22 MODELLING REALITY

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In order to be able to inform, communicate and reflect on (future) reality we must imagine, articulate, calculate and simulate in models. In models reality is deliberately drastically reduced in a justifiable way. Models may be concrete, conceptual or formal. All two-dimensional architectural analyses, exploration studies and designs are conceptual models.

The functions of scientific models may be further classified in explorative, descriptive, explicative and projective functions, concerned with reality in the past and the present, and the probable and / or possible reality in the future. Insofar as architectural models are, contents-wise, made of words and numbers it must be feasible to translate them into spatial models (the so-called 'medium switch'), or to contribute to the construction of spatial models. With the translation 'backwards' to (future) reality it is important to watch out for 'model over-extension'.

22.1 THE MODEL[a]

A simplified rendering of reality – present or future – is called a 'model' of that reality, provided that a structural relatedness exists with that reality and that the model is based on conscious interpretation of that reality (figure 155). Without models science is inconceivable.

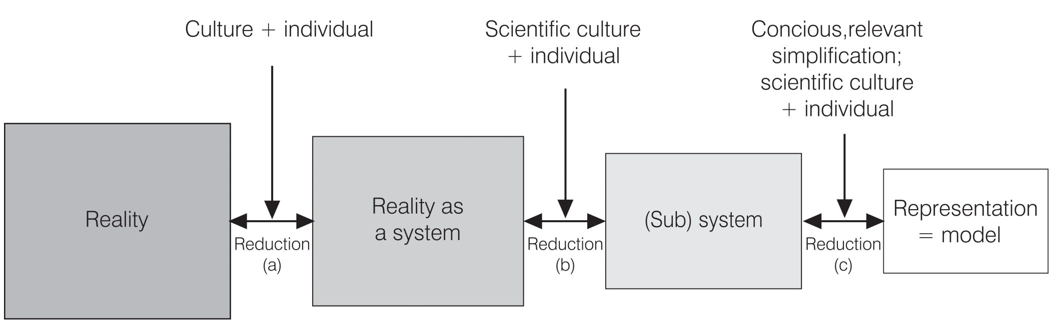
In a model, reality is approached from a certain angle. Seen in one way, this angle is determined by (scientific) cultural backgrounds; often without conscious awareness. Seen another way, it is context-orientated; preferably explicitly. An urban architect makes a different model of a residential neighbourhood than a social geographer or civil engineer. Models are not value-free: moreover, they should not be.

a In the present and following paragraphs use has been made of Bertels, K. and D. Nauta (1969) *Inleiding tot het modelbegrip;* Chorley, R.J. and P. Hagget (1969) *Models in geography, parts I, II and V;* Soest, J.P. van, J. van Kasteren et al. (1988) *De werkelijkheid van het model*.

b Klaasen, I.T. (2000) *Valkuilen bij stedebouwkundig ontwerpen: verwarring tussen model en werkelijkheid*.

c In contrast to previous comparable 'world models', the 'Brundtland Report' does not include numerical models, because the pre-supposition that a (global) system may be manipulated is too dependent on thinking along causal lines (Soest, J.P. van, J. van Kasteren et al. (1988) *De werkelijkheid van het model*, p. 86).

d Frijlink, F. and L. Leferink (1991) *Waar het leven goed is - een stedenbouwkundig ontwikkelingsplan voor West Brabant*.



155 We may think of reality as a complex of (sub-) systems (a). This simplification (reduction) of reality is made unconsciously and is not only based on the reach of naturally determined human powers of perception and thought, but also on cultural pre-suppositions, where individual differences apply. From this reality we may separate consciously sub-systems (b), based on intentional considerations and (scientific) cultural pre-suppositions that might differ per individual. The sub-systems may be presented next in models of the reality (c).

22.2 KINDS OF MODELS

In a presentation reality may be put into words, numbers, 'imagined' on a scale, or simulated. This leads to a classification of types of models:

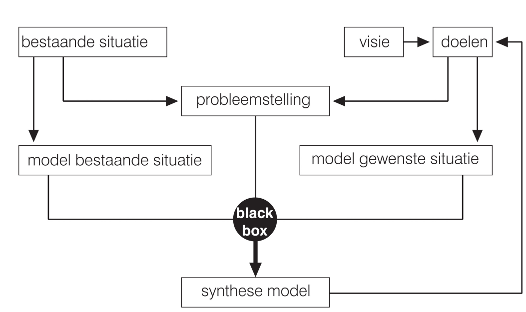
- verbal models
- mathematical models
- spatial models
- mechanical models

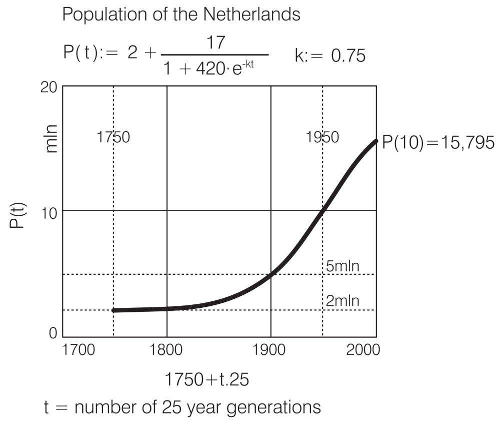
A verbal model is a discourse in words (figure 156). In this vein the structure of medical education at Limburg University functioned as a model for re-structuring the architectural education at Delft – with all the pitfalls inherent in the use of an analogue model.[b] A well-known verbal model is *'Our Common Future'*, the so-called Brundtland Report of 1987.[c]

Who does not understand the Dutch language will find the models in figure 156 incomprehensible; to them the models do not have a communicative function. When words are used with different meanings in scientific (sub)cultures of a (scientific) linguistic community, faulty communication may occur.

