# The composition of a master plan

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*Key words*
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*Abstract*
This chapter describes a Dutch method to create a master plan applied in the conurbation of Rotterdam. It concentrates on its first phase: a general vision for the area before specialists give their view and projects for realisation are selected. An application in the Turkish city of Adapazarı is elaborated. Between both cases some theoretical aspects of making a vision for an urban master plan are elaborated.

# 1 Introduction

In the Netherlands, municipalities make zoning plans (bestemmingsplannen) with legal obligations for citizens on the basis of master plans (structuurplannen) without such obligations. However, provincial and national authorities check if these zoning plans are according to the master plans and if the master plans suit within the provincial regional plans (streekplannen) and on their part if these suit within the national plan. So, at these four levels, plans are designed. On the higher levels of scale individual buildings disappear from view: the legends differ from those of zoning plans. They are more abstract, but nevertheless they do have a great impact on the future on the territory its inhabitants live in. So, many people are interested and involved in their development.

This paper concerns the composition of master plans, in particular their first phase. To explain how these plans are made, we start with an example from the municipality of Rotterdam. Municipal master plans in the Netherlands are renewed every 10 years at average, but some municipalities like The Hague, part of the same urbanised area within which Rotterdam participates (South Wing of 'Randstad'), did not renew their master plan for more than 50 years. The master plan of Rotterdam started with a general vision before specialists gave their sectoral visions. We end with a general vision for Adapazarı, Turkey.[1] In between we will give an more theoretical discourse about that difficult first step: creating a vision for the conurbation.

# 2 A Dutch method

## 2.1 The Master Plan Rotterdam 2010

Rotterdam renewed its master plan some years ago. It concerned a territory with some parts (see *Fig. 1*), separated by other municipalities like Maassluis, Schiedam, Vlaardingen and the Harbour with its own administration.

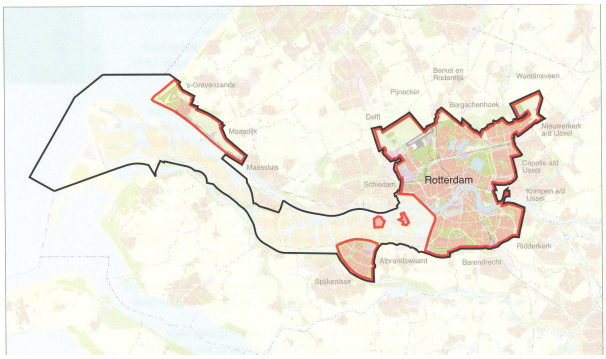


*Fig. 1 The municipality of Rotterdam, its territory and its harbour ruled by its own administration.*

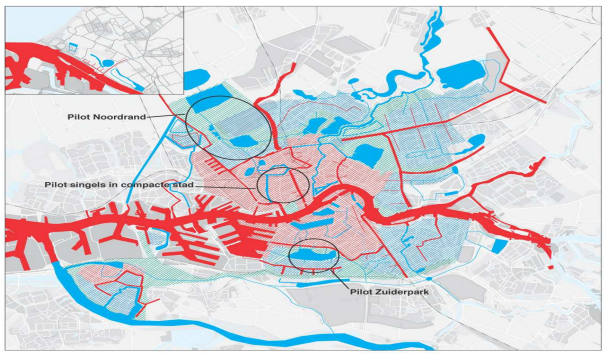


*Fig. 2 Partial study Blue city*

The method of working to make the master plan started with a vision concerning the desirable future of the municipality as a whole, its challenges, possibilities, constraints, boundary conditions or preconditions of existing policy, summarised by the term 'vision' (see *Table 1*). That outlook gives an answer at the question: 'What makes the city unique?'. It directs the ideas of all actors involved.

Then, many partial studies were made, concerning probable trends and policies of employment, mobility, housing, leisure, the exploitation of a location along the river and additional studies concerning the relation of the city with the harbour, the application of high rise buildings, the recent developments of the South bank, the planned new cross-river connection and environmental outlooks. They had to be integrated in an 'Integral spatial structure image Rotterdam 2010'.

However, a plan like that has no use without a strategy of implementation by defining crucial projects on urban and district level realizing or supporting the broad idea concerning the available possibilities of time, space and money.

| Vision | Structure image | | | Strategy |
|---|---|---|---|---|
| **Three core ambitions**<br>The river as a unique challenge for the city | **Partial study city of entrepreneurs**<br>trend and policy | **Partial study Mobile city**<br>trend and policy | **Partial study Blue city**<br>trend and policy | **Clever management**<br>of time, space and money |
| | **Integral spatial structure image Rotterdam 2010** | | | |
| **Materials**<br>Political aims Rotterdam calls<br>Rotterdam 1999 and trends<br>Historical-spatial analysis | **Partial study Residential city**<br>trend and policy | **Partial study Recreational city**<br>trend and policy | **Additional studies:**<br>City/Harbour<br>High rise buildings<br>Studio South<br>New cross-river connection<br>Environmental outlook | **Effort RPR 2010**<br>2 urban strategic areas<br>6 strategic areas district approach<br>6 categories of projects |

*Table 1 The method of working to reach a spatial plan Rotterdam (RPR) 2010*

A method of working like this is not only accurate at the level of a master plan, at any level of scale something like that has to be done.

## 2.2 Three core ambitions and a promising challenge

The core ambitions defined in the beginning concerned Rotterdam as a varied and attractive place to live (see *Fig. 3*), a centre of Randstad's South Wing (see *Fig. 4*) and an European city with a world harbour (see *Fig. 5*). Ambitions do have a level of scale.


*Fig. 3 Ambition 1: Rotterdam varied and attractive*

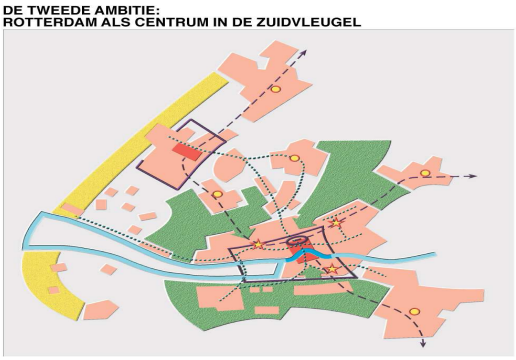


*Fig. 4 Ambition 2: Rotterdam centre of Randstads South wing betweenThe Hague and Dordrecht*

*Fig. 3* suggests a special ambition of variation within district level by repetition of a Mondriaan like pattern on the level of the municipality, but variation occurs on different levels of scale. The question remains which kind of variation will be chosen on every several level of scale. For example *Fig. 4* shows a clear difference on the regional scale of the South Wing, forced by topography. The Hague is located along the seacoast, Rotterdam more centrally along the riverside. On an even higher scale Rotterdam and its

harbour get their European identity being part of the Rhine delta, the Randstad and a European network (see *Fig. 5*). From Paris into Strassburg (1 hour!) and from Cologne into the South connections are already of a high-speed quality.

