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3.
Mapping and Design as Interrelated Processes

Constructing Space-Time Narratives[1]

Bieke Cattoor (Delft University of Technology)

I present a short processual account (Kitchin et al. 2013) of three re-cartographies of one and the same region, south-west Flanders, which touches upon some contemporary issues that cut across the disciplines of cartography and urbanism. The three re-cartographies re-imagine the territory of south-west Flanders in contemporary terms. Produced within the context of urbanism, they adopt a designerly approach to research by cartography, implying an orientation towards (re)shaping the environment. The re-cartographies are purposefully contextual. They aim to rediscover and reactivate the potentials inherent within the site, while at the same time attempting to formulate a (partial) response to contemporary spatial problematics. Critical re-mapping is a way to expand the spatial imagination, and in this sense augments the capacity of designers and stakeholders to engage constructively with the environment. Re-cartography is a partly accumulative and partly iterative urbanist practice, one that oscillates between re-inscribing and re-constructing, between re-imagining and engaging with the territory; simultaneously practising the territory and the map as-a-process.

The three re-cartographies (Cattoor and De Meulder 2011; Cattoor, Louwette and Thomsen 2013; Cattoor 2016) are discussed in detail in the Maps section accompanying this chapter. An introductory section sketches the current state of urbanism and links it to the renewal of interest in mapping; after that, a section on methodology examines the re-cartographies in terms of designerly mapping practices.

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1. The text part of this chapter is a partial reprint, partial adaptation of: Cattoor Bieke (2015) Designerly Mapping Practices at the Crossroads of Cartography and Urbanism: a Processual Account of Three Re-cartographies of Southwest Flanders, *Environment and Planning A*, 47(6), p. 1283–1297. Copyright © [2016] (SAGE Publications). Reprinted by permission of SAGE Publications.

The discussion demonstrates the capacities of re-cartography as an urban design tool, while highlighting its significance to cartographic theory.

Urbanism: a renewed engagement with the critical capacity of maps and mapping

Contemporary social, economic, environmental, and cultural issues all possess a significant spatial component that appeals directly to urban designers as well as to planners and landscape planners. The commitment of the spatial design sciences to such wide-ranging problematics has given rise to a number of different theoretical approaches: reformulating the contemporary spatial condition in terms of a palimpsestic territory (Corboz 1983), reconsidering the city as a relational, open intensity (Massey et al. 1999) addressing processes of urbanisation on a planetary scale (Brenner 2014), to cite but a few. The common denominator of these diverse theories is the conviction that contemporary spatial problematics cannot be adequately addressed without first challenging dominant spatial epistemologies. This crisis of the typical spatial model is a question not only of representation, but of agency as well: urban designers and planners no longer feel able to tackle the mounting spatial challenges via traditional design and planning tools.

This partial summary of the issues urban designers are facing today should not detract from the fact that the complexity and scope of what is at stake have reached a critical point, and they cut to the very heart of the discipline. This implies the need to rethink urbanism in terms of its disciplinary object, methodology, and agency. The resulting disciplinary quest is accompanied by a renewed of interest in the critical capacity of maps and mapping. Experimenting with cartographic formats not only expands the scope of our spatial imagination, but also enables us to dismantle the ways in which our visions of cities and regions are held hostage to systemised and standardised cartographic procedures that to a large extent still reflect nineteenth century and early twentieth century spatial ideologies (Brenner and Schmid 2011). Amongst other things, these standardised procedures perpetuate spatial thinking in terms of hierarchical scale and in terms of the nature-culture or city-countryside nexus. They focus on discrete objects rather than on relationships between objects and rarely question the assumption of linear time. The persistence of such cartographic models — unambiguous, neatly layered and hierarchical — compromises the spatial designer's ability to deal with the heavy, often contradictory, claims that today are being laid on space. To be able to accommodate contemporary spatial complexity in an era of scarce natural and financial resources and when space itself is at a premium implies that the territory

needs to be rethought in terms of multiplicity, heterogeneity, and hybridity as a dynamic layering of different historical moments with important regenerative qualities (Tschumi 2012).

Yet the reinvestment in cartography by urban design disciplines is not limited to a revaluation and redefinition of maps and mapping as tools of analysis and instruments for visual thinking (Söderström 1996). The groundswell of interest in mapping has caused urban designers to (finally) accord full value to mapping as an agency for the production of territory and as a maker of place (Corner 1999). Today, maps are no longer considered to be subordinate instruments to the actual design process, but rather as active urbanist practices that complement the established design categories of plan and project. Some designers have gone to great lengths to experiment with, and critically expand, the cartographic language. Cattoor and Perkins (2014) have reviewed some of the most sophisticated results of these experiments, labelling them 'architectural atlases' and highlighting their potential as a different kind of counter-mapping.

Three re-cartographies of south-west Flanders

The somewhat abstract challenges and difficulties will be rendered tangible in the Map section of this chapter, via a brief excursion into three re-cartographies of south-west Flanders. All three re-cartographies have been published as atlases: *Chronologies of a (Sub)urbanized Territory* (Cattoor 2013), *Figures Infrastructures* (Cattoor and De Meulder 2011) and *E17 Motorway Landscapes* (Cattoor 2016). The three re-cartographies were either produced in close collaboration with or commission by Leiedal, the inter-communal planning and development agency.

A designerly approach towards research by cartography

The re-cartographies perform research by cartography that significantly differs from traditional cartographic analyses, because they explicitly adopt a designerly approach. Each of the three re-cartographies is conceived, designed, and produced by urban designers. Urban design, much like architecture, is essentially 'a design-led discipline oriented towards (re)making and (re)shaping space. Geography, in contrast, is at core an analytical discipline oriented towards description and diagnosis of already-existing spatial circumstances' (Jacobs and Merriman 2011: 219). Heylighen et al. (2009: 98) have argued that a designerly approach 'seem[s] to be dominated by a world-to-mind direction of fit. [implying that] Designers are

concerned not predominantly with what is, but with what can be. Their attention is focused on possibility.' This projective attitude has profoundly influenced the development of the case studies in question and permeated all aspects of cartographic production.

The re-cartographies all share the same aspiration: to counter the on-going deterioration of the regional landscape. The 'indeterminacy' (Buchanan 1992) or 'wickedness' (Rittel and Webber 1973) of this aspiration is fundamental to design problems: they lack a definitive condition or problem statement, cannot fall back upon an exhaustive list of possible strategies, and have no stopping rules. At the same time, very few of the potential solutions to design issues can be judged in absolute true or false terms (Buchanan 1992; Rittel and Webber 1973). While the maps and atlases under consideration might, at first glance, appear to be concerned with regional history, they are all, to a greater or lesser degree, directed towards the future. They are not devised to meet scientific criteria but should be viewed as speculative attempts to construct a shared (by the stakeholders) and projective re-imagination of the territory. In this they aim to open up and demonstrate novel and more appropriate possibilities for future spatial development. To this end, each of the three re-cartographies follows a strategy of de- and reconstruction: deconstructing previously existing cartographies of the site and recomposing them into a series of alternative maps, and collating these into an atlas (or series of maps) that recasts the landscape in a set of territorial and cartographic figures. The territorial figures either reveal or provide insight into forgotten or previously overlooked spatial constellations, many of which are imbued with a landscape restructuring potential. The reformulation of the landscape in terms of cartographic figures (in the figurative sense, 'figure' as in 'figure of speech') is the methodology of the work. It represents a conscious attempt to extend cartographic language and to thereby challenge the imagination as well as to facilitate the discovery of novel territorial patterns. In addition, it aims to foster critical reflection upon more conventional maps and also the more traditional projects for the site in question (Cattoor and Perkins 2014). The crystallisation of meaning into a formal artifact, which condenses both content (territorial figures) and container (cartographic figures), is a typical act of design.

This designerly approach has significantly and overtly influenced the choices made during the mapping processes. While it can be argued that designerly decisions are essential to every mapmaking process, they are often rationalised or obscured in favour of scientific liability or in favour of the credibility of the national cartographic body (Wood 1992).

Figures Infrastructures: constructing hybrid and dynamic infrastructural figures

Figures Infrastructures (Cattoor and De Meulder 2011) focuses on the major infrastructure networks within the area [**Maps 1-4**]. A major challenge to the work was to avoid analysing these infrastructural networks in terms of how they are usually presented or in terms of how they were planned. Infrastructures is typically classified by type or category: national roads versus motorways, category-one roads versus local roads. These typologies and categories are most often managed separately, and not always to great success. *Figures Infrastructures* reimagines the infrastructure networks as hybrid and dynamic spatial figures: dynamic in the sense that the maps incorporate both the historical evolution of the infrastructural lines and the shifting interrelations between the different networks over time; hybrid because they merge many different typologies and cross different spatial categories, e.g. infrastructure and tissue, because they incorporate the planned as well as the unplanned, and operate across different scale levels.

Figures Infrastructures is a through-composed 'architectural atlas' (as elaborated by Cattoor and Perkins 2014). Developed in the context of urban design, the scope of the cartographic research was not limited to the pursuit of historical knowledge: the mappings aim to reconstruct emerging infrastructural figures that have both the power and the potential to act as frames for a more sustainable regional development. The infrastructural figures foregrounded in the atlas are, in most cases, only latently or implicitly present in typical cartographies, and therefore rarely feature within the contemporary spatial imagination. These infrastructural figures are given shape by means of a through-composed atlas structure, which fosters the accretion of various types of interactions between the maps [**Map 1**], such as: structural interactions on the level of the overall atlas set-up, figural (as in 'figure of speech') constructions on the level of the sites or chapters and inter-textual, or more precisely, inter-cartographic relationships on the level of the individual page layout. The structural, figural, and inter-textual cartographic constructions of meaning, as described in this paragraph, intermingle and accumulate as the reader works through the pages, chapters, and finally, the book as a whole.