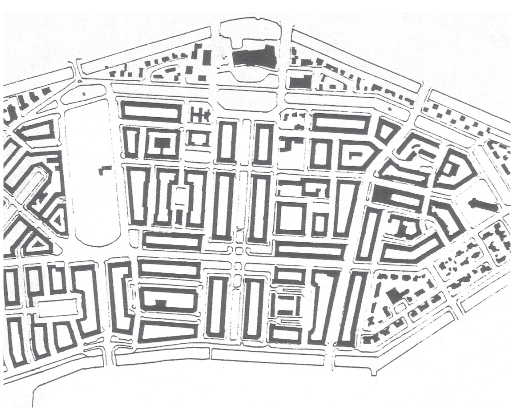
156 Example of a verbal model, respectively visualised verbal model: procedure graduation project.[d] In this case visualisation does not make the model a spatial one.

In de door ons gehanteerde werkwijze wordt een onderscheid gemaakt in modelmatige weergaven van de bestaande situatie en mogelijke wensmodellen.
Konfrontatie van beide modellen - these en antithese - leidt vervolgens tot een synthese- en ontwikkelingsmodel. Een ontwikkelingsmodel is te omschrijven als een ruimtelijk kader dat randvoorwaarden stelt en richting geeft aan verdere ontwikkelingen.

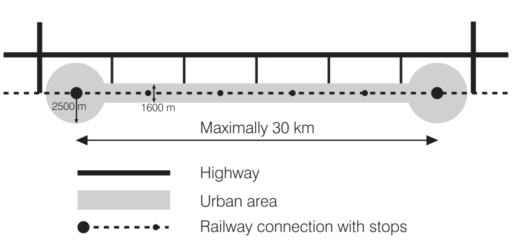




157 Graphic representation of an example of a mathematical model with mathematical contents



158 Example of a spatial model on scale: a (possible, future) articulation of a site.[b] Without explanation of the symbols used (legends) this model is incomprehensible to the 'uninitiated'.



159 Example of a spatial model: a principle model of a city resembling a ribbon

A mathematical model is made up of numbers or symbols (Figure 157). All computer models are mathematical models, even if they are presented as spatial models, like GIS products (Geographical Information System) and 3D models.

The *'Limits to Growth'* report of the 'Club of Rome' of 1972 is an example of a report constructed out of mathematical models. In contrast to verbal models, mathematical models employ a universal 'language', with the proviso that this does not apply for its verbal parts.

A spatial model is a spatial rendering of three-dimensional reality (practically always) on scale. Every three-dimensional model is a spatial model, but so are all architectural designs and maps (figure 158 and 159).

(Sub)cultural agents, often hardly consciously experienced, determine how we visualise and depict something. The use of symbols in a 'picture' language may be compared to the one of words in ordinary language. Unlike the case of numbers the meaning is not universal. Symbols must be explained (legends). *"The image is the result of a long sequence of agreements, conventions, codes, tunings, etc."*[a]

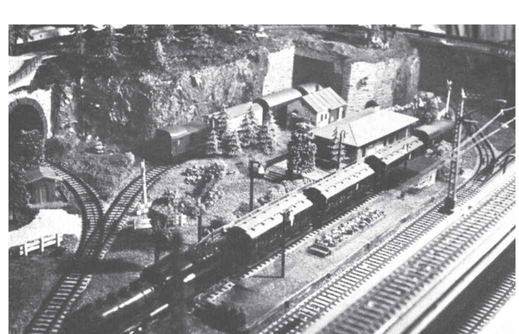
A shape metaphor may be the basis of a spatial model. Examples of shape metaphors are the 'Green Heart' (figure 172) and 'Ribbon City' (figure 159). A well chosen metaphor activates two associative processes at the same time: verbal and visual. This increases the chance that the relevant information is brought across: its communicative value is high.[c] Bertels and Nauta claim that the vague suggestiveness of a metaphor can have great artistic value and cause aesthetic delight.[d]

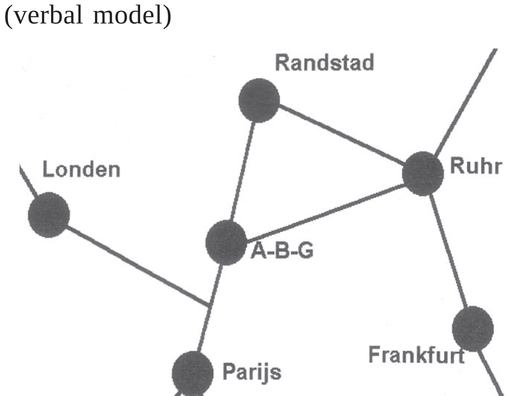
"Images are cognitively enormously compact, they can accommodate mountains of information; information not readily expressed in words. Consider the effort that is needed to enable computers to recognise faces. Images favour the strong points of the human brain. We made drawings before we wrote, we have a fabulous memory for images, better than for text. Add a summarising metaphor to a text and it will be remembered a lot better."[e]

A mechanical model (figure 160) is a model functioning in analogy with its original. It is a spatial model with real time for fourth dimension. An example is a planetarium, a dynamic model of the solar system. The reality of a mechanical model can only be depicted as a spatial model. Aided by a computer a mechanical model may be simulated; compare this to film, a rapid succession of static images.

