The Networked World:
The Example of Urban Network in Spatial Planning

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Abstract
Network is a popular label in spatial planning and related fields. How is network used in spatial concepts in Dutch strategic planning practice, with regard to analyzing and organizing space? Network approaches in planning practice are firstly characterized by general aspects of 'network', i.e. parts that are connected in order to reach a specific goal. Furthermore, network representations in planning are embedded in government's ambition to order. An exploring study into 'urban network' as an example of a network concept in some planning documents gives clues of helpful as well as ambiguous roles of network approaches. Equally to other network approaches, urban network entails a broad, sometimes inconsistent mix of features. Among these features is the combination of empirical and normative aspects. Connectivity has a key role in urban network in studied documents, referring and contributing to structural as well as organisational connectivity as goal itself. The documents are mostly vague about the actual or specific reasons for connecting and connecting factors. We name over-connectivity and exclusions as dark side of connectivity. We also distinguish a challenging aspect of network. That is -depending on planning strategy, spatial situation and ambition- the possibility of a 'counter-network' or the 'meshes' as fourth element of networks next to parts, connectivity and goal. Further research into networks is necessary in order to describe (im)possible benefits of network representations in planning context.

Keywords: Network Approaches; Spatial Analysis; Dutch Planning; Planning Concepts.

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1. Introduction

1.1 Dazzled by networks

> The Netherlands is developing into a network society and a network economy. On the one hand, individualisation continues to progress; on the other hand, all those individuals are increasingly closely interconnected in numerous networks. This development has major consequences for spatial planning. There is more and more coherence between the various cities and urban areas. The government applauds this development towards urban networks (Ministerie-VROM, 2004a; p.9).

Network is a popular catchword in documents and discussions around spatial policy and related fields as transport and nature (e.g. 'Trans-European Transport Network' (European-Commission, 2001); 'Nature 2000 Network' (European-Commission, 2002)). '[…] 'Network Europe' is emerging as a particular trope that starts to structure thinking in European policy making' (Hajer, 2000; p.140). Above quotation is a brief yet rich example of the use of the term 'network' in Dutch spatial policy. In this text network refers to both people and places, both present and in future, both autonomous and arranged, both visible and invisible. The various meanings and applications of networks in describing and organizing space suggest potential as well as pitfalls.

This paper will study network approaches in planning, by the example of the concept of *urban network*. We will look at the way urban networks have been used to analyze and develop space in strategic planning, with a focus on Dutch areas and Dutch planning. This paragraph will firstly look at the linguistic meaning of network, followed by the context of planning and some examples of network studies related to planning. This will result in some research questions that will be used for studying three documents that include urban network. The second paragraph presents the example of the urban network concept and its use and content in the European document on 'Territorial State and the perspectives of the European Union', followed by the Dutch National Spatial Strategy, and the Regional Spatial Plan of the province of Gelderland in the Netherlands. This study ends with discussion and a look into further research.

1.2 Network connotations: complex connectivity

The linguistic meaning of network reveals important aspects of network. In its etymological sense 'net (n) + work' is about 'any complex, interlocking system' (Harper, 2001). However, is network about a system that is characterized by 'complex and interlocking' and/or does it deal with complex and interlocking aspects? The first tends towards a contradiction in terms or at least a confusing fact: 'system' evokes the feeling of 'structure', which is the opposite of complex (in the meaning of complicated). In its noun-meaning network is about 'a large system consisting of similar parts that are connected together to allow movement or communication' (Cambridge-Dictionaries, 2004). This fits the notion of network named as 'dealing with' complexity, typified by 'connecting together' (ibid). This is also the verbal-meaning of network alongside 'meeting' (ibid). So, though network is a puzzling word in nature, it suggests at least the function of *connectivity* of parts in order to reach some form of progress.