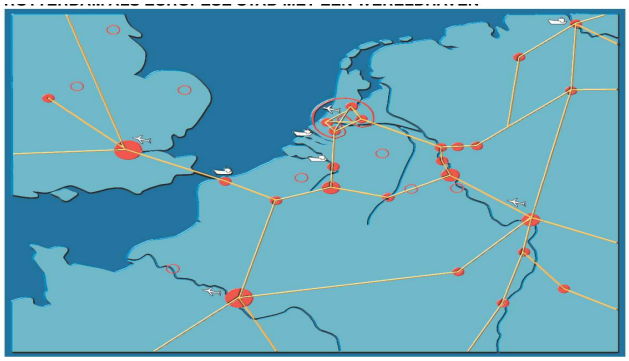

*Fig. 5 Ambition 3: Rotterdam European city with a world harbour*

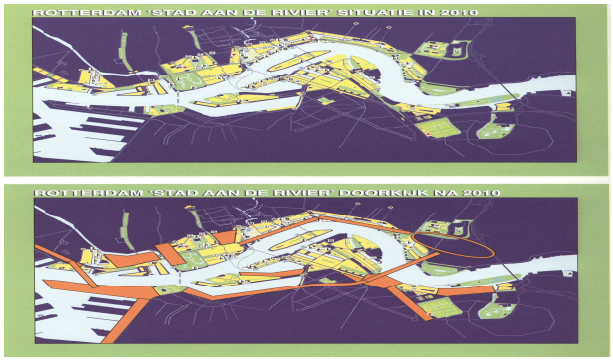


*Fig. 6 Ambition 4: The river as a unique challenge for the city in 2010 and after 2010*

A special promising challenge occurred by removing the old harbour areas in the neighbourhood of the city into the contemporary large Western harbour area extending into the sea. Until 1970, these old harbours separated the city from the beautiful river banks. Once released, these areas could restore the relation of the city with the river by careful design of new residential and business areas. However, these areas are not released at once. About 20 000 people are still working there. So, a careful planning should be made to exploit the new possibility of many locations with a view on the river.

## 2.3 Partial studies

After roughly defining these desires and opportunities, different sectors of actors in the field were asked to design their own ideal city or Rotterdam in at least 3 versions: inhabitants, entrepreneurs, experts in the field of civil engineering, shipping, traffic, mobility, economy, business, trade, employment, housing, leisure, and so on. They made their own plans, and seeing each other's plans they became aware of the city's varied potentials. The population was involved in conferences showing models, guided by process managers.

*Fig. 7 Partial study City of entrepeneurs*

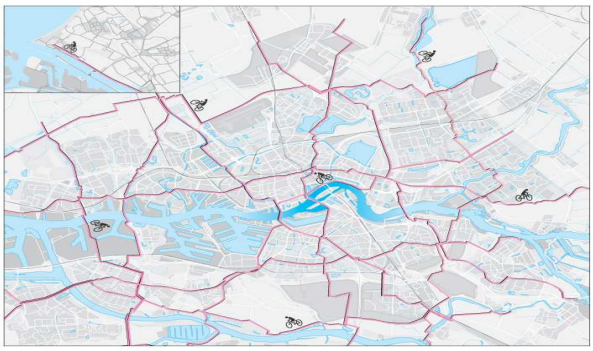

*Fig. 8 Partial study Mobile city*

So, the entrepreneurs focused on accessibility for cargo transport, while the traffic engineers stressed the accessibility of work and leisure by public transport and slow traffic.

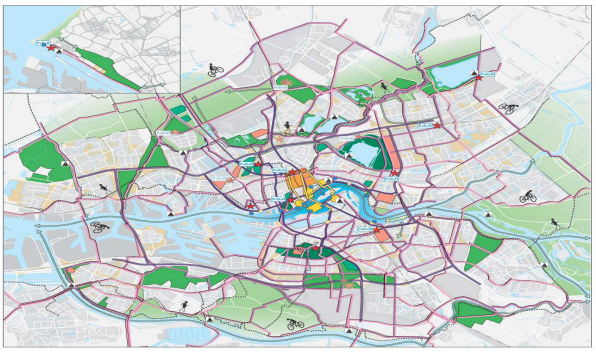

*Fig. 9 Partial study Recreational city*

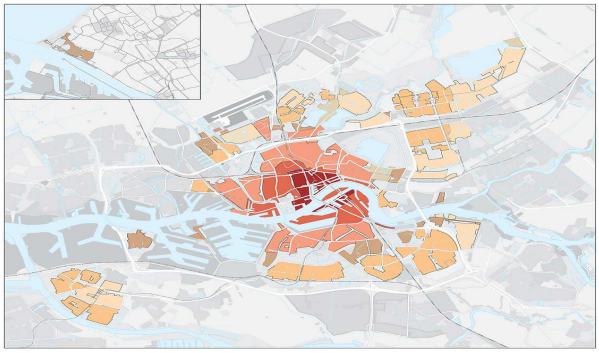

*Fig. 10 Partial study Residential city*

The leisure experts stressed the regular distribution of green areas, housing experts a relevant differentiation of residential areas with high and low densities, expensive and cheaper dwellings.

## 2.4 Integration and articulation

The integration in one map shows a city with two centres: an old one on the North bank, a new one on the South bank of the river. A new bridge in the East connects Kralingen with the South bank. The High speed train from Paris into Amsterdam has its stop in Rotterdam, the metro network is extended.

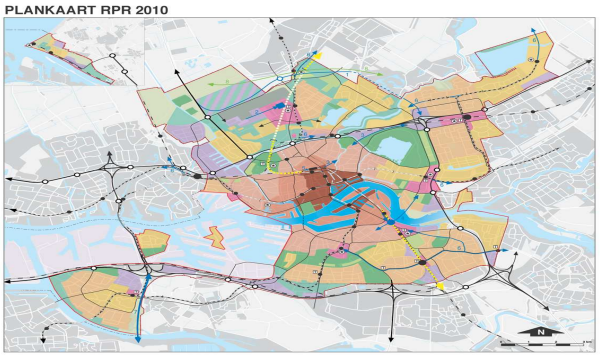


*Fig. 11 Plan RPR 2010*

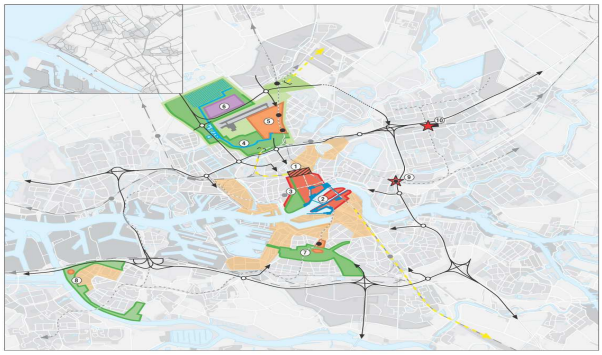

*Fig. 12* Urban strategic areas

Many old rail yards and other barriers are removed. The city becomes internally connected.