Given a system in reality, say a rail system, we may opt for simplifications of different kinds, and consequently for models of different kinds. The choice of a type of model is based on the function the model needs to perform and on the personal preference of the makers. The following example is inspired by G. Frey.[f] We may reduce the reality of a rail system to:

- a model railway net (mechanical model; figure 160)
- the positioning of lines of rail and stations (spatial model; figure 161)
- a schedule of the job allocation of railway employees (mathematical model)
- a description in words of the structure of the system, like types of connections and mutual relations, speeds, frequencies of departure (verbal model)





160 Depiction of a mechanical model of a rail system[g]

161 Spatial model of a rail system[h]

a Draaisma, D. (1995) *De metaforenmachine, een geschiedenis van het geheugen*.
b Thüsh, M. (1993) *Almere, uitgeslapen stad*, p.140.
c Draaisma, D. (1995) p.26.
d Bertels, K. and D. Nauta (1969) *Inleiding tot het modelbegrip*, p. 38.
e Citation from an interview with Douwe Draaisma on the use of metaphors. Delft, D. van *Zien en niet geloven; het beeld in de wetenschap beslecht zelden een controverse*. See also Draaisma, D. (1995).
f Frey, G. (1961) *Symbolische und Ikonische Modelle*.
g Source: *Miniatuurbanen* (1963) nr. 6, p.170.
h Source: Jacobs, M.; A. Geerse and I.T. Klaasen (1994) *Snelle trein ontspoort in de Randstad*.

22.3 TYPES OF MODELS IN THEIR RELATIONSHIPS TO REALITY

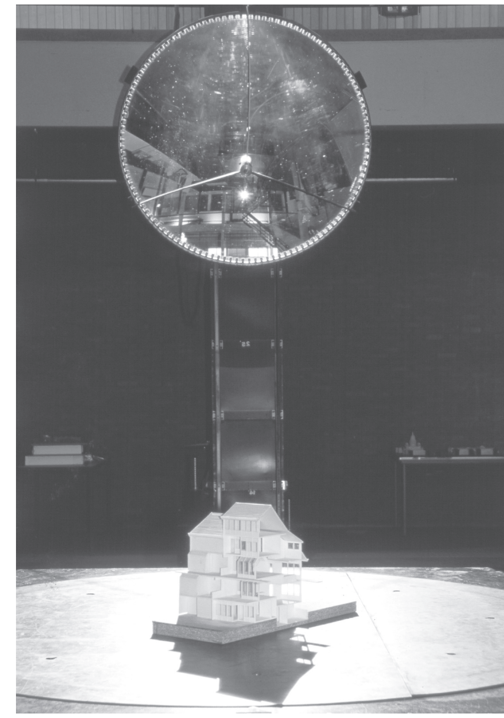
Models may also be characterised according to their relation to reality. Models can be:

- concrete (spatial and mechanical models);
- model (conceptual(verbal, mathematical, spatial, mechanical));
- formal (mathematical models).

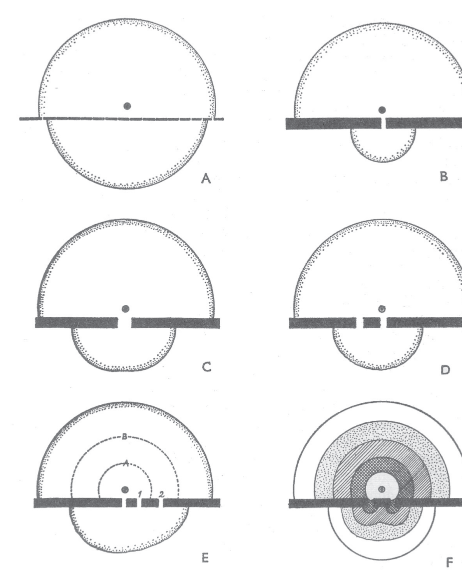
A model composed of empirical identities is a concrete model. Concrete systems and models correspond with ‘matter’. Concrete models feature spatial dimensions. Concrete models allow realistic experimenting. Examples: model railways (figure 160), urban / architectural models. Sunlighting studies might be undertaken with the help of such a three-dimensional model (figure 162). Another example is a basin filled with clay, sand and streaming water to study patterns of flow. Architect Geoffrey Broadbent mentions an example of a concrete spatial model – an analogue model – of a non-spatial concrete system; a system without length, width and height.

“The national economy has been represented at the London School of Economics by means of a bath into which water flows at controlled rates (representing income) and out through holes of specific sizes in specific positions (representing expenditure).”[b]

A comparable experiment in urbanism with the help of an analogue model is commented on in figure 163.



162 Sunlighting-experiment aided by a model [a]



Blotting paper analogues simulating gross morphological features of river towns. A suggests that where a river can be crossed easily at many points the town will develop almost equally on both banks. B, C and D are examples of the shapes resulting from various restrictions to easy access to the opposite bank. E is a rudimentary growth model, in that when the solvent front reached the line A bridge 1 was added. Bridge 2 was added when the solvent front reached the line B. This process leads to a marked asymmetry in the shape of the part of the town on the far side of the river. F is a plot of the various stages of growth.

