The Horizontal City Reterritorialised

Supply Networks in the Flemish Urban Landscape

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The following text wants to clarify my research by introducing some of its starting points: the contemporary Flemish urban landscape and its rationality as a horizontal city, and the notion of half integrated, distributed systems that might be helpful in making this landscape more sustainable. At the end a basic set-up for a research project on supply systems is proposed.

The context of this doctoral project is the Flemish territory and the strong pattern of dispersed urbanisation by which it is historically marked. While urban dispersion for a long time was treated as peripheral to the process of urbanisation and likewise remained outside of the centre of attention, the production of a number of valuable studies during the last years began to recognise the result of horizontally distributed forms of urbanisation as an urban typology in its own right.[1] The notion 'horizontal city' has even gained some currency[2] and the Flemish territory appeared as a prominent case study within this emerging body of literature[3].

[1] Jean GOTTMANN, Megalopolis. - The Urbanized Northeastern Seaboard of the United States (New York: Twentieth Century Fund, 1961)

Francesco INDOVINA (ed.), La città Diffusa (Venice: DAEST - Iuav, 1990)

Stefano BOERI, Arturo LANZANI and Edoardo MARINI, Il territorio che cambia. - Ambienti, paesaggi e immagini della regione milanese (Milan: Abitare, 1993)

Terry G. MCGEE, "The Emergence of 'Desakota' Regions in Asia. - Expanding a Hypothesis" in: Norton Ginsburg, Bruce Koppel and Terry G. McGee (eds.), The Extended Metropolis. - Settlement Transition in Asia (Honolulu: University of Hawaii Press, 1991): 3-26

Luuk BOELENS and Ed TAVERNE, "Why Cities Prosper as Deltas. - The Urbanisation of the Eurodelta" in: Leo Lucassen and Wim Willems (eds.), Living in the City. - Urban Institutions in the Low Countries, 1200-2010 (Oxon: Routledge, 2012): 192-215

[2] Bernardo SECCHI and Paola VIGANÒ, "Water & Asphalt" in: Viviana Ferrario, Angelo Sampieri and Paola Viganò (eds.), Landscapes of Urbanism (Rome: Officina edizioni, 2011): 158-179

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Alan BERGER, Drosscape. - Wasting Land in Urban America (New York: Princeton Architectural Press, 2006)

Lars LERUP, One Million Acres & No Zoning (London: AA Publications, 2011)

Michiel DEHAENE, Tuinieren in het Stedelijk Veld / Gardening in the Urban Field (Ghent: A&S/books, 2013)

Luuk BOELENS, De ontspannen versus de jachtige metropool. - Pleidooi voor een horizontale ruimtelijke planning (Ghent: Ghent University, 2013)

[3] Bruno DE MEULDER, Jan SCHREURS, Annabel COCK and Bruno NOTTEBOOM, "Sleutelen aan het Belgische stadslandschap / Patching up the Belgian Urban Landscape", OASE, 52 (1999): 78-113

Bruno DE MEULDER and Michiel DEHAENE, Atlas Zuidelijk West-Vlaanderen. - Fascikel 0 & 1 (Kortrijk: Anno '02, 2002)

Bénédicte GROSJEAN, Urbanisation sans urbanisme. - Une histoire de la "ville diffuse" (Wavre: Mardaga, 2010)

Despite the growing interest for the horizontal city, the future of this condition remains relatively unclear. The dominant frame of the question of sustainable development has been predominantly constructed around notions of compactness, densification and vertical urbanisation, leaving again the horizontal city as undeserving of further attention. Even more, by many protagonists within the discussion on sustainable urban development, horizontal urbanisation is mainly viewed as a historical mistake to be overturned. One could however also regard this type of dispersed urbanisation as a typology, with its own characteristics and possible strategies.[4] This view regards the dilemma between the horizontal and vertical forms of development as an unnecessary polemic, since these typologies are not mutually excluded and historically tend to exist within a complex co-evolutionary dynamic, much in the same way as that a city could not be understood without the influence of its hinterland.[5] Moreover, this viewpoint paves the way to imagine a sustainable future for the horizontal city, revealing specific opportunities towards this purpose. The construction of a sound hydrological balance[6], the development of short chain food supply systems, the local production of energy or the reduction of commuting distances[7] are all objectives which may be realised more easily within the relaxed urban morphologies of the dispersed city.