## 2.5 Projects of the city

At the Northern boundary several projects are developed. For example the rural area Schieveen becomes half industrial area, half nature reserve possessed by Natuurmonumenten (Dutch National Trust). The Central Station and the Centre at the North bank are re-structuralised, the Centre at the South bank (Kop van Zuid) is developed. With its most impressive views on the river, it contains the most expensive segment of housing.

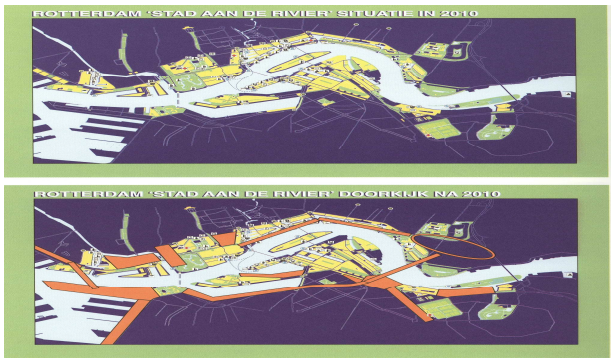


*Fig. 13 The river as a unique challenge for the city in 2010 and after 2010*

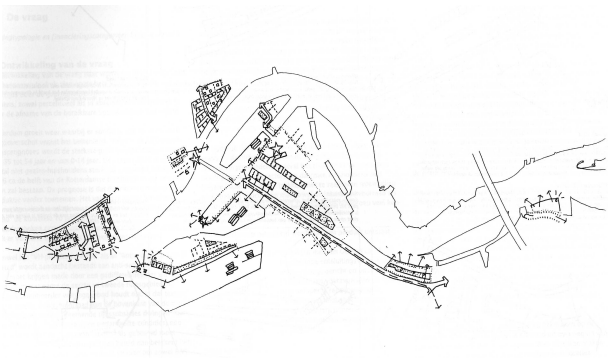

*Fig. 14 Water Projects*

Within the existing city about 20 000 houses will be built (a city within the city). The question arises how they can be differentiated (type-differentiation) to become not all the same. Restrictions to the height are no longer valid, the rule is now: the higher the slimmer.

*Fig. 15*

Ideology, outlook, Position statement

Sectors en programs

Integration and weighing

Projects

Realization strategy

*Summary of the method of working.*

# 3 The first step: creating a vision

Following roughly the method of working in Rotterdam (see *Table 1*), the composition of a master plan starts with an abstract, broadly supported collective vision (see section 4.4 below) on the identity of the area. However, that vision on a desirable future of the area should be based on a study of possible and probable future contexts (scenarios, see 3.1) in which this identity can be realised.[2]
That study offers the external variables (parameters) of separate internal studies per sector. Stakeholders and experts per sector are brought together in projects to make at least three alternatives for the area answering the question what is possible, probable and desirable from their point of view. The integration of these views in a spatial composition is the very start of designing a final master plan. However, that is not the final step. In the mean time the administrative organisation has to be prepared to manage the realisation of the plan.

## 3.1 Study of context

The context of a metropolitan master plan 1:25000 (roughly a radius R=30km) is a local region (R=100km) with an internal division of tasks between its urban and rural landscapes (R=30km). On its turn a larger sub-national region (R = 300km) contains more of such local regions dividing *their* tasks within that larger context. The tasks to be divided on a given level of scale are different from those divided on any other level (see 3.2). For example, administrative tasks to be divided are different on national, sub-national,

regional and local scale. In the same way cultural, economic, technical and ecological tasks to be divided or sectors to be distinguished (see 3.3) are different on any level of scale.

Moreover, their futures are different. These future contexts have to be studied as possible (see 3.4), desirable (see 3.5) or probable (see 3.6) futures to estimate the field of expected problems (see 4.2) of which some can be aimed (see 4.3) to be solved by a master plan. The obtained awareness of these problems inspires to look for specifically selected examples elsewhere (precedents, see 0).

## 3.2 Levels of scale

Increase in scale in a perspective of increasing globalisation forces to argue on different levels of scale separately (global, continental, national, regional and so on). Any level of scale has its own properties, possibilities to be influenced and developments, time scales of change. So, conclusions drawn on local scale can not be applied to national or continental scale without any concern. This important notion can be clarified by the so-called scale paradox.

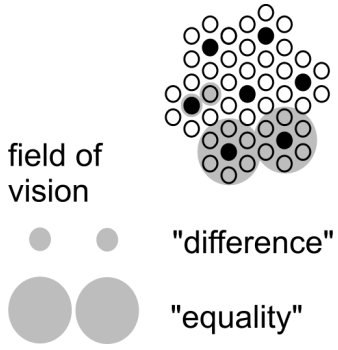


Fig. 16 *The scale paradox*

The *scale paradox* means an important scientific ban on applying conclusions drawn on one level of scale to another without any concern. Fig. 16 shows the possibility of changing conclusions on a change of scale by a factor 3. There are 7 decimals between a grain of sand and the earth. That gives approximately 15 possibilities of turning conclusions. Between a molecule and a grain of sand applies the same. This ban is violated so many times, that scale articulation should be an important criterion on the validity of scientific judgements.

The scale-paradox is not limited on concepts of diversity. An example of turning conceptions into their opposite by scale is the duality of aim and means. National means can be local aims.

To avoid problems of invalid argumentation, 22 orders of size can be distinguished to be studied separately with their own scientific instruments of analysis and synthesis (see Fig. 17).

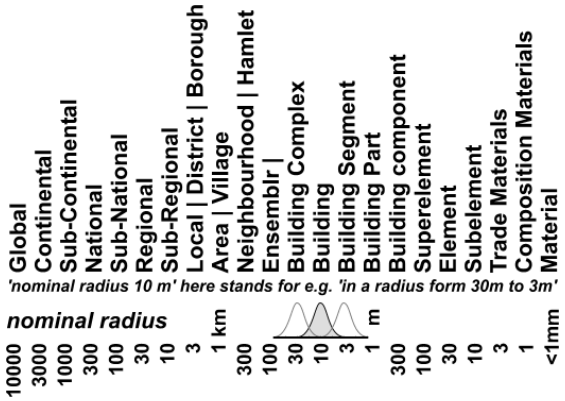


Fig. 17 Orders of size…

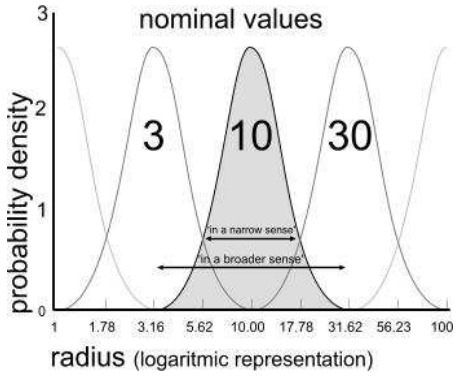


Fig. 18 to be named as nominal values

Though these orders of size are *named* as R = 1, 3, 10, 30km and so on, they should be interpreted elastically between their neighbours ('nominal' values, see Fig. 18).
So, nominal radius R=10km means any radius between 3 and 30km.