1.3 Networks in spatial planning: the impact of representations

We study networks in planning; therefore the role of networks is placed in the context of planning activities. Planning is about *ambition*, to help, rule, protect, create, prevent, connect etc. Hence, we join to Jensen and Richardson (2004; p.54) who 'subscribe to the numerous conceptualisations of planning as an expression of a 'will to order'. The 'will to order' is often expressed in policy by *representations* or *concepts* which present the 'object' of space, ambitions and interventions, by specific words and images (cf. Zonneveld, 1991). This process of *imagination* in planning and the development of planning concepts have been extensive in Dutch strategic spatial planning (see e.g. Van Duinen, 2004; Hajer and Zonneveld, 2000; Faludi and Valk, 1994). Networks can be regarded as either concepts themselves or as part of a concept. This paper studies the example of the concept of urban network in planning policy.

Concepts of urban network, as metaphor or as part of a policy text, are representations of a 'piece of the world'. These are 'creatures of our own making' instead of a simple 'mirror which we hold up to the world' (Gregory and Walford in: Barnes and Duncan, 1992; p.2). Consequently they possess particular meaning and consequences. 'One needs to explore the tropes employed' (ibid; p.5) in representations. Namely: 'writing is constitutive, not simply reflective […] writing reveals as much about ourselves as it does about the worlds represented […] rhetorical devices are central to conveying meaning' (ibid; p.3). This applies all the more for a policy concept like urban network, which is in nature a package of knowledge, intentions, instruments, procedures and language (cf. Zonneveld, 1991)[1].

We consider the concept as constructed by as well as bringing about planning context (cf. Jensen and Richardson, 2004)[2]. Hence, we regard network concepts as 'discursive constructions' (after Hajer, 2004). The analysis of an actual discourse is 'the examination of argumentative structure in documents and other written or spoken statements as well as the practices through which these utterances were made' (ibid; p.42). Following their conceptualisation of planning as a 'will to order', (Jensen and Richardson, 2004; p. 56) present discourse in their study as '… expressing a particular conceptualisation of reality and knowledge that attempts to gain hegemony. This 'will to knowledge' attempts to embed and naturalise particular values and ways of seeing and understanding the world, so that they become taken for granted and slip from critical gaze.'

Studying the content of urban network is unpacking the 'wrapped arguments and knowledge'. It will provide insight into the way government observes and deals with the world of urban networks and can be regarded as a clue for understanding the broader planning's situation.

1.4 Network approaches: features

We will explore some studies regarding network concepts, respectively describing network background, network potentials and pitfalls and broader network context.

Roots

The so-called network society is often used as root or justification for the introduction of network approaches in planning (see e.g. Hidding and Teunissen, 2002; quotation of this paper; p.1). These links suggest similarities or

[1] Zonneveld (1991; p.21-25 & 222) distinguish cognitive, intentional, institutional, communicative and action functions of spatial concepts, after Habermas' theory of communicative action.

[2] Jensen and Richardson (2004, after D. Harvey; p.54): representations of space create 'complex socio-spatial dialectics'

some (causal) connection between approach and society. The network society as new social order is, in very concisely terms, constituted by '[t]he interaction between the revolution in information technology, the process of globalisation, and the emergence of networking as the predominant social form of organisation' (Castells, 2002; p.548). This network society is hard to grasp, as it experienced as a 'meta-social disorder' (Castells, 2000; p. 508). Parallel to the network society, 'our perceptions of time and space have also changed, becoming more multifarious, complex and structurally open-minded'. Current urban and environmental planning approaches are 'outmoded': '[b]ecause that society has itself become ever more mobile, in individual motion and networked in a manner which respects no boundaries' (Boelens, 2005; p.11). Network approaches in planning seem to be introduced to (handle the urge to) manage the so-called 'disordered' and 'mobile' networked world.

Potential & problems

Network concepts are process-oriented concepts, which deal with dynamics of natural and societal systems, rather than focus merely on physical patterns. Network concepts have potential for a coherent and integrative planning approach (Hidding and Teunissen, 2002). An important aspect of (urban) network is that it is 'pursuing a specific goal', which can be obtained by linkage or cooperation of entities instead of working individually (Albrechts and Lievois, 2004[3] and cf. network connotation in this paper; p.2).