Chronologies of a (sub)urbanized territory: reconsidering processes of (sub)urbanisation

Chronologies of a (Sub)urbanized Territory (Cattoor, Louwette and Thomsen 2013) investigates the perpetual reproduction of the heavily urbanised territory of south-west Flanders [**Maps 5-7**]. This atlas is an attempt to reconsider the question of urbanisation, which has long been centred on the city, in terms of the territory. Increasingly convinced that historical knowledge helps to make regional planning and development policies more relevant and effective, Leiedal (the inter-communal planning and development agency) commissioned a uniform cartographic chronology. The objective was to establish a common denominator for the variations in the generalisation and symbolisation schemes within successive series of national topographic maps. *Chronologies of a (Sub)urbanized Territory* is a structural, ideological, and academic elaboration of Leiedal's original request. The Dutch-language version of this cartographic research forms the backbone of a spatial biography of the region aimed at a wide audience and was published as part of the book *Metamorfosen* (De Meulder et al. 2010).

Time is a crucial variable within the composition of the atlas: three diachronic map series — *Frames*, *A Classic Chronology,* and *Interrelations* — offer an equal number of substantially different perspectives on the history of the region. The central map series answers the original design brief in a very literal sense: *A Classic Chronology* is conceived as a succession of snapshots that range in date from 1850 to 2005. A second series of maps entitled *Frames* aims to eradicate at least some of the chaos portrayed in the chronological sequence, by situating the region within a larger geographical context and thereby interpreting the area as part of, or embedded within, large-scale spatial systems. The final series of maps, *Interrelations*, brings the overly positivist attitudes displayed in the first two map series into perspective. Each of the maps is explicitly selective and deliberately interpretational, consciously reimagining the urbanisation of the area in terms of a systemic territory.

The different map series composing the atlas are tuned to one another in terms of their consistent, diverse, and complementary strategies applied to periodisation, scaling, and legend, which are furthermore explicitated in a metamap [**Map 5** top, **Map 6** top, **Map 7** top]. This far-fetched explicitation of cartographic relationships promotes a two-fold engagement: it enables the reader to construct alternative, synchronic readings of the territory [the vertical lines seen in **Maps 5, 6, 7**] and encourages the addition, especially to the third map series, of new maps treating different themes (Cattoor 2013). In this sense, the atlas can be compared to the

writerly maps that Pickles (2004) foregrounded, with the proviso that, at this point in time, broader participation is hindered by the limited accessibility and practical interactivity of the atlas. The self-imposed rigidity of the atlas' structure gave rise to formal restrictions that serve a didactic purpose: complex suburbanisation mechanisms become clear and intelligible, and thus accessible, to a broader audience. Yet, at the same time, the simplicity of the atlas set-up establishes a multiplicity of possible narrative pathways through the maps, thereby generating different views on the plural, dynamic, and diverse historical processes affecting the territory.

E17 Motorway Landscapes: revealing relational rhythms of landscape

E17 Motorway Landscapes (Cattoor 2016) is a cartographic exploration that complements a design workshop on the E17 coproduced by Leiedal and OSA/RUA. This series of maps draws greatly upon the experience and knowledge that was gathered during the designing of the two atlases previously discussed. *E17 Motorway Landscapes* pictures the E17 motorway as it crosses the heavily urbanised Leie-Scheldt interfluvium. Motorways are mostly mapped, and therefore commonly perceived, as alien elements superimposed upon the territory. By setting alternative rules to element selection, generalisation and symbolisation, this re-mapping describes the rhythmic quality of the motorway landscape. It can be seen as an assemblage, one that is characterised by the interplays between the E17 and a variety of other spatial systems, such as the topography, hydrology, local road networks, and land-use patterns in the vicinity. The cartographic assemblage of these interplays [**Map 8**] reveals a complex symphony of patterns. It highlights the plurality, dynamism, and transcalarity of the different metamorphoses that have culminated in the present-day motorway landscape. The cartographic strategy of assemblage — as collage and compositional practice (McFarlane 2011) — engenders the assemblage-capacity of the motorway landscape as a productive 'multiplicity constituted by heterogeneous terms and which establishes liaisons, relations between them' (Deleuze and Parnet 2007: 52, in McFarlane 2011). The assemblage capacity of the map has proven to be a solid point of departure for a design proposal that incorporates water retention basins, reveals a rhythmic landscape quality, multiplicates forest patches, and also provides a structural frame that begins to interweave the hard and soft, within an integrative approach towards the motorway landscape (Cattoor and De Meulder 2011).

In this sense, *E17 Motorway Landscapes* goes much further than *Figures Infrastructures* or *Chronologies of a (Sub)urbanized Territory* in its attempts to formulate a cartographic answer to specific spatial problems: a critical decline in the groundwater level, conflicting spatial claims (mostly provoked by the particular location of the E17 motorway in the midst of the river valley) and the rapidly vanishing qualities of the surrounding landscape, which is overgrown by seemingly uncontrolled sprawled development.

Discussion

The three re-cartographies of south-west Flanders operate at the crossroads of urbanism and cartography. They adopt a designerly approach towards research by cartography, which is reflected in the design capacities of their authors, the intentions of the collaborator-client, the 'wicked' nature of their aspiration, and in the directionality of the maps presented.

Each of the re-cartographies roughly re-maps the same area. Taken together, they represent a broad selection of the widely differing manifestations that designerly research by cartography can assume. They span the entire gamut of cognitive artifacts that constitute design knowledge, while at the same time blurring the boundaries between the traditional categories of tools, visions, and projects (Manzini 2009). The Dutch-language version of *Chronologies of a (Sub)urbanized Territory* is consulted as a reference document by the inter-governmental planning and development agency on a regular basis. Leiedal considers the atlas to be *a tool* that supports policy makers and designers, as well as the other actors involved in local design processes. According to Leiedal, *Chronologies* generates insight into a territorial perspective on the urbanisation of the region, and facilitates the communication of this insight to various actors involved. Yet, *Chronologies* operates beyond the instrumental: the atlas remains open to extensions and revisions, thereby stimulating a process of continuous re-inscription. In *Figures Infrastructures*, the orchestration of multiple levels of meaning culminates in a strategic vision on the potential of hybrid infrastructural figures to act as frames for greater sustainability in regional development. Just like a more traditional design vision, the atlas is deliberately selective but, at the same time, incorporates professional as well as amateur knowledge of the region, by means of intercartographic dialogues substantiating each of its single maps. While *Figures Infrastructures* has been at the basis of strategic design proposals, such as the proposal for a new tramway in Hoog Kortrijk (OSA/RUA, 2012), the atlas also operates on a methodological and conceptual level. As a codifier of analytical techniques and identifier of

meta-patterns (Scheer 2013), a through-worked architectural atlas such as *Figures Infrastructures* can help designers to identify the potential of emerging infrastructural figures on other sites, while also encouraging attention to the uniqueness of their context-specific manifestation. The map series *E17 Motorway Landscapes* selectively remaps the interactions between the motorway and a wide variety of other spatial systems in an attempt to formulate a cartographic answer to specific spatial problematics. The assemblage capacity of the map provides a solid base for an integrative design proposal while simultaneously rethinking the perception of the dual carriageway as a thick, continuously evolving, but resilient, motorway landscape.

Time is a crucial variable in all three re-cartographies: all three cases experiment with cartographic strategies that incorporate time as a dimension, thereby recasting urbanisation as an on-going *process*. *Chronologies* questions linear time by juxtaposing three map series, each of which presents a substantially different take on the history of the region. The open set-up of this atlas stimulates its extension and reinterpretation and, beyond this, presents the spatial history of the region as an evolving narrative. *Figures Infrastructures* presents emerging infrastructural figures via 'figural' cartographic constructions. These picture the dynamic interrelations between infrastructure networks in a variety of ways including, for example, through a multi-perspectival spatial chronology. *E17 Motorway Landscapes* assembles the processes of interaction between the motorway and a variety of other spatial systems. The idea of change is not only reflected in the re-cartographies' approach to the landscape; the re-cartographies themselves are envisaged as flexible and dynamic as well: in iterative confrontations with the territory (territory is broadly considered here, containing the context and condition of the terrain as well as the people involved), the re-cartographies are elaborated, extended, replaced, or even completely displaced.

The re-cartographies display a huge diversity in the way they oscillate between maintaining the illusion of systematic precision and, on the other hand, promoting the specific, explicitly forwarding a subjective reinterpretation of a site-related problematic. Contrary to many other cartographic practices, the re-cartographies openly express and exploit this tension in a careful orchestration of their atlas set-up, be they a fully-fledged architectural atlas, a more modest semi-didactic atlas, or a mere map series. *Figures Infrastructures* respects infrastructure lines as a topographical given but, at the same time, abandons the aura of comprehensiveness that emanates from a regular roadmap. Instead, it favours the construction of an interpretative, multi-layered and narrative composition. The three map series

included within *Chronologies* question each other's version of the region's spatial history, though the atlas as a whole incorporates many of the characteristics associated with a standard didactic atlas. The elements mapped as part of *E17 Motorway Landscapes* were selected on the basis of their relationship to the motorway, the objective being to address multi-sectoral and multi-scalar spatial issues via an integrative approach.

Dealing simultaneously with the systematic and the subjective, and dealing simultaneously with both the territory and the map as on-going processes, should be considered fundamental to the discipline of urban design, which incorporates both the science of the city and the practice of intervention (Pinson, 2004). The three re-cartographies jointly pursue these objectives by means of a designerly approach to research by cartography. In this sense, they reflect the almost pragmatic coexistence of two seemingly opposing cartographic paradigms at the heart of the discipline of urbanism: the consideration of the map as a (partial) workable mirror and a concomitant engagement with the post-representational quality of the map as a project (Pickles 2004; Kitchin 2010).

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Bibliography

Akerman J. (1995). From Books with Maps to Books as Maps: The Editor in the Creation of the Atlas Idea. In: Winearls J. (ed.) *Editing Early and Historical Atlases: papers given at the twenty-ninth annual Conference on Editorial Problems, 5–6 November 1993*, University of Toronto (p. 3–48). Toronto, Buffalo, London: University of Toronto Press.