## 3.3 Layers

Administration, culture, economy, technology, ecology, mass | space | time (physics), are 'layers' of a map, an area, its historical development or plan for the future. They should be primarily analysed separately and on different levels of scale. After all, each layer has its own data, subdivided in its own categories and classes allowing its own ways of analysis and synthesis. These categorizations limit the possibilities of reasoning raising methodical problems by connecting layers and levels of scale.

**Sectoral data**
Data about these layers should be collected on the lowest level of scale possible. In that case they can be aggregated to a higher level of scale, sometimes combined into new categories to make other kinds of reasoning possible, appropriate at that scale.
The reverse, some indicators at a higher level should be disaggregated into separate values to allow more specified conclusions. Such a database supposes a professional administrative organization able to collect and store time series of data in different layers and on different levels of scale, at any time available for experts and stakeholders.

**Conditions supposed in causal inference**
Any layer has its own suppositions, way of reasoning (paradigm). For example, reasoning about management is an other way of reasoning than reasoning about culture. However, they are related because management tacitly supposes a culture (making reliable appointments, using the same language, a level of education).

That does not immediately mean a culture *causes* a determined style of management.
A culture makes a class of management styles *possible*.
So, culture is a *condition* for management or administration (see *Fig. 19*).

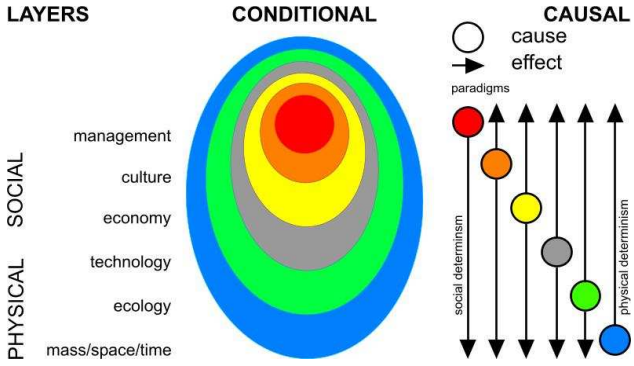


*Fig. 19 Conditional and causal reasoning*

**Causal reasoning**
However, causal reasoning is dominant in any expertise. A manager or administrator has to be convinced that her or his efforts have any effect, causing changes in culture, economy, technology, ecology or space. Her or his 'paradigm' should be one of social determinism: "If you really *want* something, it will be done!". A cultural expert has a cultural determinism as a paradigm: "If people can imagine something, it will be done!". An economic expert has an economic determinism as a paradigm: "If economy allows it, it will be done!". In the same way there are also physical determinisms. They are all right, but they can reach opposite conclusions according to their different 'general' paradigms ignoring different specific contexts. To make decisions in a context comprising all layers, you need conditional thinking.

**Conditional reasoning**
So, *conditional* reasoning about conditions and possibilities is not always also *causal* reasoning about causes and effects. Causal reasoning is only valid taking certain - often tacit - conditions into account. For example, a minimal level of economic potential is a necessary condition for different cultural possibilities like education, values, aims and standards of safety, use, ethics and aesthetics, different life styles and so on. In the same way, new technologies make new forms of economy possible, but technology on its turn is bound to ecological conditions like resources, a human population large enough to support that technology and a sustainable way of using human and physical resources.

**Probable and possible futures**
The difference between cause and condition is the same difference as between probable and possible developments. A master plan should not primarily make activities *probable*, it should firstly make different activities *possible*, providing all technical conditions. That philosophy is called 'conditional planning'.

## 3.4 Possible futures

Imaginable possible futures are *limited* by boundary conditions of time, space (how much time do we have, how much space? Which risks?), ecology (growth of population, vegetation, biodiversity, carrying capacity), technology (energy supply, resources, information, statistics), economy (consumption, investments, social pressure), culture (education, life style, spatial claims) and administration (global, continental, national, regional, local division of tasks, systems of land registration, possibilities of mortgage, hypothec based on that public land registry, often making loans possible to start new enterprises).

**Improbable possibilities**
However, possible futures, the *potential* of the area, could be *extended* by innovative ideas, raised in brain storm sessions and designs.
Possible futures are often confused with probable futures. Anything probable is per definition possible, but not all possible futures are also probable (see *Fig. 20*).

To find these *improbable* possibilities requires creativity, skipping seemingly self-evident suppositions no longer valid in the actual or expected future. It requires conditional thinking rather than purely causal thinking.

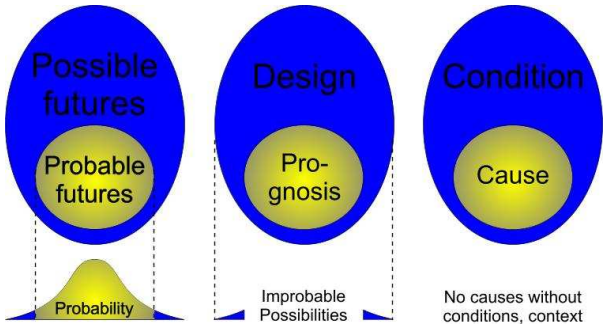


*Fig. 20 Improbable possibilities*

## 3.5 Desirable futures, made possible by a master plan

A collective expectation of future impacts of the intended master plan on different layers and levels limits the desired content of the master plan to avoid disappointments about its effect.

To obtain a collective expectation games can be useful (for example Frieling's Metropolitan Debate or De Jong's Future Impact computer programme, see *Fig. 21*).

The spatial object of a master plan ranges from 300km until 100m, but its impacts can influence any level of scale and layer. The desirable impacts are the programme of requirements of the master plan. But whether these impacts will be achieved or not, depends on the future context you may expect.

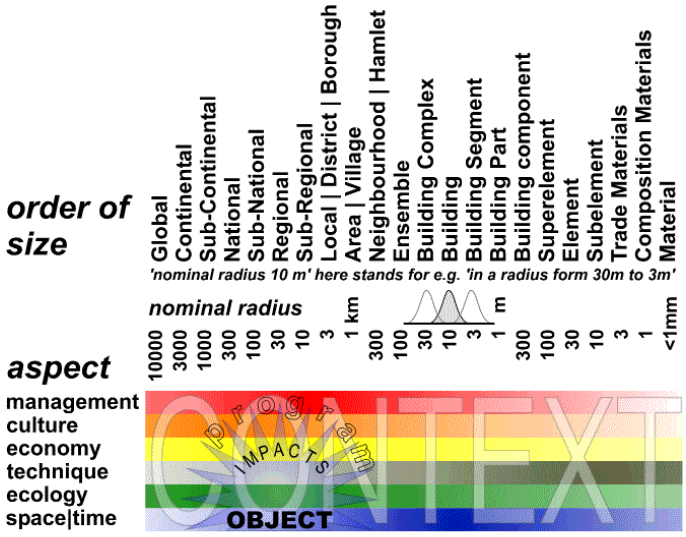


*Fig. 21 The future impact of an object like a master plan*

## 3.6 Probable futures

The probable future context determines the success of these desirable impacts (programme of requirements). Realistic scenarios of space-time (earthquakes: when and - concerning their impacts - where), ecology (demography, wild settlement, agricultural and natural potential), technology (installations, networks), economy (employment), culture (tradition, imagination, education), administration (division of tasks, initiative) produce awareness about the field of *problems* to be expected.