Network studies also include serious critics. 'In planning practice the term 'network' is both used in a descriptive and a normative sense, resulting in confusion that hinders a broad acceptance of these concepts as a planning tool' (Hidding and Teunissen, 2002; p.306). Otherwise, there is a gap between the normative network concept and factual reality (Albrechts and Lievois, 2004). Hajer also questions the functionality of 'networks' as a planning concept, speaking of networks' 'lack of discriminatory power' and the load of networks' meaning 'to such an extent that it is almost impossible to use it as an analytical device' (Hajer, 2000; p. 142).

Context

Likewise, both valuating and criticizing the use of networks, Hetherington and Law (2000) describe networks in sociological and geographical perspectives, the broader context of planning. They at first link network thinking to the relational approach of space:

> Networks are complex arrangements of space with no clear centre or dependence upon hierarchical relations of difference. The network metaphor fits well, […], with a relational approach to space that stresses a non-hierarchical way of thinking about difference and the space that it constitutes as seemingly fluid, complex and unfinished character (Hetherington and Law, 2000; p.n/a).

Hetherington and Law subsequently criticize the metaphor of network which 'leaves no room for alterity and allows nothing to stand outside the relations that it orders through its description of the world (network)' and (referring to N. Thrift, ibid; p.n/a) 'network spaces, it appears, are just as rigid in their ontological and epistemological assumptions as Euclidean containers and Cartesian grids.'

1.5 Networks summarized: framework and questions

A tentative and general description of networks, based on above texts, is made as: networks generally consist of parts, connections and a specific goal. The actual implementation of network representations in planning is still various and vague. Some sets of network features have come up by above information, of which many are in some way paradoxical or conflicting. In this (never finished) compilation of features, network represents:

- People and/or Locations;
- Social dynamics and/or Physical dynamics;
- Relational space and/or Euclidian space;
- Autonomy and/or Arrangement;
- Invisible system and/or Visible system;
- Complexity and/or Structure;
- Desired situation and/or Current situation.

This study is not about choosing between these (dialectical) aspects, however showing the broad range of meanings. Subsequently, we will observe which and how features are used with regard to the concept of urban network in policy documents.

Again, we regard urban network as a construction or package of knowledge and arguments. We will study some policy documents by posing these questions:

[3] Albrechts and Lievois (2004) filter out two types of network concepts: connecting networks including the only value of accessibility and creative networks aiming at learning and value-adding. Whereas they consider urban network as creative system, we do not specify urban network beforehand as we will look at the description of policy documents.

1. What does 'network' represent in the spatial planning concept of urban network (relating to analyzing/describing and designing/prescribing)? See general description and possible features in above list.
2. What does urban network tell us about the planning context?
3. Directions and in future: what are useful and unclear characteristics of a network concept like urban network?

2. Experiences of the urban network

2.1 Introduction of policy documents

We will study the concept of urban network on a strategic planning level, the level that particularly involves analyzing and design in a tactical field. Starting point of this research is the national policy concept of urban network in the Dutch National Spatial Strategy. The regional government of Gelderland has -hierarchically- elaborated this concept in its Regional Spatial Plan. Firstly, we investigate a European document on Territorial Cohesion. This document elaborates urban network on a more strategic level (aims) and a specific level (projects), giving extra information about the use of urban network. We are looking for similar, different and related characteristics in order to reveal the scope of meanings of urban network in planning.

2.2 Territorial State Document[4]: motors and clusters

The European Union Ministers for Spatial Development 'agreed to focus on elaborating territorial cohesion […] by aiming at a better exploitation of Europe's diverse potentials' (p.I). The Territorial State Document is a scoping document for the assessment of the territorial state and perspectives of the Union. The ambition of territorial cohesion is based on sustainable economic growth and sustainable development according to Lisbon aims. One of the three strategic policy objectives for strengthening territorial cohesion is 'improving the strength and diversity/identity of urban centres/networks as motors for territorial development in Europe' (p.II). The objectives are building on the European Spatial Development Perspective (ESDP) principles, for example on development of a balanced polycentric urban system.