Brenner N. (ed.) (2014). *Implosions/Explosions: Towards a Study of Planetary Urbanization*. Berlin: Jovis.

Brenner N. and Schmid C. (2011). Planetary Urbanization. In: Gandy M. (ed.) *Urban Constellations*. Berlin: Jovis, p. 10–13.

Buchanan R. (1992). Wicked Problems in Design Thinking. *Design Issues* 8(2), p. 5–21.

Cattoor B. (2013). Chronologies of a (Sub)urbanized Territory: Reimagining (sub)urbanization processes in southwest Flanders, Belgium. *Journal of Maps* 9(1), p. 76–83.

Cattoor B. (2015) Designerly Mapping Practices at the Crossroads of Cartography and Urbanism: A Processual Account of Three Re-cartographies of Southwest Flanders. *Environment and Planning A*, 47(6), p. 1283–1297.

Cattoor B. (2016). E17 Motorway Landscapes. Map series. In: Cattoor B. and De Meulder B. (2016) A relational and processual re-cartography of infrastructure: E17 Motorway Landscapes, *Journal of Maps* 12(4), p. 707-710. doi:10.1080/17445647.2015.1066274V.

Cattoor B. and De Meulder B. (2010). Iteration between Collaborative Urbanism and Formal Cartographies: Design experiments in southwest Flanders. In: Meijsmans N. (ed.) *Designing for a Region*. Amsterdam: SUN, p 202–213.

Cattoor B. and De Meulder B. (2011). *Figures Infrastructures: An Atlas of Roads and Railways*. Amsterdam: SUN.

Cattoor B., Louwette T. and Thomsen K. (2013). Chronologies of a (Sub)urbanized Territory: Reimagining (sub)urbanization processes in southwest Flanders, Belgium. Published Atlas in: Cattoor. Chronologies of a (Sub)urbanized Territory: Reimagining (sub)urbanization processes in southwest Flanders, Belgium. *Journal of Maps* 9(1), p. 76–83.

Cattoor B. and Perkins C. (2014). Re-cartographies of Landscape: New Narratives in Architectural Atlases. *The Cartographic Journal* 51(2), p. 166–178.

Corboz A. (1983). The Land as Palimpsest. *Diogenes* 31(121), p. 12–34.

Corner J. (1999). The Agency of Mapping: Speculation, Critique and Invention. In: Cosgrove D. (ed.) *Mappings*. London: Reaktion Books, p. 213–252.

Deleuze G. and Parnet C. (2007). *Dialogues II*. New York: Columbia University Press [1st ed. 1977].

De Meulder B. and Dehaene M. (2001). *Atlas Zuidelijk-West-Vlaanderen: Fascikel 0&1*. Kortrijk: Anno '02.

De Meulder B., Hoornaert S. and Van Herck K. (eds) (2010). *Metamorfosen. Een ruimtelijke biografie van de regio Kortrijk*, Brussels: Dexia Bank & Intercommunale Leiedal.

Heylighen A., Cavallin H., Bianchin M. (2009). Design in Mind. *Design Issues* 25(1) 94–105.

Jacobs J.M. and Merriman P. (2011). Practising Architectures. *Social & Cultural Geography* 12(3), p. 211–222.

Kitchin R. (2010). Post-Representational Cartography. *Lo Squaderno* 15, p. 7–11.

Kitchin R., Gleeson J., Dodge M. (2013). Unfolding Mapping Practices: A New Epistemology for Cartography. *Transactions of the Institute of British Geographers* 38(3), p. 480–196.

Manzini E. (2006). New Design Knowledge. *Design Studies* 30(1), p. 4–12.
Massey D., Allen J. and Pile S. (eds) (1999). *City Worlds*. London: Routledge.
McFarlane C. (2011). Assemblage and Critical Urbanism, *City* 15(2), p. 204–224.
Meeus S.J. and Gulinck H. (2008). Semi-Urban Areas in Landscape Research: A Review. *Living Reviews in Landscape Research* 2(3) [online], available from <http://www.livingreviews.org/irr-2008-3>.
Pickles J. (2004). *A History of Spaces: Cartographic Reason, Mapping and the Geo-Coded World*. London: Routledge.
Pinson D. (2004). Urban Planning: an 'Undisciplined' Discipline? *Futures* 36(4), p. 503–513.
Rittel H.W.J. and Webber M.M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences* 4, p. 155–169.
Scheer B.C. (2013). The Master Plan is Dead: Long Live Urban Morphology. *Urban Morphology* 17(1), p. 48–50.
Söderström O. (1996). Paper Cities: Visual Thinking in Urban Planning. *Cultural Geographies* 3(3), p. 249–281.
Tschumi B. (2012). 'Importing the City into Architecture' interview by Eisenschmidt A in New York, 13 July 2011. *Architectural Design* 82(5), p. 130–135.
Verhulst A. (1965). *Het landschap in Vlaanderen in historisch perspectief*. Antwerp: Nederlandsche boekhandel.
Wood D. (1992). *The Power of Maps*. New York: Guilford Press.

Maps

Three re-cartographies of south-west Flanders

Flanders, the northern part of Belgium, is one of the most densely populated regions in Europe (Meeus and Gulinck 2008). South-west Flanders, also known as the 'Texas of Flanders', can be viewed as emblematic of the dispersed urbanisation of Flanders, characterised by the simultaneous presence of multiple spatial systems that cross different scale levels, that affect large territories, and that unfold over the course of extended time periods. These systems overlap and often conflict, especially because the historical border position of south-west Flanders has further intensified and complexified claims on space. The three re-cartographies reimagine selections of these complex and dynamic spatial systems to reveal patterns that mostly remain implicit in the urbanist discourse and hidden in everyday maps.

These complex patterns and phenomena usually remain opaque to the observer; the spatial complexity of the region is far beyond the representational capacity of a single map. Atlases, by multiplying maps and relating them to each other, often present a more sophisticated representation of a territory. The deliberate editing of a set of single maps into the format of an atlas not only elucidates the meaning of the individual maps through the logic of the book (Akerman 1995: 3), but adds an extra geometric layer to the logic, or geometry, of the individual maps: '… being a book, an atlas charts out the World according to a different geometry than its constituent maps' (Akerman 1991: 2). Deliberately editing the structure of the atlas (as defined by Akerman 1991: 2) can thus add clarity, as well as complexity, to a collection of maps. In addition to clarifying their meaning, it is also possible to nuance the unidirectional image of a territory by arranging the maps in a sequence. All three re-cartographies are involved in the exploration of the territory as much as in the exploration of cartographic language. They work on unveiling and counteracting the established and seemingly self-evident cartographic conventions and procedures that were described in the introductory paragraph. For example: standardised conventions of scale and routine procedures of selection, categorisation, generalisation, and symbolisation, and the failure of traditional methods adequately to address the issue of periodisation (Cattoor and Perkins 2014).

Figures Infrastructures: constructing hybrid and dynamic infrastructural figures

Figures Infrastructures (Cattoor and De Meulder 2011) focuses on the major infrastructure networks within the area. A major challenge to the work was to avoid analysing these infrastructural networks in terms

of how they are usually presented or in terms of how they were planned, typically classified by type or category. These typologies and categories are most often managed separately, and not always to great success. *Figures Infrastructures* reimagines the infrastructure networks as hybrid and dynamic spatial figures: dynamic in the sense that the maps incorporate both the historical evolution of the infrastructural lines and the shifting interrelations between the different networks over time; hybrid because they merge many different typologies and cross different spatial categories, e.g. infrastructure and tissue, because they incorporate the planned as well as the unplanned, and operate across different scale levels.

These infrastructural figures are given shape by means of a through-composed atlas structure which fosters the accretion of various types of interactions between the maps [Map 1], such as: structural interactions on the level of the overall atlas set-up, figural (as in 'figure of speech') constructions on the level of the sites or chapters, and inter-textual or, more precisely, inter-cartographic relationships on the level of the individual page layout.

The structural, figural, and inter-textual cartographic constructions of meaning, as described in the previous paragraph, intermingle and accumulate as the reader works through the pages, chapters, and, finally, the book as a whole.

The Maps on the following pages [Map 1-4] are excerpts from: Cattoor B. and De Meulder B. (2011) *Figures Infrastructures: An Atlas of Roads and Railways*. Amsterdam: SUN.