163 Depiction of a concrete blotting-paper (analogue) model of an urban system.[c]

A conceptual model is a mental construction (theory, sketch) referring to the (past, present, future) reality. A conceptual model is composed of conceptual identities. Bertels and Nauta used in the pre-computer era the evocative term ‘paper and pencil construction’.[d] Conceptual models and systems correspond to ‘comprehension’. Conceptual models only lend themselves to thought experiments, also called ‘thought models’. Examples are construction drawings and design sketches (figure 158 & 159). A classic example:

‘Galilei considered an imaginary experiment involving perfectly spherical balls in motion on a perfectly smooth plane. It would be impossible to achieve these ideal conditions in any actual experiment because of the intervention of friction and imperfections on the spheres. However, this ability to abstract from the conditions of the real world played an essential part in Galileí’s formulation of a new science of motion.’ [e]

All two-dimensional spatial models, urban / architectural blue-prints included, are thought models. This also applies to three-dimensional models depicted on flat surfaces, and to virtual designs. Conceptual spatial models are, literally, ‘thought images’. (Urban)architects will seldom be in a position to experiment with their products; this in contrast to industrial designers, for instance, who can use conceptual models as well as concrete models. A concrete model of a teapot, for instance, can be tested on efficacy.

Finally, a formal model is an un-interpreted syntactic system of symbols (calculus, algorithm). Geographer David Harvey calls an element of a formal (mathematical) model a ‘primitive term’, and compares it to the – dimension-less – concept ‘point’.[f] Only structure imports, not content. Formal systems and models correspond to abstract names.

Examples of formal models are un-interpreted mathematical models (consistent conglomerates of mathematical equations) of a concrete hydrological system, for instance (reality is summarised in a series equations) and the formalised conglomerate of Euclid of the conceptual system ‘Euclidian space’.

22.4 FUNCTIONS OF MODELS

Models carry information and are consequently instrumental in communication, study and research. The exchange of information may be directed at the transfer, respectively widening of knowledge, but also at action or eliciting action. By the same token models may also be

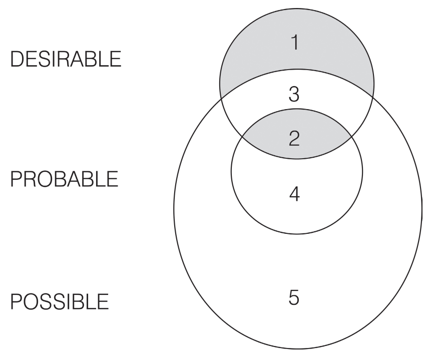
a Source: photographic service, Fac. of Arch. DUT.
b Broadbent, G. (1988) *Design in architecture: architecture and the human sciences*, p. 89.
c Chorley, R.J. and P. Hagget (1969) *Models in geography, parts I, II and V*, p. 763.
d Bertels, K. and D. Nauta (1969) *Inleiding tot het modelbegrip*.
e Commentary on Galilei, G. (1632) *Dialogue Concerning the two Principal Systems of the World*. Source: The Open University (1974) *Science and belief: from Copernicus to Darwin*, unit 3, p. 117.
f Harvey, D. (1973) *Explanation in geography*, p. 452.

interpreted in terms like discussion model, participation model, seduction model, study model, more specifically heuristic model, action model, execution model, etc.

From a scholarly angle models can be classified as follows:

164 Types of models according to their function

function:	*aimed at:*
descriptive model	what (probably) is the case
explicative model	because of what or why that (probably) is the case
predictive or probable-projective model (= trend scenario)	what probably will be the case (probable future)
intentional-projective[a] model (= planning model)	what we have decided that should be the case
(explorative)-potential-projective model (design or explorative scenario)	what possibly can be the case (possible future)



165 In this (spatial, descriptive, conceptual) model the ‘probable futures’ are a subset of the ‘possible futures’ and contains the set ‘desirable futures’[b], parts of the set ‘possible’ and of the set ‘probable futures’.[c]

This survey is related to the modality schema of Taeke de Jong (figure 165). Establishing a relationship between the model-functions and this schema of modalities generates the following classification:

166 Types of models according to their modality

1 desirable, but impossible	model without an application field (fiction)
2 desirable and probable	trend scenario deemed a desirable development
3 desirable, possible, but improbable	intentional-projective model (planning model, design)
4 undesirable, but probable	trend scenario deemed an undesirable development
5 (still) undesirable[d] and improbable but possible	explorative-projective model (explorative scenario) or potential projective model (design)

A descriptive model is a model of an existing situation or process:

- maps of the existing situation (figure 167);
- descriptions in words or numbers of an urban system;
- programmes of requirements;
- description of the procedure followed (figure 156).

An explicative model does not restrict itself to the ‘what’ or ‘how’ question, but addresses the ‘why’ or ‘because of what’; based on insight into the working of processes, traditionally seen from the angle of causal, but also of conditional thought.

An explorative model is used to get insight into:

- what is the case (or what has been the case) or,
- what might be the case (or might have been the case); for instance in the study of the mechanisms of the ‘global warming effect’;
- future (developmental) possibilities.