The document stresses the duo-aspects of territorial cohesion in general and the specific role of urban networks. That is elaborating the *strength* of areas as urban networks (the motors), as well as elaborating *integration* (the clusters). This twin-aspect is best illustrated by the explanation of the choice for a territorial approach to development.

> 'Each region has a *specific* territorial capital that is distinct of other areas and generates a higher return for certain kinds of investments that for others, since these are better suited to the area and use its assets and potential more effectively. Many of the components of territorial capital, including their integration and connectivity to other areas, can lead to productivity gains and generate growth' (p.3).

Summarized, we observe some 'network' thinking in this document. Specifically, 'network' in urban network in this document entails cities or regions and their potential [as part], integration or clusters [as connection], aiming at economical growth [as specific goal]. Whereas the document remains abstract about the features of urban networks and does not label regions beforehand, some examples of 'good practice' at the end of the document show more details of some urban networks in practice, aiming at for example business, transport, technology, etc.. These projects show that the cities and regions themselves have to initiate and create a strong urban network.

2.3 National Spatial Strategy[5]: multi-connectivity and designation

Connectivity

The concept of urban network in the current Dutch National Spatial Strategy has its roots in a Key Decision of the former national spatial plan, the 'Fifth National Policy Document' that was never approved. The reason of

[4] All information is from European-Commission (2005). Status: Scoping document, including summary of political messages, endorsed for further development.

[5] Information is from Ministerie-VROM (2004a) [A] or Ministerie-VROM (2004b) (own translations from Dutch) [B]. Status: Adopted by Council of Ministers (April 2004), and in discussion by Upper and Lower House. Based on the 'The Fifth National Policy Document on Spatial Planning' which has never been approved.

introduction of urban network was preventing urban space to be shaped in an 'expanding, amorphous mass of stone' and reaching 'connected yet clearly separated urban centres including open space' (B, appendix 2 - p.14). What kind of connection does it refer to? How do connecting and separating work together? We distinguish a structural and an organisational connection in the document, referring correspondingly to space as mainly object and planning-processes.

The *structural connection* is about the (physical) appearance of urban network, which is mostly characterized by the position of urban network in the 'National Spatial Structure'. The philosophy of governance of the strategy introduces the National Spatial Structure: it comprises the regions and networks that 'the government considers to have national significance' (A, p.6). The reasons of being significant remains at first restricted to the explanation that the spatial structures and networks are in 'considerable way spatially structuring for the Netherlands as total' (B, p4). It looks like a circular reasoning: how are significant and structuring related?

The *organisational connectivity* of urban networks is expressed by teamwork of city-actors. The strategy stresses the importance of cooperation and agreements in urban networks in the field of economic opportunities, infrastructure, facilities, culture and leisure. 'The cities and centres that comprise these networks complement and reinforce each others' strengths, so that they have more to offer together than they do as individual cities' (A, p.9). So, being part of a network can result in being more than just a simple part: it can reinforce your position.

The urban network's regional scale level is named as the 'opportunity level' for further *implementation* of connectivity. However, the national government has a final *responsibility* for urban networks. While the government works from a 'development-oriented' spatial policy vision, characterized by a 'decentralised planning system', there are some exceptions to this rule. The national governments chooses for example to be 'selectively and directly involved in concrete policies regarding spatial development related to the National Spatial Structure, which often involves major investments' (A, p.5). This means 'intensively interfering' in the designated urban networks in distinction to other areas in which they merely guarantee 'basic quality standards'. The interferences entail concentration of economical activities, infrastructure and urbanisation in these urban networks.

To be labelled or not to be labelled

In contrast to the European document, and in contradiction to the development and decentralized orientated philosophy, the Dutch strategy designated itself the cities that 'are' national urban network. The Fifth National Policy Document did designate more urban networks including regional ones. It is reasonable, even apart from this history, that 'other' urban networks also want the official, national label of urban network. It is a confirmation of being part of the important, including the approval for development and especially the reward of national and European investments. This situation resulted in protests by other jointed cities, as the so-called 'Stedendriehoek' [Urban Triangle], including Apeldoorn, Deventer and Zutphen. The Urban Triangle has the characteristics of an urban network: it is a region that is cooperating in order to deal with for example urbanisation and reorganization of industrial areas (Stedendriehoek, 2004). Protests have resulted into the proposition and acceptance of a motion about financial support to regional urban networks (Minister-VROM, 2005).