The historical process of dispersed urbanisation has taken place as a slow process of accumulation within a distinctive balance between territorially bound contextual conditions such as the availability of water, fertile land, property structures or energy resources and network driven dynamics. The logic of urbanisation is literally part of agglomeration effects that are built up both within territorial place based arrangements and deterritorialised networked arrangements that articulate relationships at a distance. In recent history one could argue that network driven logics have taken the upper hand yet territorial logics continue to play their part.

More and more a demand to rebalance this relation between propinquity and dispersion can be perceived. Campaigns to consume food according to local and seasonal circumstances, to produce energy more in line with a climatological and geographical context try to bring back a territorial logic. Three arguments that are also embedded in a pursuit for greater resilience typically seem to underscore the push towards reterritorialisation. First of all a chance to grasp local opportunities within a perspective of incremental development which would not be possible by systems designed on a bigger scale. Secondly, a reinforced local independence that also tends to bring a sense of responsibility to a community. And thirdly, the small scale of operation that makes it easier to change these systems, making them more robust.

Reterritorialisation however is not a value in itself. A one-sided argument for territorially oriented urbanisation logics tend to privilege communautarian dynamics at the expense of open, typically urban, social relationships. Moreover, generalised mobility, clearly a source of deterritorialising,

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[4] David GRAHAME SHANE, Urban Design Since 1945. - A Global Perspective (Chichester: Wiley & Sons, 2011)

[5] William CRONON, Nature's Metropolis: Chicago and the Great West (London: W.W. Norton & Company, 1991)

[6] Christian NOLF, Sections of Flanders. - Challenges of upstream Water Management and the Spatial Structuring of the Nebulous City [doctoral dissertation] (Leuven: KU Leuven, 2013)

[7] Marie-Hélène MASSOT, Jimmy ARMOOGUM and Laurent HIVERT, Pari 21. - Etude de faisabilité d'un système de transport radicalement différent pour la zone dense francilienne [INRETS report N° 243] (Arcueil: INRETS, 2002)
Kobe BOUSSAUW, Aspects of Spatial Proximity and Sustainable Travel Behaviour in Flanders. - A Quantitive Approach [doctoral dissertation] (Ghent: Ghent University, 2011)

continues to be an important emancipatory force within society and should not simply be given up.[8] In light of the renewed attention towards territoriality and processes of reterritorialisation one begins to realise that the horizontal city has always existed within a precarious balance between processes of de- and reterritorialisation. To the aforementioned local components we should thus also add a sense of the network. This could be done by inscribing these elements as modules in a distributed system. In these distributed systems, it are exactly the modules that act as an interface between the local and the network.[9] They are crucial to comply in an effective way to the demand of reterritorialisation, while they also enable the functional absorption within the network. The opportunity to build more sustainable urban patterns seems to come from this ability to renegotiate localised relationships to the territory by both mobilising locally available resources and rebalancing the ecological impact of development on the territory by the network, while staying far away from phantasies about autarchy or the glorification of bottom up development.

This research projects seeks to contribute to the general discussion on the horizontal city and its future development not by focussing on recipes for sustainable development per se, but rather by studying in detail these dynamics, in which modularity takes centre stage. In the Flemish context some important research in this sense has already been done during the last decades, mainly in the fields of mobility and transport infrastructure.[10] This is certainly a key aspect of the horizontal condition, but not the only one. A study of some of the half integrated distributed systems that once, and maybe still, shaped the dispersed urban landscape could be an other. The supply networks that were constructed since the 19th century for the delivery of tap water, energy and food could prove to be interesting case studies in this perspective. Researching their histories might shed a new light on resilience in practice. It might bring new insights on the mechanisms behind the expansion of these systems, their reconfiguration under changing circumstances and the balancing role of the module in between the network and the local environment. Given their big impact, it is furthermore likely that the production of food, energy and water and the way it is delivered to its users will have to be taken into account in the imagining of a more sustainable future.

