DELTANET
Multinodal, multimodal

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At school, all Dutch children learn that their country is the most densely populated one of the world, having nearly 500 inhabitants per sqkm. Even formally, this is not true, Singapore having for instance nearly 5000. But also in Egypt, not counting the desert, some 64 mln people live in an area more or less the same size as the Netherlands, thus having a population density approximately four times the Dutch one.

Whatever the facts; the feeling is we live in a densely populated country. This may explain, at least partly, why the Dutch are so fond of landuse planning and why this issue is an evergreen of public delate.
National policy these last fifty years has been to disperse the population, away from the more urbanized western part to the less urbanized other parts of the country. There allways have been two driving forces in this policy, both rooted in social values. First of all this policy wanted to prevent that in the west the pattern of independent cities , towns and villages would agglomerate into one big city. There is a deep feeling that city life and especially big city life is bad for family values. Secondly, the policy aimed at social equity, wanting to promote an equal income distribution in the country as a whole. There is a firm political belief that the best guarantee for social peace is equal distribution of jobs and income.

Recently, however, government has announced a shift of policy. The western part of the Netherlands no longer is considered to be a high density country, but, in a way, just the opposite: a low density city. To emphasize the shift, after fifty years of anti-big city policy, all settlements in this part of the country are declared to be one urban network, called Deltametropolis (1).

How did this change of policy come about? What strategy will be followed? What is its chance of succes?

DELTANET

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∗ the Netherlands today
∗ Deltametropolis
∗ Deltanet
∗ decision methods

In *the Netherlands today* I will elaborate on a changing world and the dilemma's we are confronted with.
In *Deltametropolis* I will clarify the concept and the character of its development strategy.
In *Deltanet* I will then specify the transportation system, part one of this strategy. This is the project that is conditional for the transformation of the present loose pattern of settlements into the integrated

urban system, indicated as Deltametropolis.

In *decision methods* I will conclude with the other part of this strategy, that is to improve the way by which we come to decisions on land use. A major shift in policy cannot be separated from the need to change the way we decide on it politically. In a way, any policy is the child of the method policy decisions are taken.

The Netherlands today

Like everybody else, the Dutch love their independence, but at the same time we are fully aware of our dependence on forces, more powerful than our own. Restricting myself to wordly forces, first of all, the existence of the country is conditioned by the forces that shape the delta: rain,rivers and the sea. Half of the population, eight million people, live on or below sea level. Second, the wealth of the country is based on international transport, trade and services that make us dependent on producers and consumers elsewhere. Third, our political independence is conditioned by the balance of power between Germany, Great Britain and France. There is no deep feeling of national identity in the Netherlands. Freedom is a commodity. Independence a commercial asset.

Fourth, living in a country that has an urban way of life for many centuries now, we have learned that individual independence is conditioned by that typical climate of the city where people meet on equal footing.

This may serve as a frame of reference that can help to explain the way the Netherlands reacts to changes in the world around them. First of all, this is the emergence of the European Union. Secondly, it is the emergence of a global economy, quickened by the revolution in information and communication technology. Climatologically, this is the eventual rise in world temperature and its influence on the water system. And on a personal level, it is the decline of the influence of religious and political parties on civic behaviour, the loss of great narratives, as they are called in postmodern vernacular.

The European Union, seen as an economical project, raises the question what influence it has on the competetiveness of the Dutch economy, that, in a way, will cease to exist as state boundaries, economically speaking, will dissolve. What can we do to keep our competitive edge? The answer the Netherlands is inclined to give is in line with its history: let us try to strengthen our position as a worldwide centre of transport, trade and services. This is what the Netherlands did when it rose to power in the seventeenth century and this is what the Dutch decided to invest in during the second half of the nineteenth century, after a century and a half of slow but sure decline.

The European Union as a political project raises the question what the Netherlands have to contribute to guarantee its success. First of all, we will have to pay our due for the enlargement of the Union with the middle- European countries, that will need our financial support for at least a generation. Secondly, we may expect intra- European migration to grow. The flood plains on the North Sea coast may prove attractive, especially if change of climate would make it comparable to California today.

The main question is of course: in an emerging system of interdependent city-regions, what quality do we contribute to the system, that for all kinds of reasons can not or will not be offered by others? I think the Dutch are not able to offer anything else than what they are, that is a relatively open,

classless society, with a rather effective democracy and a sense of social equality that is typical to city life. It is a typical bourgeois society. Rather conventional and smug and at the same time able to cope with difficult social and ethical questions like drugs, abortion and euthanasy.