# 4 A vision for Adapazarı

The municipality of Adapazarı in the Turkish province of Sakarya, destroyed by earthquake in 1999 with great impact (ample 15,000 casualties), took many measures. Moreover, it commissioned Delft University of Technology in 2005 to make a scenario for future development summarised here. That scenario is now gradually elaborated into a master plan by the municipality. The majority of the fast growing population (approximately 400,000 inhabitants) lives on a dangerous deep 'lake of clay' showing liquifaction in case of earthquake. Technically safe building solutions on that kind of soil are expensive. Based on experience in the past one can expect earthquakes of the same severity once in 30 years. Building on the solid grounds surrounding the 'lake of clay' would reduce risks substantially. However, these grounds show risks of landslides in case of earthquake. The ways to calculate risks and to determine the acceptance of risks is comparable to those used in lowlands threatened by floodings.

## 4.1 Scenarios

Scenarios are imaginable futures, not plans.
They make us aware of what could happen, and which chain of effects that could have. Then we can decide what we should *know* to make plans in different futures useful to reduce ecological, technical, economical, cultural and political risks.

**Knowledge and risk**
Applied knowledge reduces risks (chances x effects). Risks and knowledge both have their costs. These are not only financial, but also costs of loss of human life and happiness. To increase our knowledge takes time, and time passing can increase risk itself. But every period we increase our knowledge we may be able reduce risks better. When do we have to stop collecting knowledge and start making plans to reduce risks?

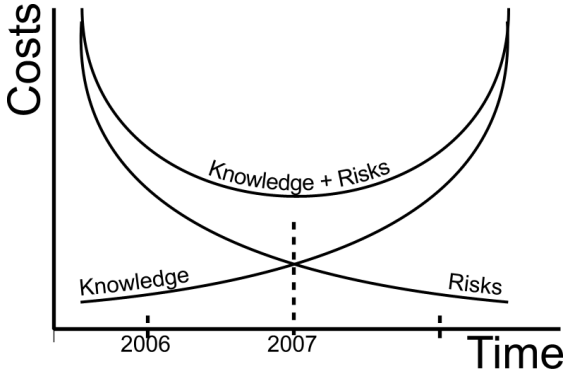


*Fig. 22 The costs of increasing knowledge and reducing risks.*

We should start making plans as soon as the costs of increasing knowledge are higher than the costs of risks (see *Fig. 22*)!

**Possible extremes**
To get an overview of imaginable scenarios it may be useful to sketch less probable extremes, based on the same suppositions (for example the same time span, area and population).
Any scenario should start by an interpretation of the existing situation. For example, *Fig. 23* shows an interpretation of the Adapazarı population (Turkey) situated in a representation of its physical environment. The population is represented in dots of 1000 inhabitants (400000 inhabitants, 400 dots). The dots have a real surface of 1000 x 30m$^2$ ('net dots': the floor surface 1000 inhabitants are supposed to need in their homes). So, on an enlargement of the drawing you can read off the population density on any chosen surface. The deviation of this map is estimated on 5% from the exact numbers and 300m from the exact locations. The scale of the map is readable by the radius of circles R=10km, R=20km and R=30km.

**With and without a master plan**
Two extreme scenarios were sketched for 2 000 000 inhabitants in 2030 (see Fig. 24 and Fig. 25).
Fig. 24 shows an imaginable metropolis in 2030 without master plan and supervision concentrically grown from R=3 into R=15km and further in an area with very high earthquake-risks. Larger pink dots R=3km indicate the imaginable wild industrial settlements around the highway Istanbul-Ankara (black line) near the earthquake-fault, caused by an overflow of the Istanbul region. The estimated number of casualties by a next earthquake is 120 000 inhabitants.

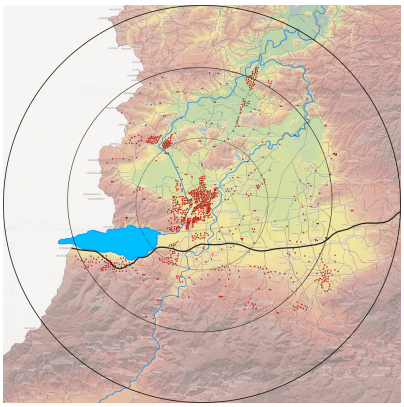

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*Fig. 23 Actual population of Adapazarı 2005*

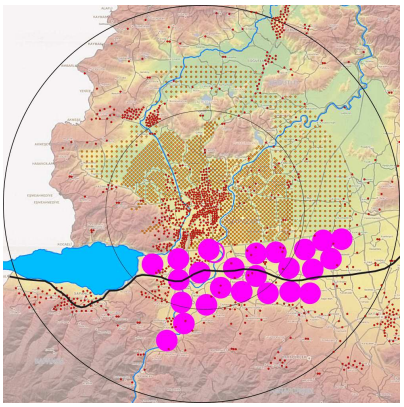

Fig. 24 A high-risk scenario 2030

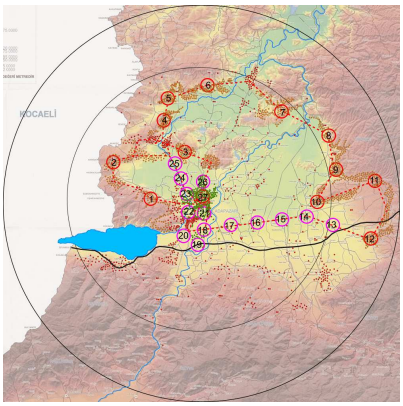

Fig. 25 A low-risk scenario 2030

**Reducing risks**

An accurately realized and maintained master plan can reduce the risks of such a development (see Fig. 25), but the consequences of this scenario are big: 200 000 inhabitants have to be evacuated into safer places. Industrial settlements and recreational facilities replace the residential areas becoming available (green spots in Fig. 25) and close a ring of infrastructure for commuter traffic and intermediary deliveries. The number of casualties by a next earthquake is difficult to estimate. It depends on many managerial (maintenance), cultural (risk-perception and -acceptation), economic (paying the measures), technological (earthquake-resistant construction), ecological (population growth, vegetation and land slides) and time-spatial (spatial possibilities within a time-frame) factors. Of course everybody hopes there will be no casualties at all (zero-risk scenario).

**Probable and desirable futures**

It is clear that both sketched scenarios are not very probable. The question is, to find a realistic (manageable, acceptable, payable, technically executable, sustainable, spatially and temporally fitting) scenario in between the extremes as close to a zero-risk scenario as possible (see *Fig. 26*).
And time works against that desirable development. The longer we postpone necessary measures, the closer a high-risk scenario becomes probable. Apart from actual problems any solution raises a secondary field of coherent problems readable from any scenario.

