4 NAMING COMPONENTS AND CONCEPTS

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Specific terminology exists in each scientific discipline enabling effective description and specialist communication. In some disciplines the number of defined concepts is relatively small (as in logic, mathematics, physics, history and geography, even though with the last two the number of names is uniquely large), in others (chemical nomenclature, medical science and above all in biology and ecology) this is very large. This has partly to do with variation in the phenomenon to be explained.

What can be done when a designing discipline, such as architecture, is expected to *create* these phenomena and to increase their variation (especially in form and structure)?

A few technical architectural dictionaries exist[a] (concepts) and encyclopaedia (concepts and names); however there is little interest for them in architectural design; they are mainly of historical interest. This by no means covers the topicality of new design assignments. In architecture there is an infinite number of proposals created; partly expressed by drawings and pictures. It is thought that from each drawing new concepts and conceptions may be derived allowing parts of the design process to be subject of discussion. However, their number is so large, that this vocabulary will never become widely accepted.

A research project into reference words, which summarise the competence of professors in architecture[b], brought to light that many subjects and dilemmas of study by design, design, design research and typology could hardly be reproduced in everyday language or technical language. The number of new terms (neologisms) in this profession is, therefore, large.

Designers show a distinctive creativeness in using neologisms for the explanation of their designs, neologisms like that empirical researchers simply dismiss as of no use in their jargon (family structure, age, income). However, it is of utmost importance that these concepts are taken seriously because they show the inadequacy of empirical jargon. They can herald a change in focus demanding another concept definition. Intensive defining is, therefore, not always the right thing to do. Conditional positioning is an alternative for precise defining.

The sheer size of the Index of this book (see page 531) is an indication of the prime importance of naming in the science of design. The first naming of components, concepts and design activities in the transformation of the earth's surface is determining the focus from where the remainder is named and considered. That this focus may be chosen differently, implies that a number of vocabularies are possible and desirable. Naming, typing and making legends are hiding an implicit, often blockading classification within which both study and design will express themselves subsequently and necessary. Already a seemingly objective description comprises in its terms at least one tacit pre-supposition that one should be conscious on in order to be able to speak in a different language about the same phenomenon.

The importance of naming and therefore implicit classification for design comes nowhere so directly to the fore as in the Chapter of the section technical study 'Classification and Combination' (see page 345). In it, the discussion, of a standing measured by decades, about naming the building materials and components is described as well as the shortcomings of any classification for a design opting for a different selection of building blocks in order to get to new designs. Any designer is facing, in each compositional task, such tacit, sometimes stimulating, but usually blockading pre-suppositions with which components have been named or imagined traditionally.

This Chapter gives some indications how the components of an image and their reconstruction into a concept may be delimited and named. This way it is becoming possible to talk about them and to retrieve them.