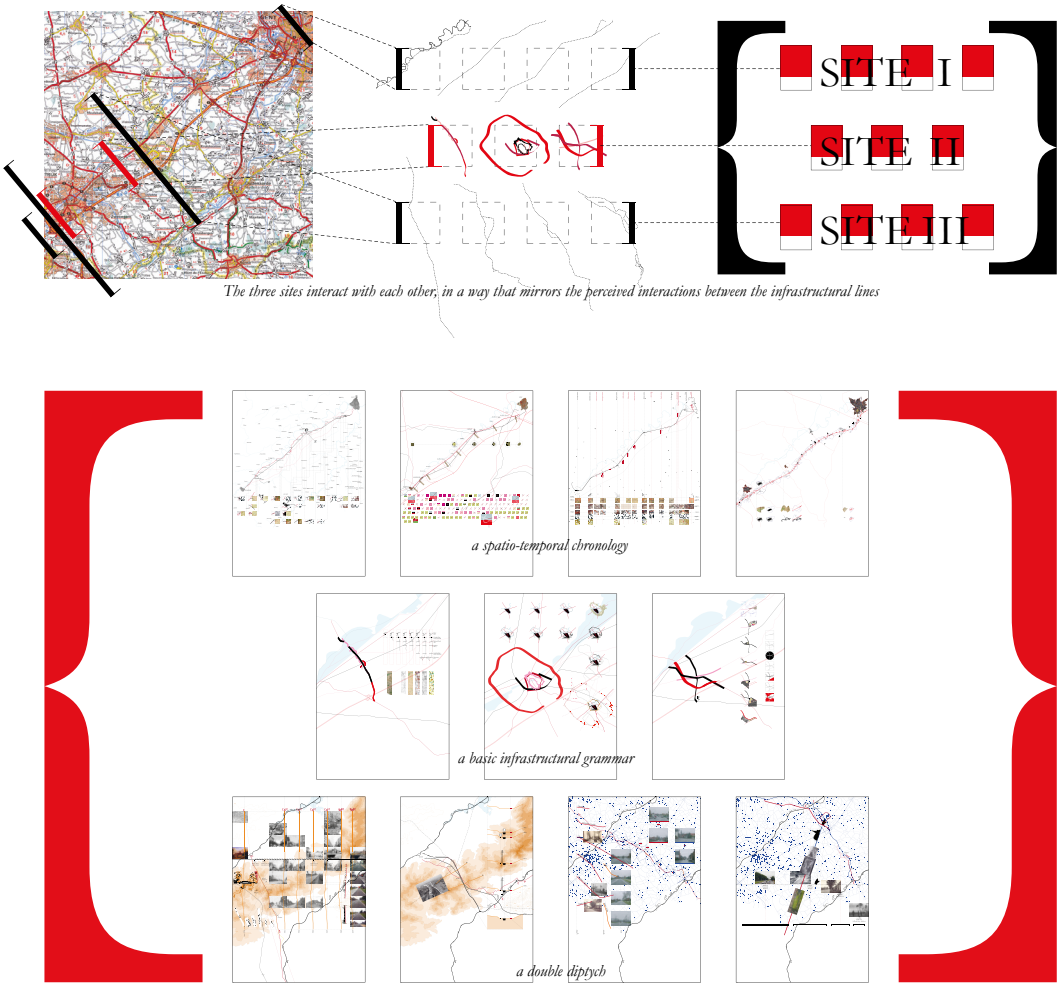
Map 1: Bieke Cattoor (2011), *Figures Infrastructures: Diagram of the Interrelations between the Different Maps Composing the Atlas*.

A diagram shows how the atlas structure fosters the accretion of various types of interactions between the maps.

On the level of the overall atlas set-up, the topological structure highlights the dynamic interdependence of the infrastructure networks as they develop historically over time into complex interrelated systems [Map 1 top a, b, c]. In general, the atlas is set up in three parts, called 'sites'. The interaction of the three sites mirrors the perceived interactions between the infrastructural lines.

On the level of the sites, each site (or chapter) constructs both a cartographic and infrastructural figure [Map 1 bottom]. Site I develops a spatio-temporal chronology [see also Map 2], Site II breaks down the infrastructures according to their compositional logic [see also Map 3], Site III focuses on one type of infrastructure and explores the diversity within its historical and present-day appearance [see also Map 4].

On the level of the page layout, the maps enter into dialogue with cartographic references [Map 1, top right]. These inter-cartographic constructions recognise, incorporate, or refute the significance of deeply ingrained cartographic principles for the visualisation, conception, and planning of infrastructure networks. The cartographic references include both historic and contemporary maps, and were created by a broad community of professional planners and cartographers, as well as by local spatial experts, such as amateur historians and regional entrepreneurs.



Map 1: Figures Infrastructures: Diagram of the Interrelations between the Different Maps Composing the Atlas.

Map 2 top: Bieke Cattoor (2011), *Figures Infrastructures, Site I*.

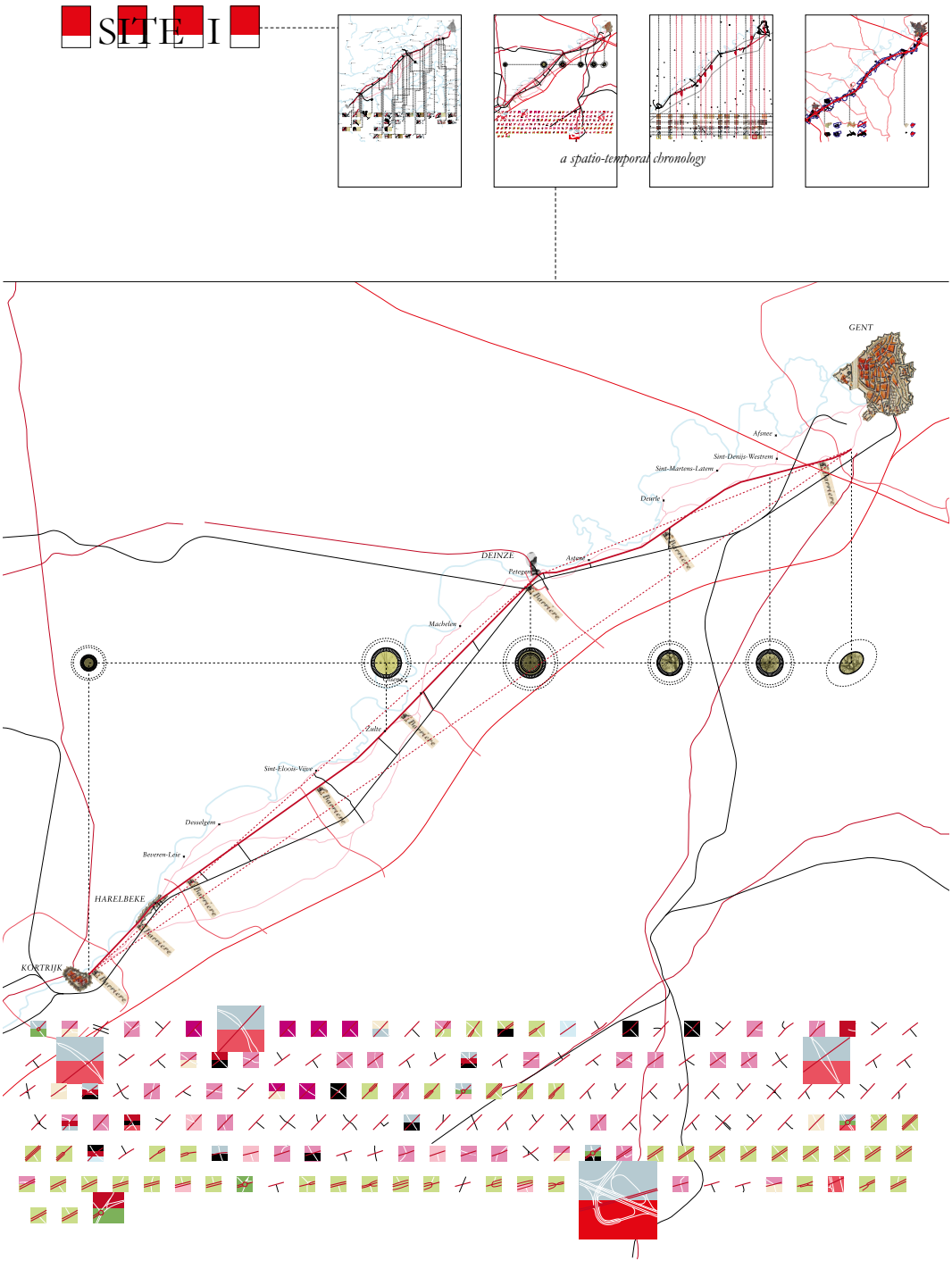
Site I develops a spatio-temporal chronology and examines the perpetually evolving bundle of parallel infrastructure lines between Kortrijk and Ghent. Two distinct strategies of temporal atlas composition determine the set-up of this Site.

The first temporal strategy is the de-construction of the bundle's history into a straightforward chronology: four successive maps follow the bundle's growth over time in four distinct historical phases: the river and adjacent ancient country lane [Map 2 a], the construction of the N43 national road in 1722 [Map 2 b], the construction of railway line 75 in 1839 [Map 2 c], and the construction of the E17 motorway in 1973 [Map 2 d].

Within this straightforward frame of the spatial chronology, each of the infrastructures is subject to on-going change. A second temporal strategy consists of making these changes tangible: each of the maps shows how the infrastructural line adapts or changes role drastically, is made redundant, or regains importance. Each of these composing maps takes on the historical perspective of its protagonist: the country lane, national road, railway, or motorway. Their transformations over time render the image of the map less permanent, the infrastructures themselves seem to offer resistance to the rigidity of the linear chronological construction.

Map 2 bottom: Bieke Cattoor (2011), *Figures Infrastructures, Site I, N43 national road breaks into segments of a line*. (Cattoor and De Meulder 2011: 49)

The second map of Site I, *N43 national road breaks into segments of a line*, illustrates the above-mentioned cartographic strategies. The map traces the history of the N43 national road, the second addition to the bundle of parallel infrastructures between Kortrijk and Ghent. Conceived as an almost independent communication route, the trajectory bisects, in a perfectly straight line, an otherwise organically formed territory. In the successive stages of its life-cycle, the N43 was demoted from its inaugural role as the prime protagonist in the handling of traffic: as new and better performing infrastructure lines were added to the bundle, the construction of supply routes saw the N43 become ancillary to these more dominant networks. These supply routes split the national road into segments, each time anew. The successive divisions are plotted in different colours on the section-boxes at the bottom of the map (e.g. the reorientation of the national road to service the railway is marked in black, to service the motorway in light red). The significance of the intersections is multiplex: some intersections define more than one segment of a line. The impact of each reorientation varies, and is reflected in the scaling and rhythm of the respective section-boxes. By illustrating how the N43 keeps breaking down into segments, at various time periods, and in different ways, the re-cartography not only refutes the presupposed status of the national road as a salient colossus, but also its existence as a solid type. The uppermost section of the map inverts the narrative of the N43's degeneration and transforms it into a tale of newly emerging, hybrid infrastructural figures. With the national road (dark red) and the railway (black) or motorway (light red) acting as stiles, and the respective supply routes acting as rungs, the map reveals two overlapping infrastructural ladders with the potential to frame the deconcentrated development in the area.



Map 2: Figures Infrastructures, Site I, N43 national road breaks into segments of a line.

Map 3 top: Bieke Cattoor (2011), *Figures Infrastructures, Site II*.

SITE II breaks down the infrastructures according to their compositional logic, thereby formulating an alternative infrastructural syntax and problematising the sequence of decomposition and recomposition that lies at the very heart of classic cartography, in other words, the act of breaking down wholes into easily categorisable parts.