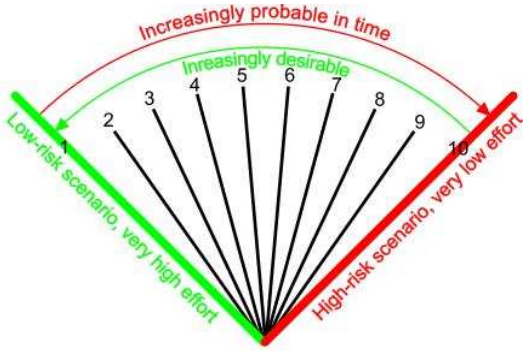


*Fig. 26 From zero into high risk*

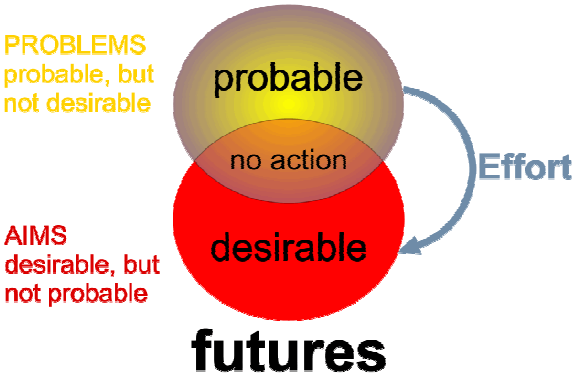


*Fig. 27 Subtracting probable and desirable futures*

## 4.2 Field of problems (probable, but not desirable)

Problems are part of probable futures we do not want. So, if we make scenarios of probable and realistic desirable futures, we can subtract the desirable futures from the probable to overview the field of problems we have to solve. Suppose, we concern the high risk scenario (see Fig. 24) as increasingly probable, and the low risk scenario as desirable, but not possible in the time given (see Fig. 25). Then we have to choose an acceptable risk level in between as a desirable *and* possible scenario (for example scenario '4' in *Fig. 26*).

**Physical and economic risks**
More concrete we could ask: "How many casualties do we accept next time (supposed we can calculate their probability for any scenario)?" Directly related to that 'ecological' question is the economic effort of reducing the probable risk level into the desirable (see *Fig. 22*). Could we afford the costs? How far can we go? How far do we want to go, taking our *economic* risks into account? These are sensitive, but crucial questions to be answered. Without a carefully prepared political decision about risk-acceptance we can not choose a realistic desirable scenario, a sustainable programme of requirements for the master plan.

**Physical risks**
Suppose the probability of casualties in Adapazarı is now 5000 per million inhabitants per year (1000 per 200 000 inhabitants now, that is 20 000 in the 20 years here supposed between two earthquakes, but increasing with the growing number of inhabitants in the future) [3]. Suppose the natural growth of population will be 2% and - by the attraction of the Istanbul region and its pressure on its periphery to accept industrial developments, accompanying services, employment and population - the immigration will be 4%. Then the population of Adapazarı will be ample 2 000 000 in 2030.
If the probability remains 5000 casualties per million inhabitants per year, an earthquake in 2030 would cost 30 x 5000 x 2 = 300 000 casualties. Suppose scenario 10 (high risk scenario without any effort) does not reduce that risk, and scenario 0 (zero scenario with an unattainable effort) reduces it into zero casualties, scenario 1 could reduce the risk into 30 000 casualties or 500 per million inhabitants per year, scenario 2 could reduce the risk into 60 000 casualties or 1000 per million per year and so on.

**Economic risks**
It is clear anybody is inclined to choose scenario 0 without any casualties. But suppose it is calculated to realize scenario '1' already will cost the total 100% actual income of the population per year, scenario '2' is calculated to cost 50% and scenario '3' will cost 33% and so on.

In other words, suppose the income tax for everybody will be the total 100% of the actual income per person per year for scenario '1', 50% for scenario '2', 33% for scenario '3' and so on. Which scenario would the population choose then? These suppositions are of course imaginary, but they are possible.

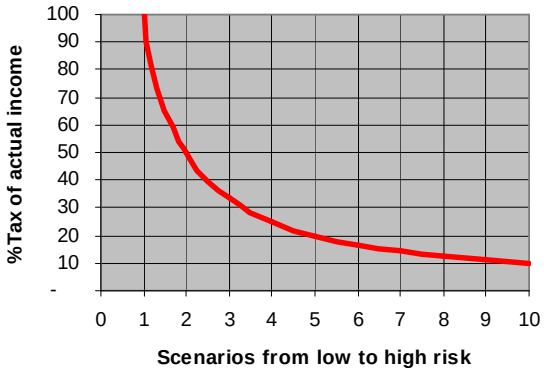


*Fig. 28 An imaginable relation of costs per scenario*

**Risk management**
These morally nearly intolerable exercises of risk management are necessary to be aware of the problems that could rise realizing any scenario. They show the necessity of collecting reliable data to adjust the assumptions we made in ignorance and to calculate realistic risks and costs. They show the necessity to think through the managerial (could we get the necessary sacrifices of the population to realize the chosen scenario?), the cultural (could we convince the population of the seriousness without causing fatalism?) the economic (which balance between costs of risk reduction and increasing income by investments to increase the taxes we need?), the technological (which infrastructure will facilitate the desirable

developments?), the ecological and spatial problems. On every layer research groups have to be founded to signal the problems we will face in time, to collect variant solutions imaginable.

## 4.3 Field of aims (desirable, possible, but not probable)

The primary aim for Adapazarı is to find safe residential places for the population, reducing managerial, cultural, economic, technical, ecological and spatial risks. But any inhabitant, any interest group, any institution has its own managerial, cultural, economic and technical aims. They are looking for income, employment, safety, accommodation, mobility, social support, health care, leisure, conditioned by their Municipality. They have different time frames, not looking forward for more than some years. And they will vote for the most convincing party to realize their own optimal conditions. An effective way to stimulate them to look forward further is to stress the future of their children, and to make young people aware of *their* future. That is why the proposed Youth and Education Centre Projects are important.
General aims for the long term have to be elaborated into targets with a time limit for the short term.

**Targets for the short term**
Fig. 24 and Fig. 25 show a low risk scenario contrasting with a high risk scenario for Adapazarı.
In between both extremes there are many scenarios imaginable (see *Fig. 26*). They are more realistic than those given. But to make them realistic it is necessary to collect reliable data in time series making scientific prognoses possible. That means a bureau of statistics has to be elaborated as soon as possible. Supported by this actual information, managerial, cultural, economic, technological, ecological and physical main project groups containing stakeholders and experts have to be installed. Their project leaders have to be appointed and get an assignment to make a progress report to the Municipality quarterly and yearly. The project groups should start with a common vision (see section 4.4). That takes time. Their second assignment is to make at least 3 alternatives for Adapazarı each, based on their views of probable, possible and desirable futures. Their final assignment is, to formulate possible Municipal Projects sustaining their views. These main project groups should act as a sounding board for specific Municipal Project groups.