The network society dazzles again

A main objective of the concept of urban network is 'promoting urbanism in the network society' (B, appendix 2 - p.14). Named processes related to the network society are economical and social-cultural changes. The national urban network is named as the appropriate scale level to reach 'vital cities'. The text remains vague about he relation between both network terms. Is urban network an answer and/or part of the experienced and/or desired network society?

Healey (2004) studied the spatial vocabulary in strategic spatial plans as the former Dutch national plan, distinguishing essentialist and relational conceptions. She argues that '[t]he *discussion* of the urban network concept is located explicitly in the new *relational* geography. […] But developed into policy concept, the network idea is *translated* into a *hierarchy* of centres' (p.53, emphasis in original). This mix or 'conflict' of traditional and relational approaches also applies to current document and is an explanation of the vagueness. Meanwhile, by means of the above mentioned protests and motion, the current spatial document has in the end included a statement that is less hierarchical: it offers possibilities for other than the designated network.

2.4 Regional Spatial Plan of Gelderland[6]

Link to the National Spatial Strategy: spatial structures

The province of Gelderland identifies and specifies three urban networks: Knooppunt Arnhem-Nijmegen as the KAN-area [Node/Junction], Stedendriehoek Apeldoorn-Deventer-Zutphen (see former text for discussion around official designation) and the WERV-region of Wageningen, Ede, Rhenen en Veenendaal. The two latter are partly situated in other provinces, respectively Overijssel and Utrecht, as such showing a typical network feature of being boundless.

This Regional Strategic Plan is the first in the Netherlands that is following the National Spatial Strategy (Provincie-Gelderland, 2005a). The document anticipates on the philosophy of that strategy by the focus on the region and the objective of economic and social-cultural reinforcement of urban networks. Accordingly, the document states: 'This regional plan is contributing to the realization of the National Spatial Structure as presented in the National Spatial Strategy by considering this as backbone of the Provincial Spatial Main Structure' (p. 7).

Above quotation suggest a mainly structural interpretation of urban network. The Provincial Spatial Structure consists of a green-blue framework and a red framework, including respectively low-dynamic and high-dynamic functions. Urban networks are part of the red framework. We also observe an organisational interpretation of urban network. The aim of the red framework is 'room' for intensification of relations and functions of urban networks and regional centres (urban dynamics and facilities), by development planning. In line with the National Spatial Strategy concentration of urban functions is point of departure, in which also 'concentration' has a structural and organisational notion.

The provincial spatial policy will have a specialized responsibility regarding the spatial structure. So, correspondingly to the national government, the regional government names corresponding important areas, and restrict their involvement to these areas. Again, the label network and related structures mean 'being important' and hence involvement of the concerning government.

Link to Europe: network-thinking

Gelderland is part of and influenced by the European sphere, which including 'spatial scaling up' and 'network formations'. The importance of Europe is stressed by Gelderland's intermediary position between Randstad and Rhein-Ruhr areas in North-western Europe. This is for example set out in more detail by explanations of the KAN-area as gate and multi-modal transport node to the Rhein-Ruhr area and by the Stedendriehoek as connection to North-eastern Europe. This is a clear example of network thinking that we observed in the European document.

3. Discussion and in future

3.1 In short

Urban network in the Territorial State Document concerns competition and cooperation. Studying listed projects of European networks will give us more details about network-features. Urban network in the National Strategy is particularly about several forms of connectivity, in which connectivity is a goal itself. The regional plan gives obviously more details about spatial situations and tasks. However, it does not add something new to the network-aspect of urban network, as studied in this paper. Accordingly, above documents include a compilation of former mentioned network features, problems and possibilities. Further research is necessary to study the (in)consistencies and especially the consequences for planning of these network-features. In the context of *spatial* concepts and the planning activities of analyzing and design, the mix and consequences of relational and Euclidian aspects is very relevant. Some suggestions and questions have come up next to and due to above document descriptions in relation to network approaches in planning, which relate to the network aspects of parts, connectivity and goal. We start with looking at urban network as planning concept.