167 Descriptive model, conceptual[e]

a Instead of ‘projective’ the concept ‘prospective’ may be used. The use of these terms is in the spatial sciences not unambiguous (see, for instance Vught, van and van Doorn (1976) *Toekomstonderzoek en forecasting;* Kleefmann, F. (1984) *Planning als Zoekinstrument*). Here the conceptual descriptions of the leading national dictionary is followed, giving as the first meaning of ‘*projecteren*’ ‘*ontwerpen*’.

b ‘desirable’: desired by a given organisation, such as a lobby, political party, a government – or the designer himself.

c Jong, T.M. de (1992) *Kleine methodologie voor ontwerpend onderzoek*, p. 9.

d (Still) undesirable, since ‘undesirable’ is restricted by ethical boundaries.

e Duijvestein, I (1997) *Mitla*, p.1

Examples of the latter case include (spatial) design studies (study by design) (figure 168) and studies trying to answer the question whether a specific programme might fit, in principle, in an existing plan.

A predictive model (probable projective model) (trend scenario) indicates what probably will happen, given a specific situation, based on insight into the working of processes (figure 169). On the basis of a model of a solar system one can predict that the sun will rise tomorrow, at what time (most probably). Well-known examples of predictive models are those forecasting election results, tomorrow's weather, those of the 'Club of Rome' – among them *'Limits to Growth'* – and the economic models of the Netherlands' Bureau for Economic Policy Analysis.

Descriptive, explicative and predictive models are linked to one another and belong to the domain of empirical sciences.

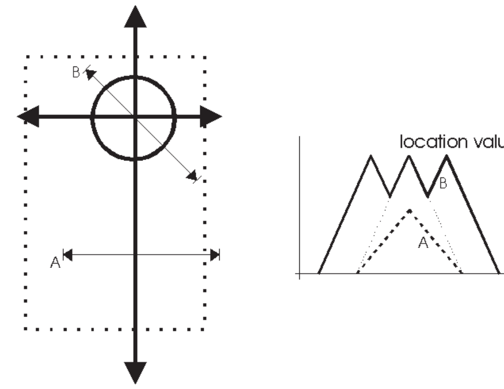
A planning model (intentional-projective model) is a model for a situation, deemed desirable, that does not yet exist, requiring one or more specific actions in order to come in existence ('goal-orientated' design, desirable scenario). Planning models are action models. Examples: the design for a bridge, an educational programme, a holiday trip (figure 170).

In potential-projective, explorative models (designs) possible future situations are rendered, the desirable ones along with those deemed undesirable. Alternative designs are also called 'scenarios'. The original meaning of the word 'scenario' denotes the sequences of actions in the theatre. The use of the term 'scenario' as an alternative projective model was introduced by the American 'Rand' Corporation. 'Rand' theorists, particularly Herman Kahn, developed in the sixties systematically possible futures, to give policy makers insight into (un)desirable effects of policy measures; effect reports, really.[c]

Scientifically understood, a scenario can be viewed as a model with a progressive temporal aspect. From a specific, well described, initial situation, possible future situation are presented in a consistent (logically connected) and plausible way. At the same time usually a trend scenario is made, to lay foundations for recommended changes in policy. Generally, several scenarios are developed to enable comparison. The differences in the scenarios are based on difference in pre-suppositions with regard to factors influencing developments. Figure 171 gives an example of these 'explorative scenarios'.

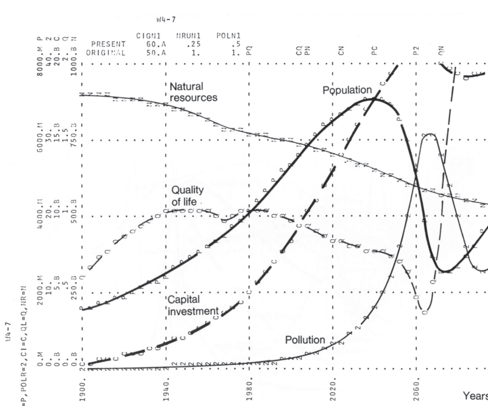
A model for a future reality, or an element of it, is also denoted as a 'concept'. More correct would be 'conception' (both from the Latin *'concipere'*: to take together).

In urban design / architecture the notion 'spatial concept' is used in the sense of a rough design. In the initial stage of a design process it is used to facilitate the designer himself, during the later stages of clarifying the design, for instance when communicating with

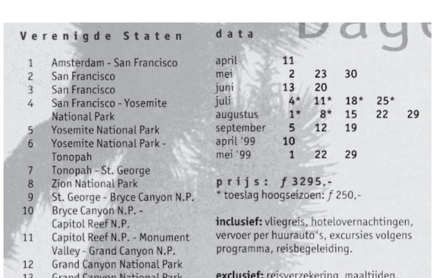


168 Spatial explorative conceptual model, (left) and conceptual, graphically rendered, mathematical model (right).

At the crossroads in a ring road, the location-value based on accessibility is equal to that of the central intersection. It may even become equal to it or greater, depending on the quality of the ring road compared with that of the radial roads inside its perimeter.[a]