Hand in hand with the growth of the large-scale infrastructural bundle depicted in Site I [Map 2], new figures arise and old ones fade. Secondary patterns emerge between the lines of the bundle, because built-up centres want to establish a link to new and faster infrastructures. SITE II deals with three such figures that are inscribed in between the parallel lines of the Kortrijk-Ghent infrastructural bundle and that bind the lines of the bundle to form a band city.

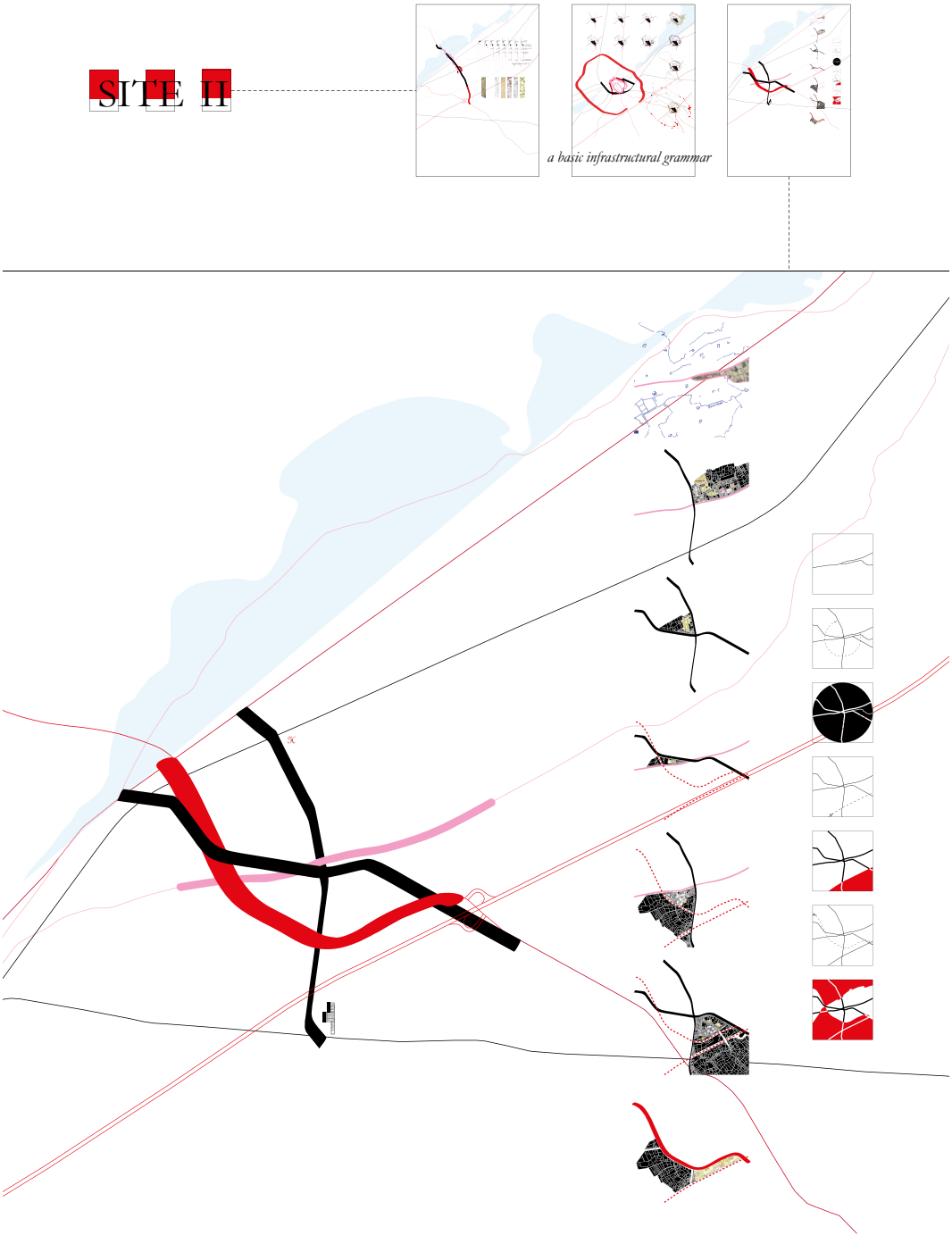
The infrastructural figures of Desselgem [Map 3 a], Kortrijk [Map 3 b], and Deerlijk [Map 3 c] can be reduced to compositions of straight and curved routes — lines and circles — laid at different periods in time. A time-related symbology is applied to each of these straight lines and curves composing the figures: pink and curved for ancient times, burgundy and straight for the era of national roads, black and smoothed for the era of railways, and red smoothed for the motorway era. By repeating this symbology in each of the three maps composing SITE II, the idea of a time-related infrastructural grammar appears.

Map 3 bottom: Bieke Cattoor (2011), *Figures Infrastructures, SITE II, Deerlijk Mixed Figures* (Cattoor and De Meulder 2011: 119).

The map excerpt illustrates the temporal strategy employed in SITE II. Deerlijk was a straightforward linear roadside hamlet until it put out four radial tentacles (in black) to grope for the newly constructed railways halfway through the nineteenth century. Near the end of the twentieth century, its attachment to the motorway exploded in a half ring figure (circle) around the village centre. These new infrastructures, the groping lines and a deviating half circle, have determined to a large extent the final configuration of the village.

The central map figure [Map 3 bottom left], outlines the principles of Deerlijk's time-based infrastructural syntax. The elementary modules within this syntax are the straight and curved routes with which an infinite variety of infrastructural figures can be composed. Straight lines extend and connect. Bends shy away, they bypass. Any figure of a town or village can in fact be reduced to a composition made of these straight lines and circles.

However, when zooming in, the straight line is not exactly straight. When zooming out, the bypass also forms a connecting link. Zooming out confronts us with the impossibility of attaching a univocal meaning to the figures. Zooming in shatters the illusion that the basic modules are pure. These modules themselves are in fact not unambiguous: dissecting them further keeps opening up new uncertainties. The border between module and composition is vague; the distinction between part and whole is never beyond doubt. These paradoxes reside in the maps. Schematic and more figurative cartographic representations [Map 3 bottom right] make apparently contradictory movements. It is the friction between the planned and the ad hoc, the abstract idea and the conditions on the ground, the resistance of the territory to planological simplification that finds its expression here.



Map 3: Figures Infrastructures, Site II, Deerlijk Mixed Figures.

Map 4 top: Bieke Cattoor (2011), *Figures Infrastructures, Site III, N50 from Archetype to Total Degradation*.

SITE III makes a start to explore the large diversity in the histories of how different national roads were formed. The distinct genesis of these national roads also has far-reaching consequences for the way in which they are approached in redevelopment projects up to the present day.

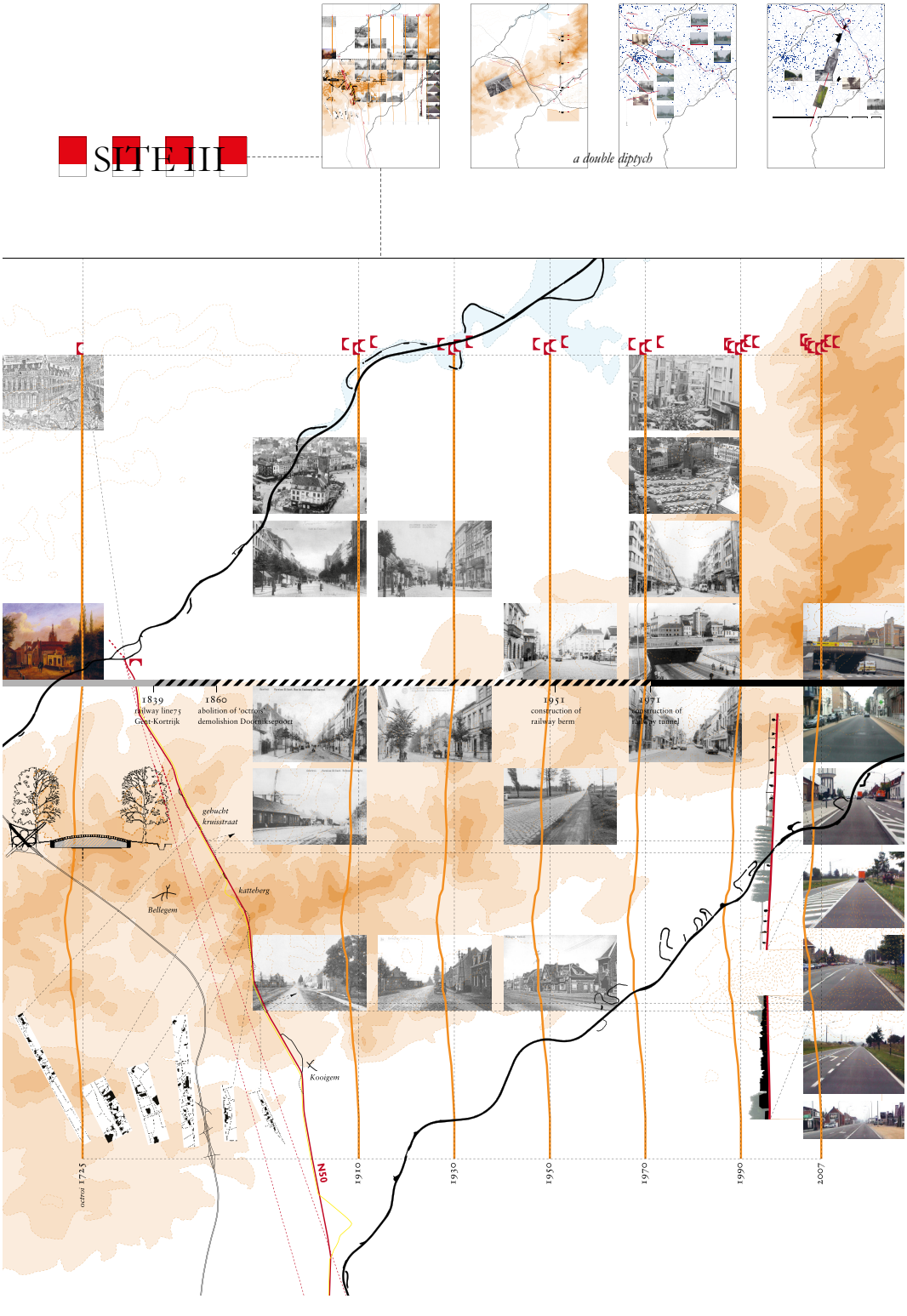
To stimulate the exploration of the wide variation in the historic appearance of national roads, SITE III was set up as a double diptych. The first two maps, in diptych, develop a contrasting story on the historic evolution of two different national roads (the N50 and the N8) in relation to topography. The second diptych explores how the N36 and the N382 engage in a very different way with the evolving local road networks. To facilitate comparison between these different road histories, each of the four maps juxtaposes a different stage in their historical development.