**Projects**
In the first phase of any scenario, many people remain living in dangerous areas. So, a Metropolitan Project providing locally safe places in Youth and Education centres[4], should get high priority. In the rural area parts of Metropolitan 'Model Village' Project [4] could get equivalent functions if distributed in villages and towns. In the same time these centres could get an important function in informing the inhabitants about Metropolitan Projects and plans like the master plan. It supports youth to be involved in its future, understanding the Metropolitan strategy and its consequences for personal life. In the same time promoting historical awareness about the area should be not forgotten.
These centres should include an internet café. In that way they could serve a cosmopolitan awareness of the population and a habituation to the use of computers and the internet. It may help to make these centres partly self-supporting asking a little fee for services like that. Stimulating to take courses and informing about the possibilities promotes education. And education promotes establishment of advanced business and industry avoiding dirty low-wages employment in Sakarya.
It could be helpful to make the social Metropolitan Projects partly self-supporting as well by asking contributions from the inhabitants for different purposes in these centres.

**Field of references**
The main project groups need positive and negative references at their disposal to extend their imagination. They should visit Japan (earth quake technology), China (managing economic growth), The Middle East (managing cultural change), Europe (science and technology of planning) and make reports of these visits to be distributed to local stakeholders and experts.

## 4.4 A preliminary vision

Adapazarı is part of the global and continental (R=3000km) identity of Turkey: a source of European culture in its ancient Greek colonies, the guide of islamic enlightenment, tolerance and criticism, a democracy based on an unprecedented history and experience of cultural diversity, developing into a high level of education, a fast economic growth, adapting new technologies, utilizing its ecological resources

and labour potential in efficient an beautiful settlements inspiring its diligent population, located between the Middle East and Europe, geographically connecting North and South, East and West.

**Adapazarı**
Adapazarı is part of the regional (R=300km) identity of Istanbul, the largest metropole of Europe and the Middle East, controlling its transits; the best studied earth quake area of the world, attracting population from all directions, centre of experiments with modern technological applications, developing different kinds of industry in its periphery (Izmith, Adapazarı), taking the risk of innovation.

**Its field of aims**
The conurbation (R=30km) Adapazarı should become a showroom of

- Turkish innovation, its successes and analysed mistakes;
- risk management, turning sad experience of disaster into innovative initiative;
- high technological, clean, risk managing industry;
- supplying clean and safe residential areas for its employees, clients and inhabitants;
- taking care for cultural and natural heritage;
- developing attractive urban and architectural environments with recognisable own identities;
- stable, efficient, effective administration and planning, ensuring the rights of its inhabitants by controlling their duties as citizens;
- democratic participation;
- an example for any growing risky region in the world.

**Starting points**
Starting points for a low-risk scenario are:

- safety first;
- business and industry replacing housing and
- existing metropolitan projects.

**Safety first**
The preliminary low-risk scenario with the same population growth as a reference for high-risk starts with the idea that living on a deep clay lake that liquidises in shaking conditions is too dangerous, whatever building technology you choose. That may be wrong as soon as we find affordable building technologies for such conditions, but in this respect we start with the worst case: we will not find such technologies affordable for the regional economy in time.
Such a starting point leads to the shocking conclusion, that most of the existing households in Adapazarı have to evacuate into safer places if we do not accept high risks. And happily there is space within a radius of 30km, internationally accepted as suitable for a working regional economy if there are suitable means of public and private transport, with their infrastructure. But what will be the cost if we write down the existing value within 25 years and build new value in the same period? Who will pay for the buildings, infrastructure and land the inhabitants leave behind? That question leads to a second starting point.

**Business and industry replacing housing**
The second starting point is, industry and business areas run much less risk than housing areas, because:

- people working there are only a part of the population, for instance not including children and elderly people;
- they stay there only a part of the day;
- you can easier make appointments for their building technology than for houses;
- you need less high rise buildings for industry and businesses than for housing in high density;
- some businesses can afford experimental building technologies to resist earthquakes in these conditions
- their buildings are written down faster than dwellings.

So, if we replace housing areas by business areas, part of the existing infrastructure remains useful and the land (and sometimes buildings) can be sold to industry and business use.

**Metropolitan projects**
The third starting point are the projects Adapazarı Metropolitan Municipality published Februari 2005 as musts for further vision.

## 4.5 Phases of a low-risk scenario

These starting points offer a scenario globally represented in *Fig. 29 - Fig. 32*, with a lower risk compared to the high-risk scenario of Fig. 24.
This scenario is elaborated in detail for the distribution of population until 1 400 000 inhabitants only. For business and industry, locations should be looked for in the remaining areas, formulated in new Metropolitan Projects to be realized successively. By this scenario these projects can get an other succession of priority. By representing the scenario in dots the useful amount of population within a proper radius for facilities, business, public transport stops and traffic can be calculated directly.

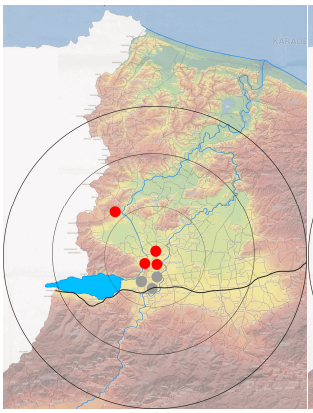

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*Fig. 29 Actual 400 000 inhabitants in spots of 100 000 inhabitants*

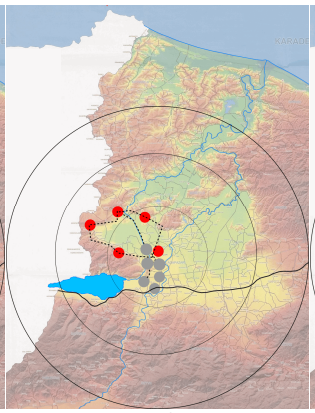

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*Fig. 30 Partially moved grown population of 500 000 inhabitants*

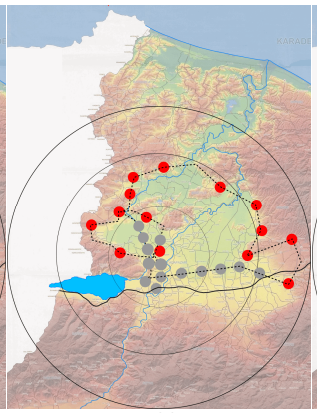

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*Fig. 31 First regional extension until 1 400 000 inhabitants.*

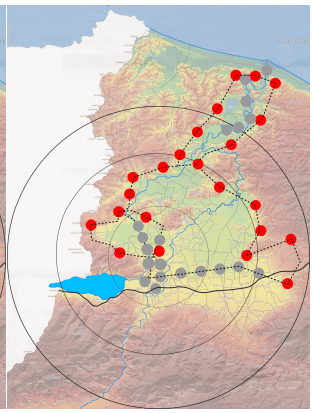

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*Fig. 32 Second regional extension until 2 300 000 inhabitants.*

**First local moving phase**
A first local moving phase provides new safer housing locations on the slopes of the Western mountain area for 133,000 people. That decreases the density of the existing city by moving 100,000 people in favour of administrative, recreational and industrial functions needed in a growing municipality and offers space for growth.