169 Graphically rendered mathematical, predictive model, conceptual[b]



Verenigde Staten

1	Amsterdam - San Francisco	
2	San Francisco	
3	San Francisco	
4	San Francisco - Yosemite National Park	
5	Yosemite National Park	
6	Yosemite National Park - Tonopah	
7	Tonopah - St. George	
8	Zion National Park	
9	St. George - Bryce Canyon N.P.	
10	Bryce Canyon N.P. - Capitol Reef N.P.	
11	Capitol Reef N.P. - Monument Valley - Grand Canyon N.P.	
12	Grand Canyon National Park	
13	Grand Canyon National Park - Las Vegas	

data

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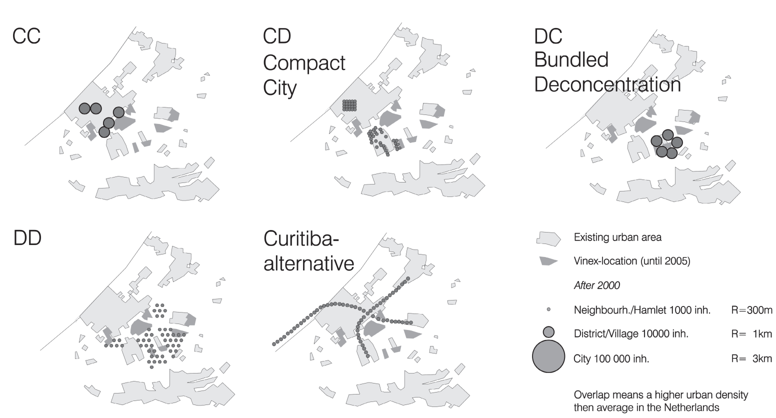
170 Example of a planning model, from a travel brochure (Travel Agency Djoser, 1998)



171 Five scenarios (explorative-projective models) for the way in which the region of The Hague could accommodate a population increase of 50.000 inhabitants in 2005.[d]

a Klaasen, I.T. and M. Jacobs (1999) *Relative location value based on accesibility: application of a useful concept in designing urban regions*.

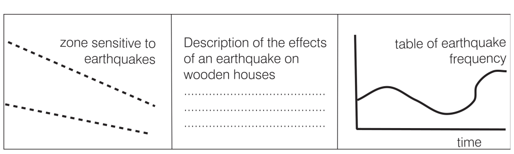
b Lomme, J. , L. Bakker et al. (1988) *Wereldmodellen - een literatuurstudie*, p. 30; source: Meadows, D.L. and D.H. Meadows (1973) *Toward global equilibrium: collected papers*.

c Bell, Daniel (1964) *Twelve modes of prediction: a preliminary sorting of approaches in the social sciences*.

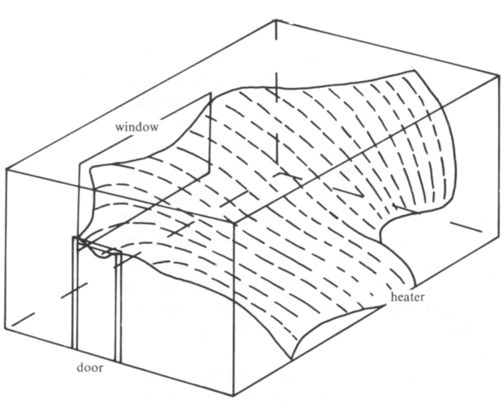
d Source: T. M. de Jong, Delft University of Technology, unpublished.

172 The planning concept 'Groene Hart' (a metaphor).[a]

173 Visualised plan-objective: the proposition "the centre of the city should distinguish itself visually' has been translated into a spatial model.



174 urban / architectural relevant models, respectively:
a spatial differentiation → spatial model;
b spatially undifferentiated qualitative architectural main-lines → verbal model;
c spatially undifferentiated quantitative description earth-quake frequency → mathematical model.



175 Combination of a spatial and mathematical (descriptive) model[c]

a VROM (1996) *Randstad en Groene Hart*.
b A potential chart can also be made on the basis of a designed situation that has not yet been realised: evaluation ex ante – see later in this paragraph.
a source: Hanwell, J.D. and M.D. Newson (1973) *Techniques in physical geography*, p. 78

parties concerned. In planning, particularly in the policy field the notion 'spatial planning concept' or 'planning concept' is in use. Figure 172 gives an example. It signifies a policy-strategic action concept, and may be purely a means to communicate on the subject with the community and other (government) agencies without (potential) empirical foundation.

Usage of the term 'concept' may cause *mis-understanding* between planners and designers. *"The Randstad/ Groene Hart concept is a strong concept"*, a planner states; and he means to say that the concept has survived decades social-political turmoil and proven to be strategically strong. The urban designer reacts: *"On the contrary, it is a weak concept."*; hinting at the fact that it takes a lot of (political) effort to keep the central area free of urbanisation. The shortest connection between points on the edge of the circle afterall is through the circle.

22.5 USE OF MODELS IN URBAN DESIGN AND ARCHITECTURE

The choice which type of model to use depends on the intention with which reality is approached, the function the model must perform and personal preference of the person making the model. Generalising, we discern in an urban / architectural designing process the following steps (in iterative sequence):

- formulating objectives, programme of requirements, task formulation;
- analysing existing situations, together with its probable developments;
- design study;
- evaluating ('ex ante' and 'ex post').

Models are also used in study by design.

The design approach can be presented in a model: a verbal model (see figure 156). Before the start of the design process this verbal model is a planning or explorative model; when it is finished, a descriptive one (not necessarily the same model). It hinges on the condition that the working procedure demonstrates structure. A listing like 'and then…, and then,…and then…, is just a set of actions, not a model. This verbal model of inter-connections between the actions can be visualised: boxes, arrows, etc.; this is even to be preferred. However, it remains a verbal model, we could call a schema.