The characteristics of distributed systems in the horizontal city could be very well illustrated by the following example that anecdotally reconstructs the history of the water distribution in Antwerp. As this city grew bigger during the 19th century the old system of wells and water carriers could no longer provide for all of its inhabitants and several propositions for water distribution in the city, using various sources, technologies and economic models, were studied. In 1881, after being granted a concession, the English firm Easton and Anderson started to operate its system, tapping water from a single point some 17 kilometres away from the city centre. Soon difficulties arrived in the filtration process and new techniques had to be developed. Also the plant's pumping facilities and reservoirs had to be improved and expanded to steadily increase production capacity. This was

[8] Benjamin MOTTE-BAUMVOL, Marie-Hélène MASSOT and Andrew M. BYRD, "Escaping Car Dependence in the Outer Suburbs of Paris", Urban Studies, 3 (2009): 604-619

[9] Che BIGGS, Chris RYAN and John WISEMAN, Distributed Systems. - A Design Model for Sustainable and Resilient Infrastructure (Melbourne: University of Melbourne, 2010)

[10] Bruno DE MEULDER, et al., "Sleutelen aan het Belgische stadslandschap"
Bénédicte GROSJEAN, Urbanisation sans urbanisme
Bieke CATTOOR and Bruno DE MEULDER, Figures Infrastructures. - An Atlas of Roads and Railways (Amsterdam: SUN, 2011)

however foreseen in the initial design of the plant and these changes were made easily. In 1905 a pumping station was added to be able to maintain the pressure in the ever growing pipelines. [11]

These expansions were followed up closely by the inhabitants of Antwerp for the status of neighbourhoods changed when they were in- or excluded within the supply of water through the water main. Soon interest groups arose which imposed requirements to the price and purity of the water and tried to influence which areas could be serviced and which not yet. [12] When the whole city was served, expansion to the surrounding villages was started. This required new water production facilities, for the first plant could no longer increase its capacity. An operation for the integration of the different lines into a coherent system started and needed coordination and regulation. Around the same time another proposal to scale up the water system was formulated. It would link the water supply of several cities such as Brussels, Antwerp, Mechlin and Leuven, but proved to be infeasible because of various practical reasons and conflicting interests. [13]

But while cities were thinking of connecting their water systems, smaller villages did not have the means to provide tap water to their inhabitants. Nonetheless pure drinking water became to be regarded as a basic right and the government made a law allowing municipalities to join forces in 1907, long after the bigger cities had erected their networks. When this first measure did not turn out to be very successful, the government established a national holding company in order to assist these municipalities in constructing their own water services. [14] This brought some conflict to the peripheral towns around Antwerp that had to choose between the commercial city network or, in the case of Antwerp, a large inter-municipal organisation. Over time most of the Flemish urban water supply systems got incorporated in the national or inter-municipal bodies. This did not happen with the water distribution network of Antwerp, although the enterprise changed its status when the concession was bought off by the city and was made into a public company. [15]

During the second half of the 20th century major changes had to be made. First of all the old stations needed to be adapted again because the quality of the water and the debit of the river along which theses stations were located no longer complied. Instead, new pipes brought water from a nearby canal to these stations. A second change was a new large modern production facility that was plugged into the existing network. [16] And while in the beginning of the century a connection between different networks did not go through, the network of different tap water providers became more and more linked. This linking secures tap water to areas with less water resources. It is noteworthy that, coming from a national organised system, the networks are more and more adapting to Belgium's federal structure. Besides, small initiatives towards international tap water trade are taken, though these are regarded mainly as a backup. [17]

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[11] Wim VAN CRAENENBROECK, Antwerpen op zoek naar drinkwater: Het ontstaan en de ontwikkeling van de openbare drinkwatervoorziening in Antwerpen 1860-1930 (Tielt: Lannoo, 1998)

[12] Ibid.
See also: Vanessa TAYLOR and Frank TRENTMANN, "Liquid Politics, Water and the Politics of Everyday Life in the Modern City", Past & Present, 1 (2011): 199-241

[13] Wim VAN CRAENENBROECK, Antwerpen op zoek naar drinkwater: 1860-1930

[14] Marc DESPIEGELAERE, Lieve DILLEN and Geert VANDERSTICHELE (eds.), Drinkwatervoorziening in Vlaanderen vanaf 1800 tot heden. - Kan de organisatie van de drinkwatervoorziening in Vlaanderen inspirerend werken voor het Zuiden? (Ghent: PROTOS, in collaboration with the Environment, Nature and Energy Department of the Flemish Governement, 2006)

[15] Wim VAN CRAENENBROECK, Antwerpen op zoek naar drinkwater: 1860-1930

[16] ---, "Historiek van de drinkwatervoorziening in België" in: Wim Van Craenenbroeck (ed.), Eenheid in verscheidenheid. - Watertorens in België (Brussels: NAVEWA & Gemeentekrediet, 1991): 17-39