**Social functions in the existing and remaining housing areas**
In this first phase many people remain living in dangerous areas. So, the Metropolitan Project providing locally safe places in Youth and Education centres, should get a higher priority. In the rural area parts of the Metropolitan Project concerning ‘Model Villages’ could get equivalent functions if distributed in villages and towns.
In the same time these centres could get an important function in informing the inhabitants about Metropolitan Projects and plans like the master plan. It supports youth to be involved in its future, understanding the Metropolitan strategy and its consequences for personal life. In the same time promoting historical awareness about the area should not been forgotten.

**Going West**
The central business and shopping area of Adapazarı already has extensions into the West. At the boundary of the built-up area there are building initiatives extending into the mountains with a beautiful view backwards on the existing city of Adapazarı. However, this area is known for dangerous landslides. Reasons to look for extensions adjacent to Adapazarı into the West anyhow are the following.

**Disconnected districts don’t work in the short term**
The new extensions 10km North of Adapazarı after 1999, housing some 60 000 inhabitants did not yet get their own centre. People do not use the facilities there, they remain going to old Adapazarı for shopping,

work and leisure. Built modern shopping centres remain empty. Neighbourhoods in the new districts still lack identity. However, below a new mosque facilities seem to flourish.
The same experience applies to disconnected suburban developments in The Netherlands (Zoetermeer, Almere, Purmerend on 10km from the original centre and even within the conurbation of Amsterdam on 3km: Zuidas). Even the effort to bring leisure, work and shopping into these disconnected areas had a limited success. This Dutch national strategy until 1984 was called 'Bundled Deconcentration'. However, after a period of say 30 years, growing to more than 100 000 inhabitants these new towns could get there own identity and attraction.

**Advantage of eccentric growth**
Concentric growth of a city raises pressure on the centre. It has to extend in adjacent housing neighbourhoods in a sub-optimal, opportunistic way.

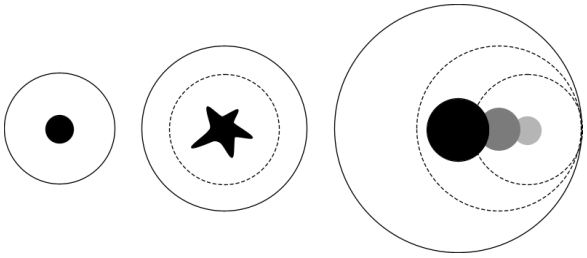

Fig. 33 Concentric and eccentric growth.

Eccentric growth gives the opportunity to build a new larger centre next to the old one, removing housing areas by public agreement in a master plan[5]. In the oldest centre special (cultural) functions could remain, not too sensitive for centrality. So, it keeps or even restores identity. In the new centre, new economic functions can be realised in a most efficient and contemporary way.

**Next moving phases**
The scenario elaborates a second and third local moving phase, a first, second and third regional extension phase not reported here. The resulting stretched conurbation means one equally directed bundle of connections without big and mutual crossings can be made.
A fast, safe rail and urban highway connection with the new central area along all new housing locations has to be established, now supported by 300 000 inhabitants, probably making a circle with the already planned connection.

## 4.6 The identity of new urban areas

Identity means difference from the rest and continuity in itself. Identity of suburban areas is a great contemporary problem everywhere in the world, influencing not only culture, but economy as well. Lack of identity attracts people back to the old centres, causing unnecessary traffic, congestion and dissatisfaction with their own living environment.

The question of identity has to be answered on different levels of scale separately. In what way Sakarya differs from other provinces in the North-Western region of Turkey, in which way this region differs from other regions in Turkey and in which way Turkey differs from the rest of the world? On any scale spatial, ecological, technical, economical, cultural and administrative differences could be token into account. Which kind of differences do we like to utilize for identity? Or do we want to resemble other regions in the world we admire? Do we like an 'international style' to prove we are 'modern' or 'contemporary'? In that case the question arises why visitors and investors in the future would come just here to sustain our development and economic meaning. It is the balance between raising surprise enough to come and recognition enough to stay. However, to raise surprise is more difficult than to raise recognition. It requires creativity and design while recognition can be reached by copying.

**Provincial identity (radius 100km)**
Sakarya's landscape is diverse and old, a rich source of identity, stronger than a dynamic, cultivated, flat area causing concentric growth like in Fig. 24. Urban designs for new housing locations can use and strengthen partial identities of Sakarya's landscape. That means a profound analysis of its potential, starting with its natural capacity.
The low-risk scenario shows a potential of a green heart metropolis commanded by nature. The identity of a stretched metropolis will be in contrast with both the identity of the enclosed flat green heart and of the older and rougher surrounding mountainous nature.
The agricultural economy of the green heart will change, and loose identity by scaling-up if not carefully guided. It is a country of rivers, poplars, willows, hazel orchards and meadows. To support the guidance of agricultural development, leisure facilities with a character in strong contrast with those in the mountains do have a potential. Sailing boats characterise sun-drenched lowlands with little villages everywhere in the world. So, here the water system could be studied as a technical, economic and cultural potential, structuring the land better than roads.

**Local identity**
The identity as mentioned above is an identity based on old differences on a regional scale. But which differences could give the newly built-up areas between cultivated green heart and rough nature around a different identity mutually?
These differences are located on slopes sunlit in the morning in the West, at noon in the North and in the evening in the East. On this scale perhaps plantation gives a first starting point. Ecological differences are the oldest source of local identity, vulnerable, often neglected and unused in urban areas. Could difference in giving different shadow by different kinds of trees in public space and parks become an identity factor on this level of scale?
The buildings on slopes in the Western, Northern and Eastern parts could differ in accessibility for sunlight. More locally they will differ in building technology coping with local difference of soil mechanics. How could we utilize these differences in architecture making different parts recognizable? Paradoxically 'difference with the rest' implies internally a corresponding homogeneity (scale-paradox). Neighbourhoods are not different from one another if they are internally heterogeneous in the same identifying mark supposed in their mutual difference. This paradox is solved by defining different differences on every level of scale. That is the task of design.

# 5 Conclusion

The managerial, cultural, economic, technological, ecological and spatial/temporal context influences the way we should make master plans. However, a general vision may be an appropriate first step before specialist's alternatives are developed. That first step may contain different scenarios to get an overview of possible local futures. Some of them are probable, but not desirable (field of problems) others are desirable, but not probable (field of aims). Desirable, but not probable futures can not be predicted, because they are not probable. These have to be designed. However, the context of design may be very different. The priorities of Rotterdam and Adapazarı at both sides of Greece are of economic and ecological nature respectively. So, their contemporary priorities differ substantially. However, the struggle for identity remains the same. And it is the final task of design to provide sustainable identity.

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