Globalisation of the economy is as old as Marco Polo and Columbus. The bill of exchange, the predecessor of paper money, an Italian invention of the fourteenth century, became the main instrument of a capitalist trade economy that flourished in the sixteenth and seventeenth century in Antwerp, Amsterdam and London (2). And even today, the Netherlands boast to contain the biggest harbour of the world and the fourth airport of Europe, which makes its role in Europe comparable to Hongkong and Singapore in Asia and the Bay Area of San Francisco in the United States.

Ongoing globalisation that shows a free flow of information, capital, goods and services will not stop at a free flow of the main source of production, human labour. Many authors have explained why and how international migration is part and parcel of this globalisation process (3). The Economist reminds its readers almost weekly that it would be naïve to suppose otherwise (4).

So, what we should expect, is that a policy aiming at ongoing economical growth will be accompanied by ongoing immigration and ongoing growth of population.

This is in line with the effects that the development of technology of communication and transportation have had on concentration and dispersal of people on the face of the earth. On a world-wide and continental level the main effect has been dispersal, the emergence of a dispersed pattern of large and very large cities; twelve with more than one million people in 1900 (5) more than 200 in 2000, twenty-five of them having more than five million inhabitants (6); continental dispersal going hand in hand with local concentration in huge cities. On a regional scale, however, these same technologies have accommodated the dispersal of population first and of jobs later on, away from urban concentration. This process of sub- urbanisation, said to have started in late eighteenth century London (7), emerged also in the United States, as the first census data of the United States, also at the end of the eighteenth century, already describe, for instance, Philadelphia *and suburbs* (8).

What we observe, historically, are simultaneous processes of dispersal and concentration, depending on the level of perception one chooses. The conclusion we draw from this experience for the Netherlands is that the European Union as well as the globalization of the economy implies we should learn to observe the Netherlands on a continental level. What we perceive, doing so, is urban concentration: a metropolitan area of five million inhabitants with an overall density of more than 1000 people per sqkm. in an urban field that includes the main parts of the Netherlands, Belgium and Westphalia, showing comparable urban concentrations around Brussels/ Antwerp and in the Ruhr area.

Looking at the pattern of cities, towns and villages in this metropolitan area on a local level, however, what we see is straightforward dispersal. We observe Amsterdam, Rotterdam, The Hague, Leiden and Utrecht as separate cities that in their planning policies show every sign of conceiving themselves, if not the navel of the world at large, then at least of the world they perceive as theirs.
And the Rhine Delta contains a few hundred municipalities that together create an superabundance of navels, that reminds one of Hindu sculpture.
Therefore, the dilemma global trends and the unification of Europe poses to the Netherlands is: what shall we do: accept a role on a continental level, develop the potential of this metropolitan area in the Rhine Delta and accept the consequences of ongoing concentration, accommodation of immigrants and growth of population? Or do we shy away from this responsibility, preferring a less exacting role in the Union, in accordance with the moderate size of the Netherlands, our moderate political clout and our moderate way of life?
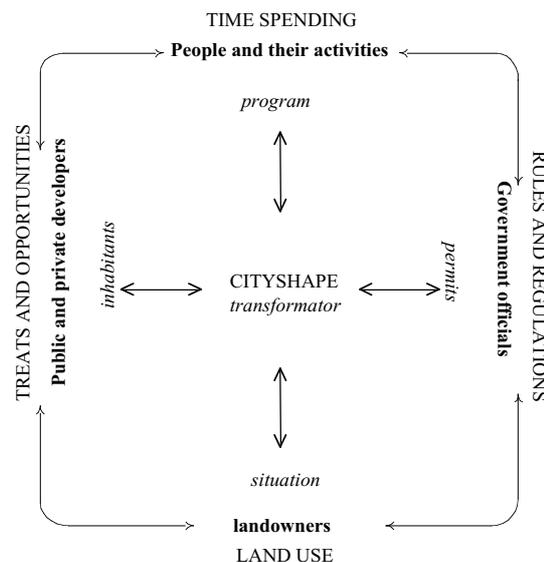
I do not know what the Netherlands will do. There is no doubt that the entrepreneurial forces in the country will opt for a role as a global city. There can be no doubt either that most people in the Netherlands prefer the provincial climate of a well- organised society over the constant need to assess risks and opportunities in a metropolis and the permanent stress of having to decide and act accordingly.