[17] SVW, Strategisch plan drinkwatervoorziening Vlaanderen [SVW report] (Antwerp: SVW, 2008)

In this example we meet many aspects of distributed systems and issues that play a key role in the ensuing discussion regarding the reterritorialisation of the horizontal city. The production of water is subject to local circumstances such as the availability and the chemical composition of water. But it also fits in the distributive rationale of the network. Certainly in the latter stages of the network's evolution this becomes clear. Because of the linking between the supply systems from different providers, the contemporary map of the water distribution in Flanders, which seems to be a quite literal translation of its history, displays little connection to the water production, yet the rather strange shape of the jurisdiction of the different consortia can only be understood in light of the horizontal interplay of territorialised and networked logics. Although at first sight tap water seems to be less susceptible for this network logic than food or energy we must conclude that also in this case strong deterritorialising forces have been at work.

The balancing between this two poles, propinquity on the one hand and dispersion on the other, happens within modules that may also fulfil a critical role in a future reterritorialising process. They are able to adjust themselves to a local context and in doing so grasp local opportunities. Moreover, they adapt to changing circumstances. This could be at a local level, changing consumption rates or a water source that becomes depleted or too much polluted. But it happens certainly also at a bigger scale when technology makes progress or new water quality standards are issued. Even non-related events such as the federalisation of Belgium had an impact on the supply networks.

Also more social issues of scale come to the fore in the example. The scale on which a network is operated is influenced by the capacity of its sources but also on the amount of water that should be provided. Local independency might come under pressure because of demands further away in the network. On the other hand considerations concerning social justice tend to provide general access to unevenly distributed resources. Also the necessity to keep these networks and more specifically its modules open or at least, not fully but half integrated can be seen from a social dimension: Commercial partners provide in many cases the funds that are necessary to invest in the realisation of projects. Often they are granted a concession, as in the example, that assures them ample time for a return on investment and some profit. There is the risk though that the general public becomes dependent on these companies and might be unable to later adapt the system to its wishes or changing circumstances. Gabriel Dupuy[18] sees a role for the urban planner in the prevention of this risk.

This balance between the different scales, the adaptability of the network and its elements, and the importance of the module in this could not only be applied on historical examples. It also enters current debates. Think of the heath nets that are currently constructed at neighbourhood level. The mere laying out of them is already important for they break the current irrational logic of the use of individual high energy heating units by introducing collective heating systems, even if they are constructed by private companies and locally managed. The actual benefits for society are however only achieved when whole cities or regions would become connected and the rest heath of for example industrial processes could be put to use. Pushing for local energy nets produces the modular units that are necessary to justify the construction of such (half)integrated systems at the supra-local level over time.

[18] Gabriel DUPUY, Urban Networks - Network Urbanism (Amsterdam: Techne Press, 2008)

The actual research project would consist of one or more case studies from a historical point of view. First of all a particular food, drinking water or energy supply network should be selected. This network should have a relative long history that is somewhat characteristic for the region and the sector – in the vein of the tap water supply network presented. The construction and evolution of this network will then be studied, with a special interest in its deterritorialising and perhaps reterritorialising role. Studies undertaken by science, technology and society (STS) scholars could be useful methodological references in this for they investigated the interplay of evolving technical equipment, changing scientific insights and the impact on those who are in- or excluded from the network's services[19], although they have so far mainly focussed on the vertical city. Other possible sources include company anniversary or commemorative books of the various network providers and service delivery companies. The section of this main network will then serve as the framework to locate areas where an analyses of the interplay between territory, various other networks and urbanisation can be developed in greater detail. This process could be repeated along another well-studied main network in a contrasting region so more general findings and recommendations could be formulated.

The broader perspective of the research is to contribute to the development of strategies for the horizontal city. As the heath nets suggest, parallels can be drawn between the historical realisation of supply networks and actual debates. Research into the de- and reterritorialisation roles of these distributed systems could thus certainly be of interest for a sustainable future.

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[19] Such as in the research and publication project 'Technology and the Making of the Netherlands' (1994-2003) in which the Foundation for the History of Technology and its director Johan Schot play a pivotal role. A similar projects is its successor 'Tensions of Europe' (ongoing since 1999).
See http://www.histech.nl/www/en/projects (accessed 28/08/2013)