Map 4 bottom: Bieke Cattoor (2011), *Figures Infrastructures, SITE III, N50 from Archetype to Total Degradation* (Cattoor and De Meulder 2011: 133).

The first diptych featuring in SITE III articulates the contrast between the N50 [Map 4 bottom], situated up high, and the N8, down the valley.

The evolution of the N50's historical route and profile is reconstructed in the following periods: ca 1725, 1910, 1930, 1950, 1970, 1990 and 2007 on the basis of plans, legal documents, and photographs. Road profiles and their on-going adjustments are a significant cause and effect of the distinctive and ever morphing characteristics of the identity of the four national roads. The notion of 'profile' is tackled broadly, ranging from profiles perpendicular to the road (lanes, ribbon development) or in alignment with it (bridges, tunnels, etc.) to broader sections through the landscape (profiles of the relief and longitudinal visual axes…).

The juxtaposition of historical periods shows that, at first, the N50 'Herstrate van Cortryck nar Doornick' has a clear typology. As a bridge road between the bridge towns Kortrijk and Doornik, and probably going back to the Romans, it conforms to an archetype. Modifications to the longitudinal profile such as the construction of a town gate, the tunnel on the outskirts of the town, and a multiplication of bridges have disrupted this typological clarity. In spite of the flexibility of the transverse profile, the entire N50 has been bypassed by the E403. That is why recent structure plans do not designate the N50 even as a secondary road. Since the category of a road is strictly related to the desired flows of traffic in the road network, spatial characteristics such as typological origin are irrelevant to such considerations. The non-categorisation has eventually earned the N50 the label of a local road — ironically enough, from now on that label is the basis for planning redevelopments. All that is left of the archetype is the unintentional side-effects of its genesis: a dominant presence in the landscape because of the raised ribbon development that has grown on either side of it in the course of time.



Map 4: Figures Infrastructures, Site III, N50 from Archetype to Total Degradation.

Chronologies of a (sub)urbanized territory: reconsidering processes of (sub)urbanization[2]

Chronologies of a (Sub)urbanized Territory explores the perpetual reproduction of the heavily (sub) urbanised territory in south-west Flanders, as a consequence 'time' was a crucial variable within the composition of the atlas. With *Chronologies*, we aimed to develop a structure for an atlas that can include the plural and often very diverse historical processes affecting the territory without jeopardizing the coherence of the atlas as a whole. Special attention has been given to how the depth and scope of an atlas can furthermore be increased through a careful engineering of the interplay between its constituent maps.

Time is a crucial variable within the composition of the atlas: three diachronic map series — *I Frames* [Map 6], *II A Classic Chronology* [Map 5], and *III Interrelations* [Map 7] — offer an equal number of substantially different perspectives on the history of the region. Each series follows a different logic regarding the scale, the map's categories, and its approach to the passage of time. Taken together, they offer three diachronic variations on the processes of (sub)urbanisation in the region. Perpendicular to these diachronic readings a synchronic reading of the territory can be constructed. The maps within the different series interact with each other and form a multi-angled point of view through which to examine specific urbanisation phenomena at delimited periods of time. The lines of interaction across the pre-defined map series add a second narrative dimension, although the possible readings are less immediately obvious. A metamap or, in other words, a map of maps (Akerman 1995: 3) opens up this multi-dimensional quality of the atlas, revealing possible trajectories across its pages. The selective display of relevant parts of the metamap illuminates the different aspects of the atlas structure described in the following sections.

The maps on the following pages [Maps 5-7] are excerpts from: Cattoor B. (2013) Chronologies of a (Sub)urbanized Territory: Reimagining (sub)urbanization processes in south-west Flanders, Belgium. *Journal of Maps* 9(1): 76–83.

2. This cartographic section is a partial reprint, partial adaptation of: Bieke Cattoor (2013) Chronologies of a (sub)urbanized territory: Reimagining (sub)urbanization processes in southwest Flanders, Belgium, *Journal of Maps*, 9(1): 76-83.

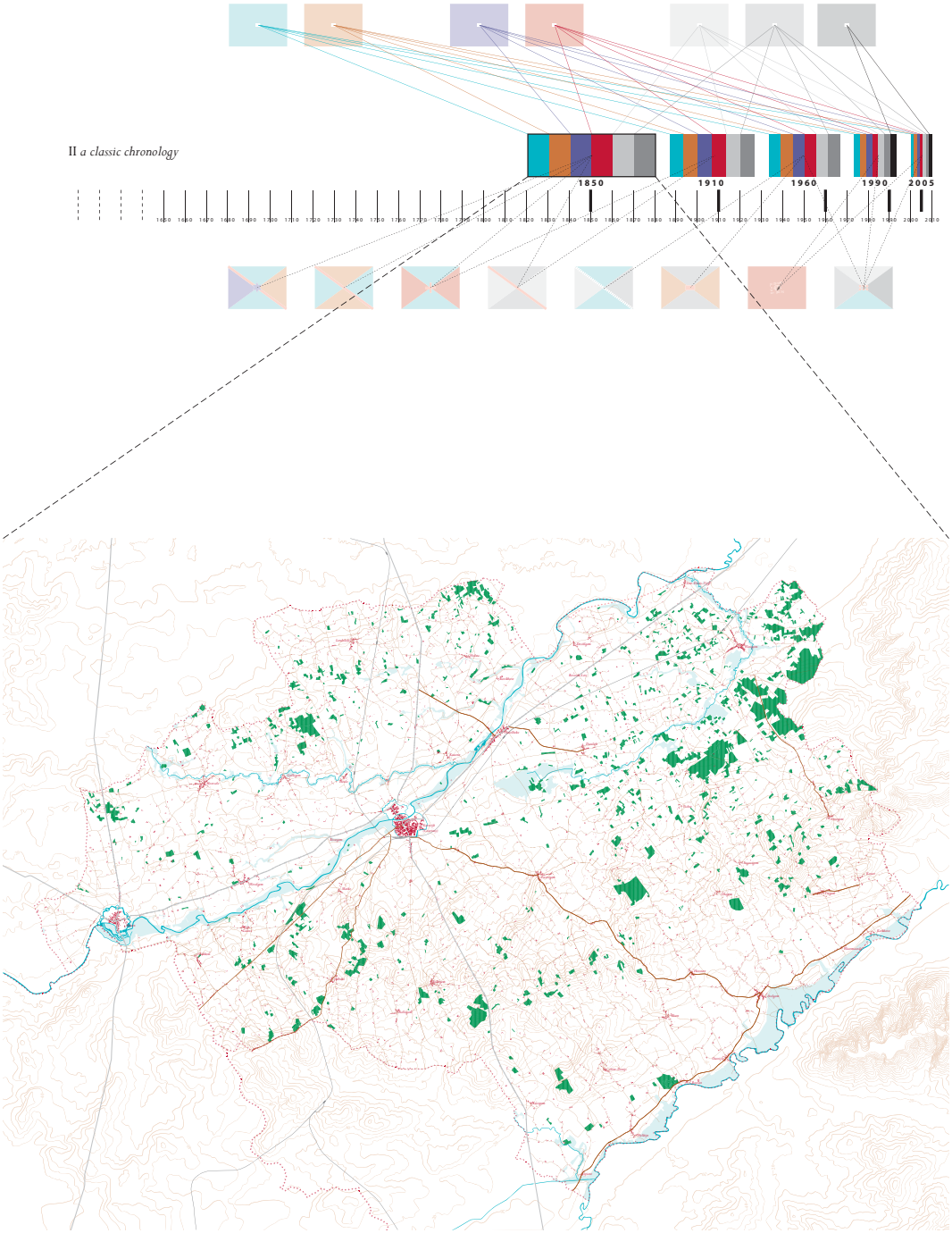
Map 5 top: Bieke Cattoor (2013) *Chronologies of a (Sub)urbanized Territory, Metamap* (Cattoor 2013, Supplementary material: 14).

The central map series, *A Classic Chronology* (map series II), is conceived as a succession of snapshots that range in date from 1850 to 2005 [see timeline]. Each map is framed according to Leiedal's administrative sphere of influence and repeats the same element categories, roughly selected on the basis of the agency's areas of competence: infrastructure, built environment, forested areas, and water. The maps depict the spatial transformation of the selected categories in great detail, underlining the often-chaotic character of on-going (sub)urbanisation, stressing entropy rather than structural quality. To complement the limitations of this classic chronology two map series were added to the atlas on the initiative of the designers [see Maps 6 and 7].