HOLLAND WITHOUT DIKES

Water
Land: 1 m above sea-level

What I do know, however, is that the main cities in this Rhine Delta, Amsterdam, Rotterdam, The Hague and Utrecht, issued a 'declaration Deltametropolis', in 1998 (9), stating that' in (9) a European perspective, the time has come to develop an urban constellation that can rank as a European metropolis'. This urban constellation is called Deltametropolis as a permanent reminder of natures conditions for any kind of human endeavour here and for that reason as the essence of the international image of this Deltametropolis, visualised perfectly in the logo designed by two students (10).

Deltametropolis
What I will try to do next is to clarify this concept of Deltametropolis.

TIME SPENDING
People and their activities
program
TREATS AND OPPORTUNITIES
Public and private developers
inhabitants
CITYSHAPE
transformator
permits
RULES AND REGULATIONS
Government officials
situation
landowners
LAND USE

There are many ways to conceive the city as a system. A useful one for urban designers is to conceive the shape of the city as the transformator of four subsystems that interact (11).
These are:
• the pattern of landuse, manifest in a territorial situation and personified by landowners.
• the pattern of activities, manifest in a temporal program of activities and personified by people who embody these activities.
• threats and opportunities, manifest in initiatives to change the physical shape of the city, personified by public and private developers.
• rules and regulations, manifest in maintaining continuity of the physical shape of the city, allowing change by permit only, personified in government officials who grant these permits.

The landuse system is conceived as consisting of four fairly independent subsystems: the water system, the rural system, the transportation system and the urban system. These are fairly

independent because they differ in shape and character, they differ in comparative influences of natural and human forces, they differ in criteria to measure their performance and for all that they differ in organisation, financial structure and in management (12).

For different reasons, in the Netherlands, all four systems have run into trouble lately (13).

The water system is overloaded by urbanisation in the Rhine Delta, as well as along the borders of the Rhine in Germany. Recent reports have shown that the system is used up to and beyond the limits of its capacity. As a perfect example of the warning in 'The limits to growth' (14), incremental growth of mineralised urban space in the second half of the last century has not been balanced by compensating measures like catchment areas to prevent overload of the drainage capacity of the natural river systems and the manmade water systems of the delta.
Along with climatic change will come greater differences between wet and dry seasons that will have to be balanced and accelerated rise of the sea level that may hinder water outlet more frequent than today. These developments in the past and expectations for the future taken together require us to rethink the whole system.

The rural system is threatened by the economic decline of soil- bound agriculture. Primary production is some 3% of GNP. Two thirds of that primary production is not soilbound but buildingbound, in greenhouses, pigsties and chickenflats. That leaves 1% of GNP earned on fields and meadows, two thirds of the national territory.
Ongoing urbanisation gives a continuous upward push on the price of agricultural land, pushing it far beyond its limits as a cost factor in agricultural production. At the same time, ongoing globalisation of the market exerts a continuous downward push on the price of agricultural products.
Here again, we are obliged to rethink the whole system.

The transportation system, especially with regard to the movements of people, is in bad shape for a series of reasons. The railway system is bankrupt: functionally a failure and financially a disaster. Privatisation of the National Railways is neither the cause nor the cure of this disappointing performance. What privatisation has done, is to bring to light that railway systems are feasible for very specific roles in the transportation market only. Especially in the Netherlands, where a shift from a national to a continental level of perception implies a shift from conceiving the Deltametropolis no longer as a high density country but as a low density city, modes of mass transit like railways have no substantial role to play, as the mass just isn't there. Another reason of the bad shape of the system is that public transport on the road, more specifically transport by taxi, has been marginalized by defensive and restrictive policies of the railway lobbies on national and local level as well as by benign neglect of the automobile industry and oil companies, that have no interest in the efficiency of the transportation system. Indeed, just the opposite: the less efficiency, the more cars and petrol you can sell.

So, this subsystem also needs some reappraisal of its routines.

The urban system, as may be clear by now, is transforming from a rather loose pattern of originally fairly independent urban centres into an integrated urban network of urban centres. Centres that simultaneously compete with each other and are complementary, when perceived on another level of observation. Monocentered municipalities transform into multicentered urban constellations without a comparable organisation of expanded local or metropolitan government. As a part of the landuse system, municipalities are less and less able to organise territorially the pattern of urban facilities in such a way that easy access for all citizens is guaranteed. Market forces have their own private criteria for access. Municipalities between themselves tend to behave just like market forces. There is no countervailing power on this network level to guarantee easy access to all its citizens, be it to good housing, good schools and good health service or safe streets, clean parks and attractive playgrounds.