A programme of requirements (package of objectives) usually has a plan-like, verbal character. As far as is possible, it is recommended to translate verbal models into spatial ones: the 'medium switch' (figure 173).

While analysing an existing situation we use descriptive, conceptual or concrete models. Sometimes they are, in their turn, based on other descriptive models. A map showing the potentials of an area for playing field development, for instance, will probably be (partly) based on a soil map.[b] Depending on the kind of properties of the existing situation (including socio-cultural, economic and political-organisational conditions) an analysis model can be verbal, mathematical, spatial as well as mechanical. When analysing probable developments within the existing situation (trend prognoses) we use predictive models.

With a model of spatial reality a differentiation applies within the space modelled (this depends on the 'grain' chosen). Then it makes sense to use a spatial model. This encompasses the differentiating qualitative and quantitative attributes: figure 174a (see also figures 167, 175, 178). If spatial differentiation is not relevant, we can use a verbal model to indicate qualitative properties, and a mathematical model for quantitative ones. A verbal model describes, for instance, the existing building condition of a house or neighbourhood; or predicts them for the probable future (compare figure 174b). A mathematical model gives information, for instance, on the development of average occupancy of homes in a community (compare figure 174c).

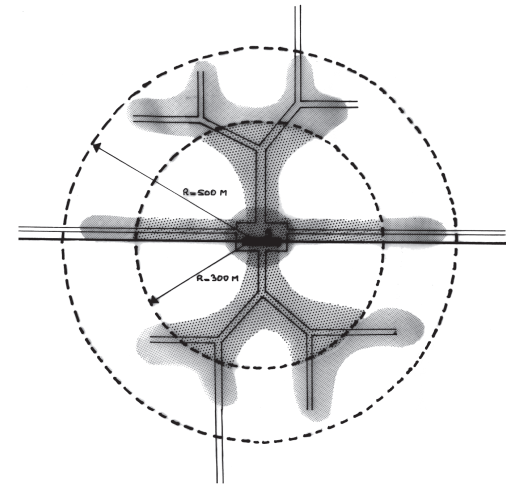
Combinations of types of models are possible: see figure 175.

In the case of design studies descriptive as well as prescriptive models are used (analyses of the existing situation and its developments); but also explorative-projective models. The resulting designs are always spatial models; they are either intentional-projective models (planning models) or potential-projective models (possible spatial futures).

In urban design and architecture evaluation 'ex post' (empirical study) is rather unusual and less feasible with an a (urban) design transcending a certain scale.

An evaluation 'ex ante' of a design may focus on the degree to which the programme of requirements has been met, or on the effects in spatial, social and other terms the design will probably or possibly have after execution: effect analyses. With this type of evaluation one should always watch out for circular reasoning: "The high density of homes around the stations will have a positive effect on the quality of public transportation"; that may well be so, since that was precisely why that high density was chosen! Evaluation of effects not intended makes sense, as well as specifying intended effects.

In this type of evaluation we use predictive models that could in principle be verbal, mathematical, spatial or mechanical. However, verbal models seem to be most appropriate, because of the pseudo certainty associated with numbers, and often with spatial models as well.



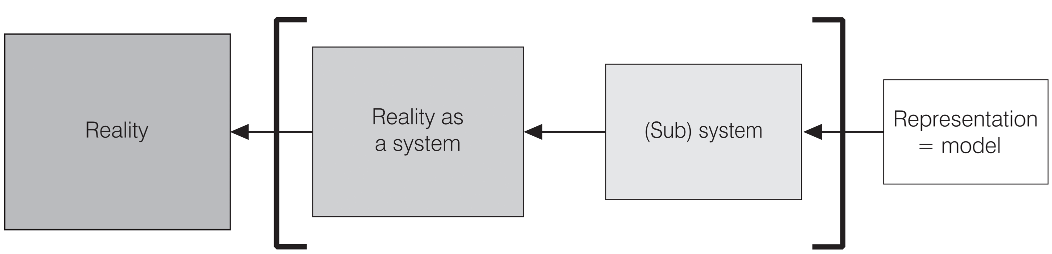
176 Principle model for the central part of a central town in a region: high concentration of facilities combined with intensive employment and residential levels round the train-/ regional bus station and along the (radial) main thorough-fares; declining density in the peripheral central areas. Mixing collective functions with the residential function originates in the wish to create conditions for social safety.

In study by design, spatial models are used with an explorative potential-projective function. Effect analysis (evaluation 'ex ante') provides continuously feed-back during the study.