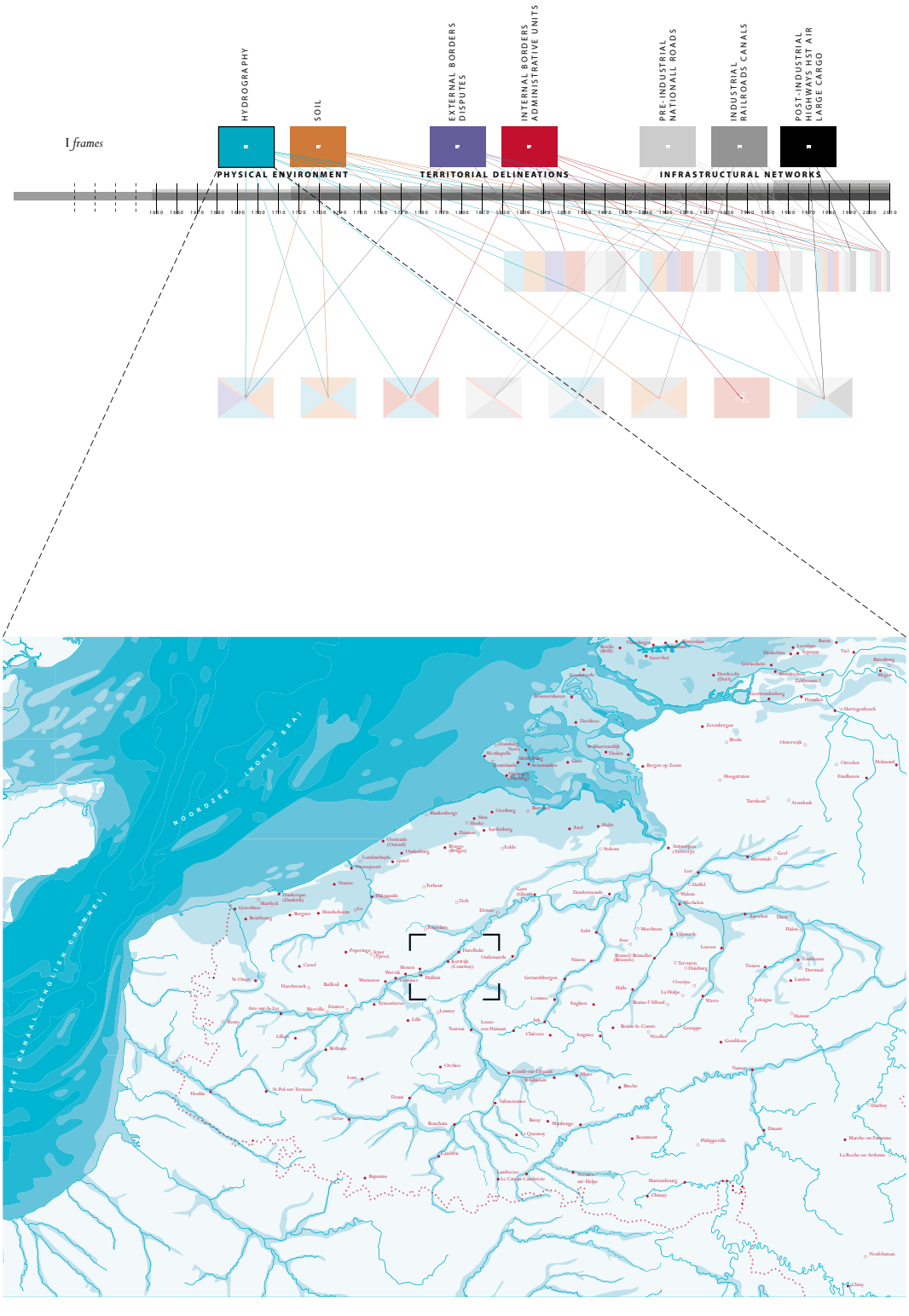
Map 5 bottom: Bieke Cattoor, Tom Louwette and Karin Thomsen (2013) *A Classic Chronology, ca 1850* (Cattoor 2013, Supplementary material: 15).

This map is the first of the map series *A Classic Chronology*, dating from 1850 to 2005. These maps, with an ever smaller time interval between them, bring the territory into focus. The maps show how, at particular moments in time, the different historical layers either link to each other, thwart, or simply reinforce each other.

Until the end of the eighteenth century, space in the Kortrijk region had mainly been organised around the duality of city and countryside. Land usage was determined to an important degree by the properties of the soil and water management. The end of the Ancien Régime (1795) marked the start of a large spatial metamorphosis that unfolded at an ever-increasing pace. The advent of modernity led to an unprecedented increase in the growth of development and the splintering of the landscape. The space is no longer organised according to the duality of city and countryside, or according to water and soil structure. New infrastructure layers slide over the traditional landscape of the Ancien Régime, reorientating the fabric and introducing new organisational principles.



Map 5: Chronologies of a (Sub)urbanized Territory, Metamap and A Classic Chronology, ca 1850.



Map 6: Chronologies of a (Sub)urbanized Territory, Metamap and Frames, Physical Development, Hydrography.

Map 6 top: Bieke Cattoor (2013), *Chronologies of a (Sub)urbanized Territory, Metamap* (Cattoor 2013, Supplementary material: 5).

Frames (map series I) was included as an introductory map series to the classic chronology, with the aim of eradicating at least some of the chaos portrayed in the chronological sequence. This series of small-scale, mono-coloured maps situates the region within a larger geographical context and interprets the area as part of, or embedded within, large-scale spatial systems. The maps have a diagrammatic quality and function along the lines of a guide, consciously simplifying the grand historical narratives and thereby making them accessible to a wider audience.

The frames are ordered in three thematic groups: physical environment (two maps), territorial delineations (two maps), and infrastructure networks (three maps). These frames are arranged, generally speaking, in chronological order according to the approximate date at which they appeared within the territory. All seven frames nevertheless have a degree of contemporary relevance. One predominant colour is chosen for each frame. The colours of the first denote the physical environment and mimic those found in nature: blue for water, brown for soil. The colours of the second set are deliberately artificial, in keeping with the fact that drawing a border is ultimately an artificial act. The grey used to indicate the infrastructure pictured in the third set of maps darkens in relation to the increases in the speed with which the infrastructure enables us to move over the territory.

Map 6 bottom: Bieke Cattoor, Tom Louwette and Karin Thomsen (2013), *Frames, Physical Development, Hydrography* (Cattoor 2013, Supplementary material: 6).

The *Frames* map series starts off with a set of two maps that show how the physical environment determined the location of human settlements. The first of these two maps elaborates on the role of the rivers Schelde and Leie in the long history of the region.

Very early settlements sprang up along the banks of the rivers and their tributaries, and these later flourished into a dense network of villages and cities. The abundant water was not only used for agriculture. For a long time, the inland waterways of the Leie and the upper Schelde belonged to the densest net of navigable waterways in the country. The connection with France via the canal network was essential for the early development of the region. A line of small cities formed, which determined part of the commercial flow between the Low Countries and Italy. From as early as the High Middle Ages, the region of Kortrijk was one of the most urbanised areas in Northern Europe. Water, and the composition of the soil, continued to define the fortunes of the region in a Post-Agrarian society. Thus the Leie represents the life-giving artery for flax, from its origins to the thriving flax industry of the nineteenth and twentieth centuries. The rich clay layers on the line of hills between the Leie and Schelde also made an important contribution to economic development.

Map 7 top: Bieke Cattoor (2013), *Chronologies of a (Sub)urbanized Territory, Metamap* (Cattoor 2013, Supplementary material: 21).

The final series of maps, *Interrelations* (map series III), brings the overly positivist attitudes displayed in the first two map series into perspective. *Interrelations* aims to counteract the oversimplification generated by the clear periodisation put forward in *Frames* and, at the same time, attempts to offer a designerly alternative to the entropy portrayed in *A Classic Chronology*.

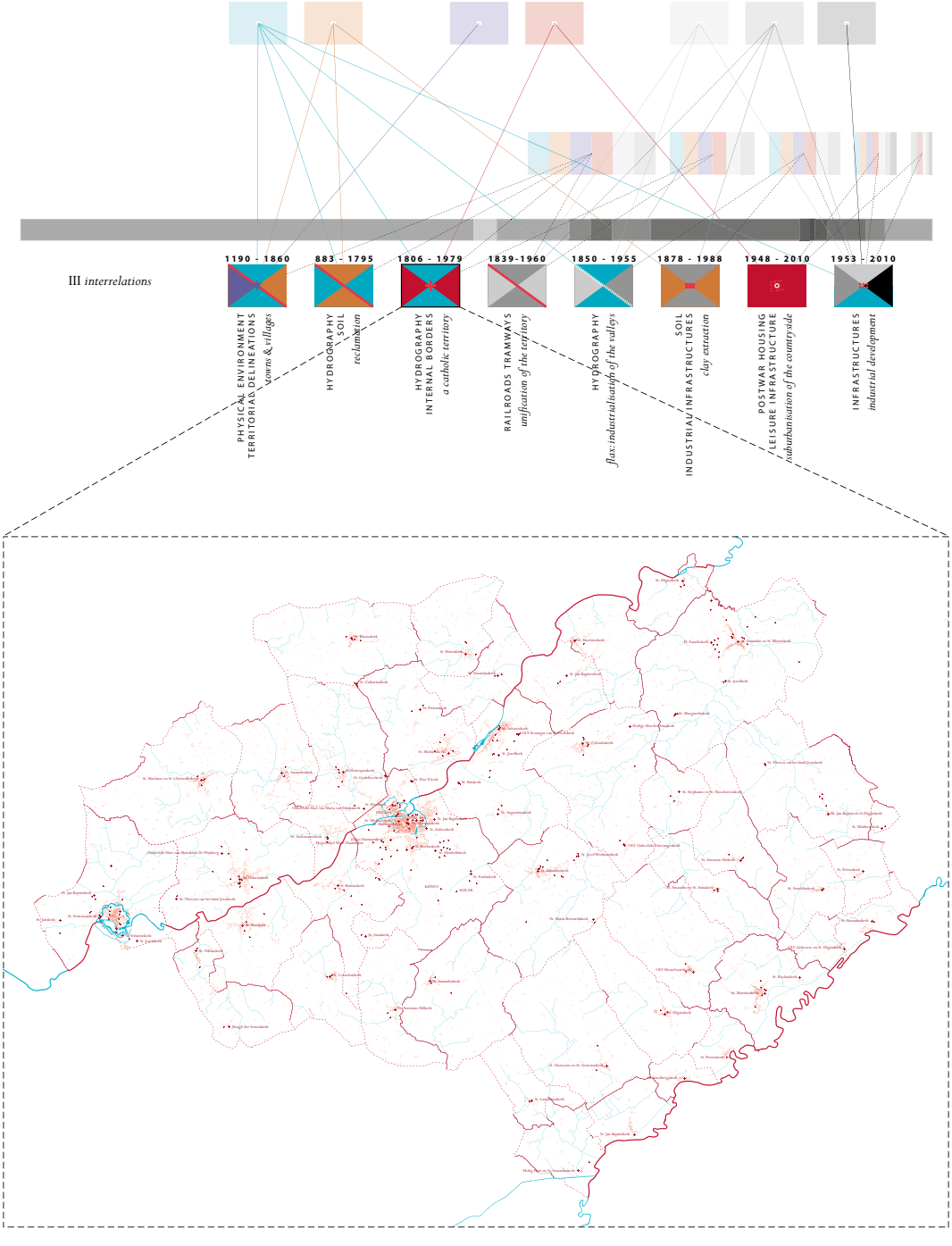
The eight maps in *Interrelations* offer systemic readings of the territory: each gives visual form to a historical theme, mechanism, or development that had a fundamental and enduring impact upon the suburbanisation of the region over a well-defined time-span. They are not snapshots, but more like thematic cuts. The time-spans covered in the eight maps overlap: the processes of urbanisation that are displayed cannot be isolated in time because different urbanisation mechanisms operate simultaneously.