The need to adapt government organisation to this transformation is well accepted. Proposals have come and gone. As urban centres keep transforming into multicentered networks but metropolitan government keeps being a political dead end, also here some rethinking of the urban system is necessary.

Now what might be the potential of the Deltametropolis concept to overcome these troubles at the same time as offering an answer to the threats and opportunities of European and global influences?

The main potential of the concept is that it offers a unifying concept in a diversified world. Its unifying potential is generated by introducing a common external aim, that is to participate in the competition of European cities, the same way as we participate in the European soccer competition. It is generated also by introducing a common cultural aim, that is to re-establish a tradition of well organised landuse, that somehow has been severely damaged in the past fifty years and nearly got lost. What we like to call ' a fine Dutch tradition' combines social aims with economy of means. In this tradition, in the interaction of spacebound landuse patterns and timebound activity patterns, design is seen as is a very careful integration of the formal representation of nature, expressed in watersystems and in landscape architecture, and the formal representation of culture, expressed in transportation systems and in urban design. By re-establishing this fine Dutch tradition we may reinforce our cultural identity . By doing so we will enrich the diversity of European culture. By participation in the competition of European cities, we will strengthen the European economy.
The Deltametropolis concept, however, is not meant as a blueprint for the future, a kind of masterplan to be implemented by some kind of authority. That would never work. Deltametropolis is an idea, no more and no less. It is a leading thought, that can be transformed into action; action whose effects can be assessed by criteria, generated by this same idea. If this idea takes hold, Deltametropolis will become the common denominator of shared history, experience and culture, like Paris, Berlin, Saint Petersburg, London. That may be its strength, as it combines focus with flexibility. It may be its weakness, the pitfall being that people will pay lipservice to the idea but will not act accordingly.

The development strategy of Deltametropolis is first of all to share the idea with others and by doing so enrich its content, strengthen its force and enlarge its potential. The idea has grown from several sources since the nineteen-eighties and it has been summarised in the declaration Deltametropolis of 1998 I mentioned already. In 2000 an Association Deltametropolis has been established, whose members today are the twelve main cities, the waterboards, chambers of commerce, employers association, farmers association and several landscape organisations and housing corporations active in the metropolitan area. This part of the strategy has been rather succesful, as it has put Deltametropolis on the political agenda and there has become part of national landuse policy.

The second part of the strategy of the Association Deltametropolis is to be very selective in focus, restricting its political action to one issue, that is landuse planning, to one territorial level, that is the metropolitan level, and to only those two landuse systems that condition the internal and external connections of the Deltametropolis: the water system and the transportation system. This part of the strategy is now being developed. The concept of the watersystem has been introduced as Water Realm. That is being discussed in seminars and conferences that generate a wide array of reports and publications. The concept of the transportation system has been introduced as Deltanet. And a brochure on Deltanet will be presented to the Minister of Transportation and Watermanagement one of these days by the cities of Amsterdam, Rotterdam, the Hague and Utrecht.

The third part of the strategy is to improve decision methods. This line of thought has its origins also in the nineteen eighties as the Scientific Council on Government Policy issued some reports on policy-driven explorations of the future. In the nineteen nineties this same Council issued reports on future landuse, landuse planning and decision processes in landuse policy, with regard to projects of strategic scope and size as well as to the political content of landuse policy. These reports are one expression of a broad field of experiments in civic policy participation. Deltametropolis is part of this mood in the country. The Deltanet Decision Support System is no more than one example between many.

Deltanet

Let me demonstrate the second part of the strategy by focusing on Deltanet.

In the present situation in the Netherlands, movement of people on road and on rail are considered to be more or less totally separated systems, regulated by different laws, influenced by different lobbies, managed by different organisations, predicted by different calculation models and even, until a very recent reappraisal of policy, officially separated by forbidding easy acces by car to the main railway stations.

travel distance	car trips	Share of public transport
0 – 15 km	70	6
15 – 30 km	17	12
> 30 km	13	18

In the present situation in the Netherlands, 70 % of car trips is for travel distances of less than 15 kilometer, 17 % for distances from 15 till 30 kilometer and 13 % for distances of more than that. In these three categories of travel distances the share of public transport in all trips is some 6 % for distances less than 15 kilometer, some 12 % for the 15 till 30 range and some 18 % for the long distances (15).