3.2 Norms and empiricism in a network concept

We consider urban network in this study as a representation or planning concept. The concept of urban network is used to describe and prescribe, refers to actual and desired situations, and is part of and solution to the network

[6] Information and citations (own translations from Dutch) are from Provincie-Gelderland (2005b), unless stated otherwise. Status: adopted in June 2005

society. Hence, a planning concept is a 'composition of empirical and normative assumptions' (Zonneveld, 1991; p.21). We argue that a composition as such, is potentially confusing in nature (in line with paragraph 1.4), meanwhile potentially useful in handling this confusion. Named confusion in concept and document is in some way reasonable as norms are partly based on a current promising or problematic situation. However, texts become misleading if a description of a current situation is based on a not-yet existing desired situation. As such, concepts in texts may run over the exact problems, chances and future-directions. Considering network concept specifically, we argue that this dilemma of a concept is intensified by similar features of the term network.

3.3 Ambitions and over-connectivity

The documents have shown that cities and regions are eager to be (part of) a network, as such being part of an ambition. This fits somehow in the trends and aims of 'development planning' and 'cohesion'. However, planners should be warned if simply 'being part of the ambition' overshadows and overrules the actual goals and (spatial) problems. Secondly, assuming the general connotation of network, there is a risk of over-connectivity. For example, if 'every-city' wants to be part of the urban network, the network becomes equal to every-space. On the other hand are the consequences of excluding entities by 'network exclusion' (see e.g. Graham and Healey, 1999; p. 26; and Castells, 2000; p.508 about 'switching off'). However, exclusion may also mean exclusive as following text will explain.

3.4 Fourth element or counter-network

A challenging issue regarding structural connectivity is mentioned in the introduction of urban network in the National Spatial Strategy, though not in this way elaborated in the document itself. It is the inclusions of 'open space' in the definition of urban network. We can regard the aspect of open space as the 'mesh' of a network, as fourth element of network concepts next to connection, parts and goal. (cf. 'without meshes there are no networks', in (Van der Knaap, 2004; p.6). Or we can regard the aspect of open space as 'counter-network'. This latter is comparable to the green-blue network of Gelderland. By emphasizing the meshes of a network or by introducing a counter-network government may for example prevent that everything blurs into one network without looking at specific qualities of places and people. However, such a strategy should be judged in the current planning and spatial context and desired planning strategy.

3.5 Further research: tricks and tracks of networks

What are useful ways to analyze and organize current networked world? This study shows that network in urban network describes and prescribes space; using a mix of social, physical, relational, hierarchical, structural and potential features, in which connectivity is a key factor. What are reasons and consequences of this (sometimes) conflicting) features? What is the meaning and inside of connectivity? This paper into the meaning and application of urban network can be elaborated by studying related documents, discussions and actors regarding urban network. Moreover, further research is necessary to expose qualities and deficiencies of other spatial network concepts in planning, for example the Ecological Network, meanwhile valuating the 'emblematic'[7] value of these network concepts. Additionally, a comparison between network and similar metaphorical terms used in concepts to plan and design rural and urban areas will reveal more specific qualities and deficiencies of networks.[8] An alert distinction between current and desired networks, searching for the connecting factor of network in a specific context, awareness regarding potentials and pitfalls of representations as network, will lead to clearer explanations in policy documents and better anticipation to the networked -or counter-networked-world.

[7] Network concepts may be 'emblematic' for the bigger 'problematique' (after Hajer, 2004), i.e. looking at the way network concepts include the notion of space may be exemplary for (mis)understanding and describing space in the broader planning context.

[8] A possible term is 'mosaic' used by R. Forman to understand and plan the metropolitan landscape of for example Barcelona, founded on landscape ecology theory.

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