Image forming is a pre-requisite in visual-spatial processes of thought when intending to attain synthesis, states Muller.[a]

22.6 CONFUSING MODEL AND REALITY[b]

Whenever designers are not sufficiently conscious of the fact that they are working with models only of reality, and/or when they have insufficient insight in the relation between model and reality, mis-conceptions may occur about the possibilities as well as on the limitations of their designs and their analyses: model over-extension. 'The way back', from the model to (future) reality is not taken, or is taken in a wrong way. (figure 177; see also figure 155)



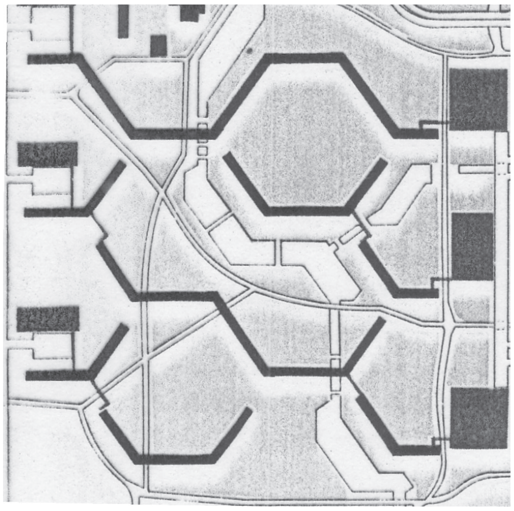
177 Translating a model to (future) reality: 'The way back': 'reductional' restrictions. Compare figure 155.

Before starting to work with a model, reflection is necessary on its application; pre-suppositions in that context should be checked. Outside the field of application, conclusions are not valid. From testing the model of an aeroplane in a wind-tunnel the conclusion may not be drawn, for instance, that the aircraft will fly in reality as well, since the conduct of the pilot has not been considered in the model.[c] In addition, the ratio between the size of the particles in the air with regard to the size of the model plane differs from the one applying in reality. If the model aeroplane is made of a different material that the real machine (think of architectural models) the field of application is even smaller.

a Muller, W. (1990) *Vormgeven, ordening en betekenisgeving*, p.142

b The present paragraph is based on Klaasen, I.T. (2000) *Valkuilen bij stedebouwkundig ontwerpen: verwarring tussen model en werkelijkheid*.

c Soest, J.P. van, J. van Kasteren et al. (1988) *De werkelijkheid van het model*.



178 The (has-been) surface articulation of the Bijlmermeer (Amsterdam South-East) (Source unknown). The design of this area was a good example of model over-extension. The re-structuring is in full swing

For urban designers some relevant types of model over-extension are:

- field of application is lacking;
- no distinction between model and reality;
- insight into the way in which reality has been reduced in the model is insufficient;
- spatial and temporal confusion of scale;
- confusion of stand-points from which observations are made.

An example of confusion between model and reality is depicted in figure 178. In this design the surface articulation is insufficiently adapted to the specific. The result is very monotonous. This pitfall is known as ‘stamping’ (*stempelen*).

In this example it could also be true that confusion of observation standpoints raises its ugly head. A not uncommon mis-conception among designers – alas – is that the reality designed will be experienced, before too long, from ‘above’; just like the designer experiences drawing board or computer screen: ‘the drawing board perspective’. The observer-in-reality stands or hangs above an area only occasionally. He stands right in the middle of that reality, or at some distance, moves along it, or through it.

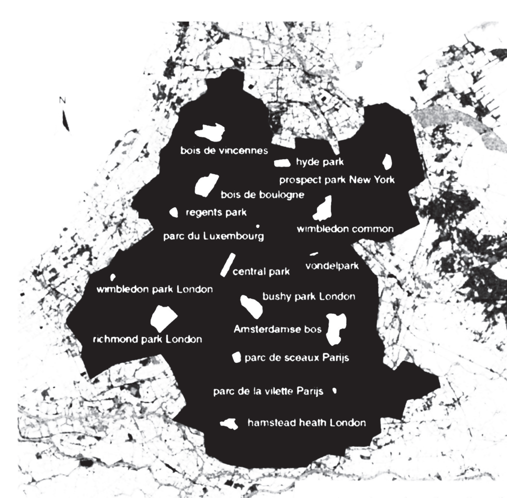
Another example is that designers, traditionally strongly focused on visual perception, neglect noise, smell and physical sensations (wind!) or disregard them, because they are hard to depict. The value of a design – in the sense of its implementation potential, and after implementation, its usefulness – depends on the degree in which specific conditions of a site have been taken into account, even if properties are invisible, not to be depicted in a spatial model (spatial analyses), or reduced out of existence (figure 179).

179 Circular residential building by Bofill in Marne-la-Vallée, near Paris. Noises in the heart of the circle are amplified many times by the circular construction (Photograph: Author)

“The disadvantage of designing by drawing is that problems which are not visually apparent tend not to come to the designers attention. Architects could not ‘see’ the social problems associated with new forms of housing by looking at their drawings”.[a]

When one is conscious of the fact that in a model of a/the (possible, future) reality, a lot of reality has been omitted, it will be clear that two situations can not be compared bluntly. The historical island Marken in the former ‘Zuiderzee’ (IJsselmeer) may be just about as large as a yet to be constructed, artificial island in the outskirts of Amsterdam (‘Haveneiland’, part of the development ‘IJburg’), but its distance from the centre of Amsterdam, for instance, defies comparison. The same applies of course for its demographic structure.

The failure is complete when referring to another situation spatial scales are confused (figure 180).



180 De Minister of Physical Planning of the Netherlands compared the ‘Green Heart’ of the ‘Randstad Holland’ to Central Park, Manhattan, New York City. The ‘Amsterdamse Bos’ is already two and a half times as large as that New York park! If the scale ratio of Amsterdam and Manhattan are taken into account, and the kind of utilisation qualities that apply, the Amsterdam Vondelpark and Central Park do have many things in common. (Source: Berg, R. van der (2001) *NL Superbia)*

a Lawson, B.R. (1990) *How designers think, the design process demystified, p. 18/19.*