So, on a national scale, the role of public transport on a local level is negligible, mediocre on the level of city regions and has a considerable share of the volume only on longer distances, and even here less than 20 %. This will not come as a big surprise because even in the most densily inhabited area of the country, the urban pattern is dispersed and densities are generally low. The Deltametropolis is comparable more to the Bay Area and to Los Angeles in California than they are to European examples like Paris or London.
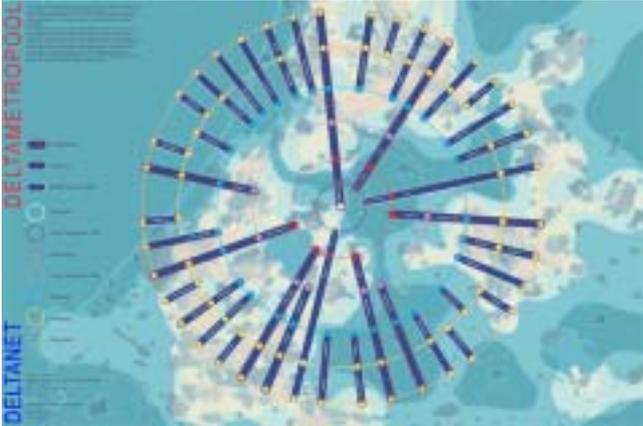
The metropolitan requirements on the system are twofold (16). One: travel times within the Deltametropolis should be reduced to one hour per trip, as a maximum, to attain that its inhabitants will experience it as a coherent and interconnected daily system. Two: use of space of the system within the metropolitan area, as well in its urban as in its rural parts, should be restricted as far as is possible in accordance with the first requirement.

The consequences of these two requirements for the design of deltanet are first of all that the separation between road system and railsystem should be replaced by integration.
Second consequence: there is a need for a main shift in focus of attention within the transportation system. The primacy of the network of connections is replaced by the primacy of the pattern of connectors, because these connectors embody the means of acces to any one of the different modes of transport as well as the linkages between these different modes, to wit the connections between the road system and the rail system (17).

The third consequence is that looking at the facts, the only way to increase the share of public transport on the short distances and, to reduce use of space, is to enlarge the share of public road transport, that is by a wide range of taxi systems.
Fourth consequence: the interaction between the performance of connectors as points of acces to Deltanet and as centres of activity within the Deltametropolis has to be monitored on a frequent basis, just like it is done with the communication system in, for instance, the United States, where they keep track of the 'most wired cities and towns' and The Internet Performance Authority publishes, a 'keynote business internet performance index' on a weekly basis (19).

As anyone can imagine these requirements and its consequences turn present policy on traffic and transport more or less upside down and present policy on urban development inside out. This enhances the need for improvement of decision processes.

