading one (Qviström and Bengtsson, 2015).

One flagship example of TOD-influenced brownfield redevelopment stands out—*Hammarby Sjöstad*. It covers 160 ha and houses 20,000 inhabitants. Constituting a marriage of TOD and green urbanism, *Hammarby Sjöstad* is a "new town/in town." Active transport rates are very high,

and the environmental footprint of its inhabitants is claimed to be approximately one-third lower than the footprint of residents of Stockholm's suburbs. The town is considered to be a desirable place to live relative to the inner city and the early new towns. Although this development has been criticized as a driver of gentrification, local planners are actively promoting this model abroad (Cervero and Sullivan, 2011; Höjer et al., 2007; Schmitt, 2015).

4. CONCLUSION

The chapter has demonstrated that TOD, albeit called by other names or not named at all in policy, has been an intrinsic principle of planning in Austria, the Netherlands, and Sweden and in their respective capitals since WWII. Far from being a recent North American invention, TOD has its roots in Europe and dates back many decades. Clearly, the enthusiasm with which TOD in its recent embodiment has been received in the United States and Canada has done much to highlight and promote the term in Europe.

In the early postwar period, entire new satellite towns or lobes were developed around the peripheral stations of the rail systems of Vienna, Amsterdam, and Stockholm. This period reflected the economic prosperity and the popular desire to suburbanize in that era. In later years, in parallel with the urban revival movement, TOD efforts were transposed to the inner cities, in new brownfield redevelopments. In both cases (earlier suburban and later urban TODs), the national, regional, and local governments played a major role in steering development toward public transit stations and lines—or in servicing existing housing developments with public transport.

The discourses contained in policy documents in Austria, the Netherlands, and Sweden express support for sustainable and resilient urban and regional development, and include reference to various TOD principles (without referring explicitly to TOD). At the same time, changing political priorities and administrative reform have led to a decline of the status and role of planning, especially at the national and regional levels, which is increasingly framed as a time-consuming and cost-intensive activity. In various cases, the interests of developers are placed ahead of strategic efforts to structure cities and regions in a more environmentally sustainable manner. This situation currently limits the extent to which cities can promote TOD in practice, and may pose a key barrier for TOD in the future.

Notwithstanding the intensity of interactions and the internationalization of planning ideas, efforts to transfer policy and practice from Austria, the Netherlands and Sweden have rarely resulted in specific actions or hard outcomes (see also Pojani and Stead, 2015b). Contextual differences in culture, social setup, language, physical patterns, planning legislation, and financial resources form barriers to transfer. Where transfer has occurred, the imported policies or programs have been adopted to the local context. Adoption is of course a necessary strategy in almost all cases—replication is rarely considered to be a useful option, as the more critical literature on policy transfer and best practices is keen to emphasize (e.g., Evans, 2009a,b).

Although policy transfer and learning are relatively limited on the specific issue of TOD, studying practice elsewhere can nevertheless help practitioners, politicians and academics to understand their "home" situation better and to consider their own practices and knowledge in a different light or with a more critical eye. However, this is unlikely to result in the simple replication of physical developments seen in Vienna, Amsterdam or Stockholm.

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