Each map contains material that has been selected and extracted from the first two maps series. They explore and interpret the dynamic interrelationship between the *Frames* pictured in the first series and the accumulation of the built-up areas as illustrated in the *Classic Chronology*. At the same time, they endeavour to make sense of the interplay between the macro and the micro scale. Each of the maps is explicitly selective and deliberately interpretational, consciously reimagining the urbanisation of the area in terms of a systemic territory. The series is intended as an open-ended collection upon which further elaborations and extensions, as well as divergent interpretations of the region's history and visions of its future, can be grafted.

Map 7 bottom: Bieke Cattoor, Tom Louwette and Karin Thomsen (2013), *Interrelations, Hydrography/Internal Borders, A Catholic Territory* (Cattoor 2013, Supplementary material: 24).

The above excerpt from the *Interrelations* series develops a narrative on how hydrography and internal borders steered the shaping of a catholic territory.

The development of the parishes was always closely linked to the water structure: water formed the centre and/or the borders of the parishes. Historically, the church always stood prominently in the centre of the parish. For centuries, it structured the whole rural space, together with the cemetery, and later the presbytery and the village school. The parish borders continued to live on in the municipality borders laid down by the young Belgian nation state in the municipality law of 1836. During the nineteenth century Catholic revival until well into the twentieth century, the church confirmed its all-determining influence on society. This manifested itself in the region as a rhizome of churches and institutions that, even today, structures the landscape.



Map 7: Chronologies of a (Sub)urbanized Territory, Metamap and Interrelations, Hydrography/Internal Borders, A Catholic Territory.

E17 Motorway Landscapes: revealing relational rhythms of landscape

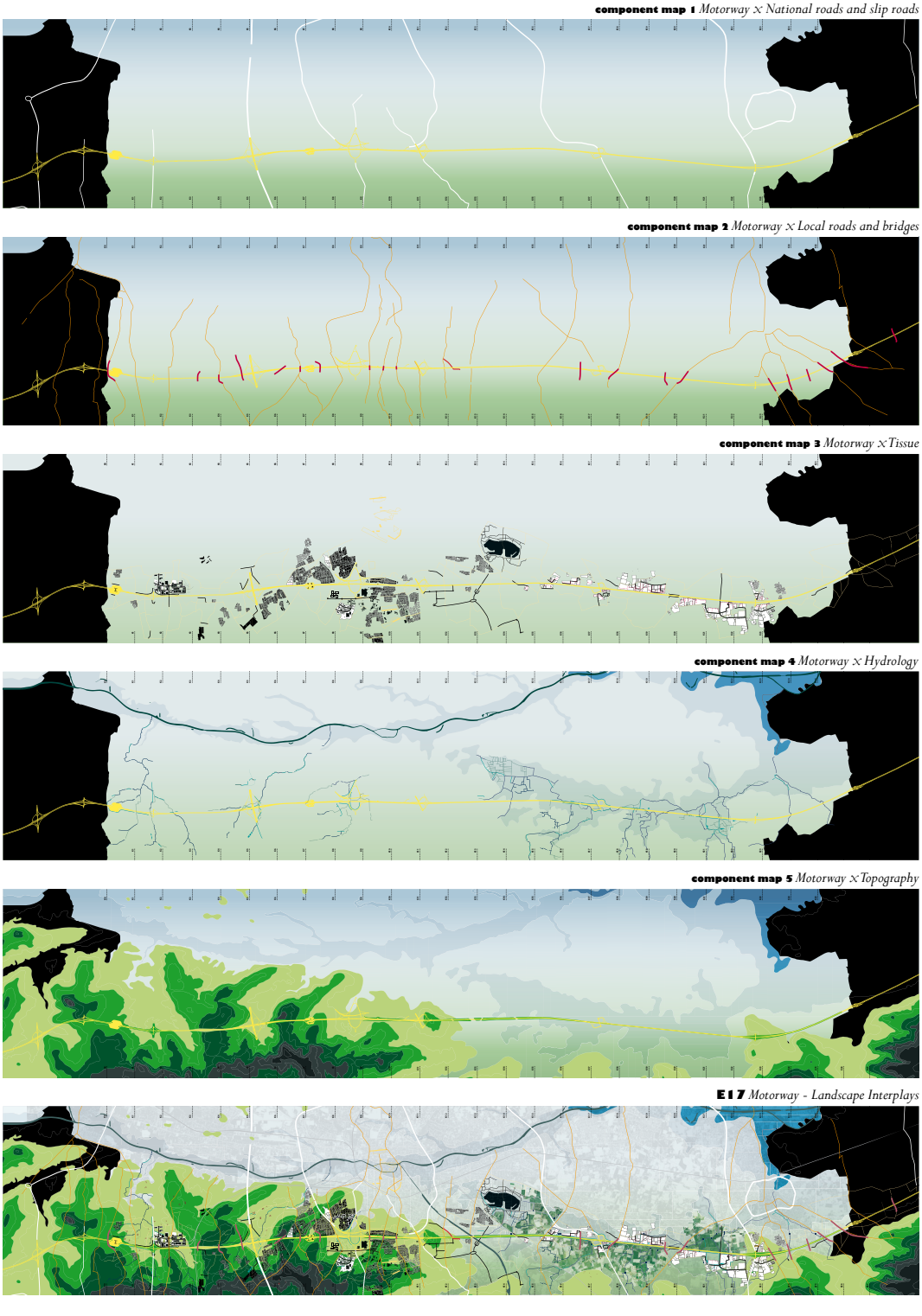
E17 Motorway Landscapes pictures the E17 motorway as it crosses the heavily urbanised Leie-Scheldt interfluvium. Motorways are mostly mapped, and therefore commonly perceived, as alien elements superimposed upon the territory. By setting alternative rules to element selection, generalisation, and symbolisation, this re-mapping describes the rhythmic quality of the motorway landscape. It can be seen as an assemblage, one that is characterised by the historic interactions between the E17 and a variety of other spatial systems, such as the topography, hydrology, local road networks, and land-use patterns in the vicinity.

The Map on the following pages [Map 8] is an excerpt from: Cattoor B. (2016) *E17 Motorway Landscapes*. Map series in: Cattoor B. and De Meulder B. (2016) A relational and processual re-cartography of infrastructure: E17 Motorway Landscapes. *Journal of Maps* 12(4): 707-710.

Map 8: Bieke Cattoor (2016), *E17 Motorway Landscapes*.

As the latest addition to a bundle of infrastructures, the E17 motorway (in yellow) runs parallel to the River Leie, a country road, national road, and a railway line. Slip roads and exits formed part of the original construction and connected the E17 with the pre-existing national roads at each intersection. This had a fundamental impact upon the constellation of national roads: originally part of an assemblage of radio-concentric systems connecting municipalities, the construction of the motorway saw them transform into the rungs of a linear and rhythmic double comb figure — with the motorway figuring as a backbone [Map 8, component map 1]. Hydrology is in direct relation to topography [Map 8, component maps 4 and 5], and introduces a finer and more nuanced perpendicular division than those previously described. The River Gaverbeek, a main tributary of the Leie, intertwines with the E17 to the east, which results in a broadening of the motorway's body. Tributaries to the Gaverbeek generate rhythms that run perpendicular to the motorway, with the water on both sides of the trace. In the central part of the investigated segment, artificial devices have overtaken the natural hydrology, with pumps removing the motorway run-off water. To the west, foothills alternate with three creeks that run perpendicular to the motorway, strangely coinciding with the motorway exits. Noted in red are the bridges that cross the motorway [Map 8, component map 2], and which stitch the rifts in the local road network caused by the construction of the E17 back together (the transverse roads interrupted by the construction of the motorway are shown in orange). These local road networks become denser in the vicinity of cities such as Menen, Kortrijk, and Waregem, where the intervals between the bridges automatically reduce. The re-cartography reveals the remarkably sculptural presence of the bridges. These bridges, moreover, introduce a rhythm of contrasting landscapes: in the sections between the bridges, newly erected industrial and suburban developments alternate with age-old pastoral settings [Map 8, component map 3]. The dark and light blue lines trace, in turn, the ways in which the local streams and creeks have been ruptured, repaired, and altered in order to accommodate the E17 as well as post-E17 development [Map 8, component map 4].

The cartographic assemblage of these interplays [Map 8 bottom] reveals a complex symphony of patterns. It highlights the plurality, dynamism, and transcalarity of the different metamorphoses that have culminated in the present-day motorway landscape.



Map 8: E17 Motorway Landscapes.