Decision methods
The present method of deciding on landuse in the Netherlands shows a relatively wide gap between general policies for a distant future and day to day interventions in the existing environment. The same is true for the separation between public policy statements and investment decisions of public and private parties. The co-ordination between the different sectors of public policy as well as between the different levels of government is relatively well-organised; officially, but also in practice. Nevertheless, all these authorities have different tasks to fulfil, different roles to play and different responsibilities they are accountable for independently. Because of that, all these people tend to be more interested in their individual projects than in their interaction and co-ordination. More or less untill the nineteen sixties, this system was coordinated by a well-developed body politic, consisting of political parties, politically affiliated broadcasting companies and daily newspapers, and politically affiliated labour unions and employers associations. This whole social structure of discussion, forming of opinions and coming to decisions has disintegrated and vanished into thin air. This has given rise to processes of decision making that do not only take a very long time – they allways did – but are more or less totally unpredictable in outcome and have to be repeated frequently to make sure that they also are legally sustainable.
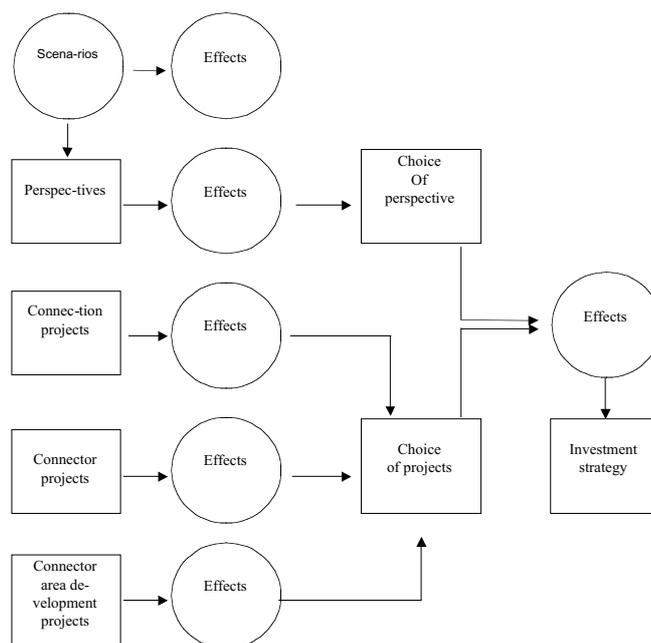
Metropolitan requirements on the decision processes are, however, that they should be speedy and sound. Indeed, in a European competition those metropolises will have a competitive edge that are able to take strategic decisions quicker and better than others (19).
The Deltanet decision support system should help to attain such a level of decisiveness (20).
The consequences of this double requirement are first of all that the decision method should confront people with the interaction of long term policies with short term interventions in the existing situation. For this reason, Deltanet DSS distinguishes between probable futures or **scenario's**, desirable futures or **perspectives** and interventions or **projects**.
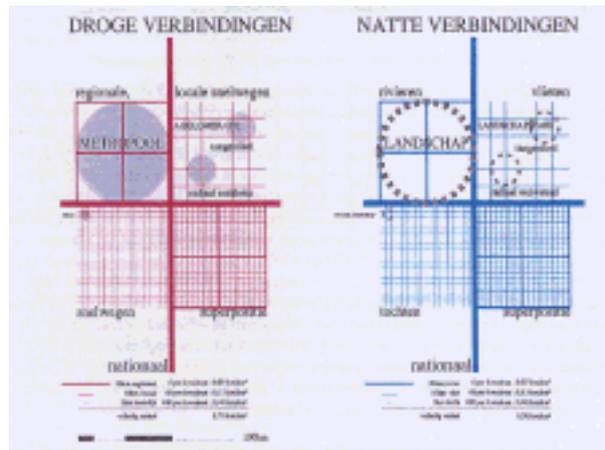
Second consequence: decisions should be directed to levels of competence, that have to do with the size and content of the area to be served by the system. For this reason, Deltanet DSS distinguishes between areas with systematic different types of landuse and with systematic differences in size, according to a method to analyse landuse patterns and its possible future transformations, the morphological vocabulary developed by my colleague Taeke de Jong.
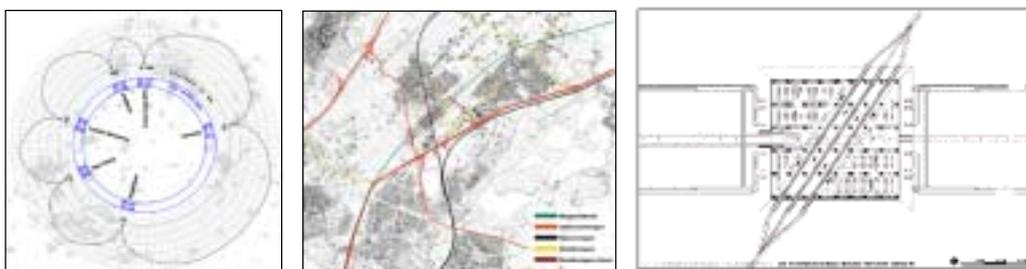
Metropolitan system ⟷ Urban system ⟷ Architectural system

LEVELS OF COMPETENCE   /   INTERDEPENDCE OF DECISIONS

Third consequence: decisions should be shown in their interdependence, so people that have to decide can pursue a certain line of thought and can follow the line of thought pursued by other participants. For this reason Deltanet DSS distinguishes between (1) inventorization and choice of options as an individual person, (2) interaction and deals between actors that have to co-operate to succeed and (3) collective evaluation of the results, is the agreements that have been reached. At all times, people keep an eye on all levels of competence.

Fourth consequence: decisions that have to be speedy and sound require of participants in this process that they take full responsibility for their decisions. To enable them to do so, they have to be aware of several roles each and every one of them does play in the process: as an individual person, with personal values and preferences; as an actor, with certain interests according to the interest groups one belongs to; as a citizen, with a public responsibility to sustain society. For this reason Deltanet DSS enables participants to make individual choices on a personal basis, let them decide as actors on investments in projects and let them vote as citizens on perspectives.

Human value systems are at the core of all human decisions. There once was a time that political parties could act as the embodiment of different value systems in society. As political parties have lost this power, responsible citizens have to search for new methods to decide on public matters. For speedy and sound public decisions they have to reinvent democracy.

D.H.F.
01.06.01

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