a   Venturi, M. (1950) *Town Planning Glossary; 10.000 multilingual terms in one alphabet for European Town Planners;*
-   Kay, N.W. (1955) *The Modern Building Encyclopaedia, an authoritative reference to all aspects of the building and allied trades;*
-   Graf, Huber et al. (1956) *Das Kleine Lexikon der Bautechnik (im Anhang DIN-normen im Bauwesen);*
-   Saylor, H.H. (1962, 1952) *Dictionary of Architecture;*
-   Académie D'Architecture (1963) *Lexique Des Termes Du Batiment;*
-   Barbier, M., R. Cadierques et al. (1963) *Dictionnaire Technique du Batiment et des Travaux Publics;*
-   Burke, A.E., J. Dalzell et al. (1963 / 1959 / 1955 / 1950) *Architectural and Building Trades Dictionary;*
-   Kinniburgh, W. (1966) *Dictionary of Building Materials;*
-   Frommhold, H. (1967) *Begriffsbestimmungen aus dem Bauwesen;*
-   Koepf, H. (1968) *Bildwörterbuch der Architektur;*
-   Koch, W. and G. Kötting (1971) *Termen en Begrippen in de Bouwkunst;*
-   Cowan, H.J. (1973) *Dictionary of Architectural Science;*
-   Killer, W.K. (1973) *Bautechnisches Englisch im Bild;*
-   Meling, G. (1973) *Naturstein Lexikon; Werkstoff, Werkzeuge und Machinen, Wirtschaft und Handel, Gestaltung und Technieken von der Antike bis heute;*
-   Walker, J.A. (1973) *Glossary of Art, Architecture and Design since 1945;*
-   Hall, J. (1974) *Dictionary of Subjects and Symbols in Art;*
-   Harris, C.M. (1975) *Dictionary of Architecture and Construction;*
-   Villena, L. (1975) *Glossaire Burgenfachwörterbuch des mittelalterlichen Wehrbaus;*
-   Curl, J.S. (1977) *English Architecture;*
-   Baumgart, F. (1978) *DuMont's kleines Sachlexikon der Architectur;*
-   Stein, J.S. (1980) *Construction Glossary an Encyclopedic Reference and Manual;*
-   Bak, L. (1983) *Vademecum ruimtelijke planning;*
-   Mohr, A.H. (1983) *Vestingbouwkundige Termen;*
-   Logie, G. (1986) *Glossary of land resources;*
-   Stichting Bouwresearch, P. Erasmus et al. (1989) *Terminologie van de voorbereiding en de kwaliteit in de bouw;*
-   Nederlands Normalisatie Instituut (1991) *Algemene termen in de bouw;*
-   Reinders, C.G. (1992) *Vaktaal; vaktermengids bij kerkgebouwen;*
-   Renes, J. (1992) *Historische landschapselementen;*
-   Wilde, E. de and H. Volker (1995) *Prisma Vakwoordenboek Bouw;*
-   Haslinghuis, E.J. and H. Jense (1997) *Bouwkundige termen.*
b   Jong, T.M. de (1997) *Hoogleraren Bouwkunde in trefwoorden.*
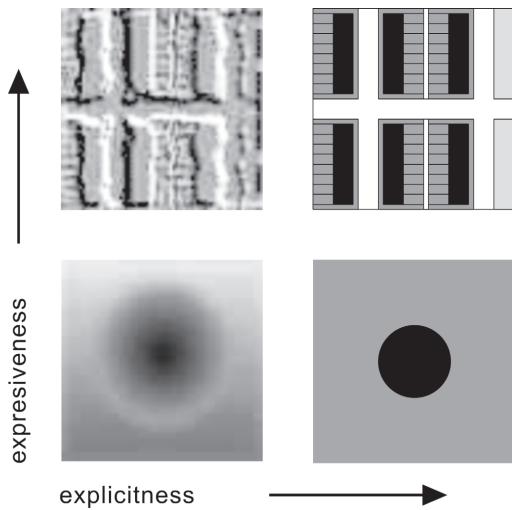
4   Information content of a drawing
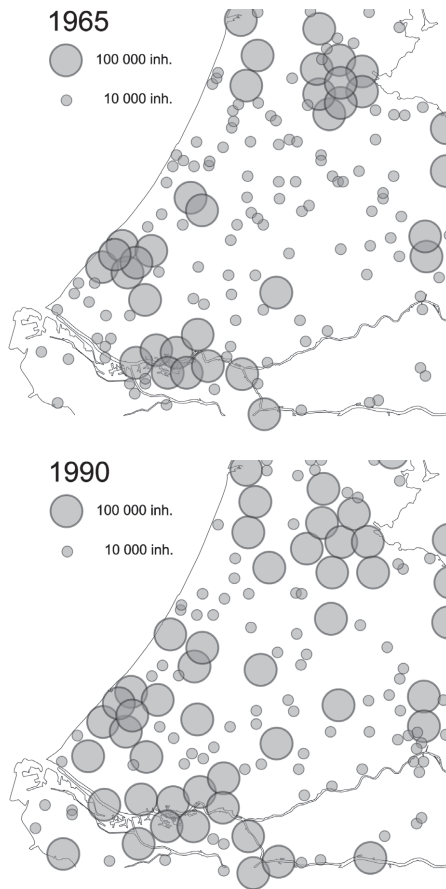
4.1   COMPONENTS AND CONCEPTS IN DRAWINGS

A picture says more a thousand words, but which words are these? This question is of importance for the scientific status of drawing, its documentation and retrievability.

A drawing is made in order to read something from it. Legibility is dependent upon explicitness and expressiveness. That is not the same. An explicit drawing, like a black circle on a grey field with for legend units 'black = built' and 'grey = vacant', for instance, may be very explicit, but is not expressive. The upper plot divisions are more expressive, while their legends (vocabulary) are more comprehensive and have been spread in more than one legend plane in the drawing (information content). When the borders between the legend units are drawn vaguely, the drawing may be more expressive, but it is less explicit. The precise positioning of legends planes has more tolerance (see paragraphs 24.10 and 24.11). Less explicit drawings make sense for creating an impression, but say less in a scholarly than in a poetical sense. Nevertheless they are essential in the designing process.

While consulting an archive of drawings it is only important to retrieve the drawing from which may be read what one wants to know. So it is not only important from a scholarly viewpoint to know what a drawing is depicting, but especially which properties, attributes and operations may be read from what is depicted.

4.2   FOCUS: SEED OF COMPONENTS AND CONCEPTS

The chosen focus primarily determines the viewpoint from which components and concepts are defined. During the design process, the interpretation of the location determines in a major way the first components with which the composition of the design is created. This way, over the years the interpretation of the urban area in the Randstad has changed focus. During the process the selection of the constituting and surrounding components of the image and the concepts related thereto did change. In the figure below the Randstad is represented in units of 100 000 and 10 000 people (large and small circles) in 1965 and 1995 respectively.

The large circles have a radius of 3km and represent reasonably well the urban surface area, which on average in the Netherlands is occupied by 100 000 inhabitants. This also applies to the small circles of 10 000 inhabitants. Where the circles overlap a higher than average population density for the Netherlands exists. The interpretation of this urban area throughout the years is similar to the formation of a different structure of the stars into a different constellation. Through this a different political, design technical and scholarly grasp on the composition also originates. In 1965 the Randstad was made up of a few large and a few small towns, recognisably separated by buffer zones and a 'Green Heart' between them. In 1995 it was mostly called a 'north-wing ' and a 'south-wing'. The Green Heart is becoming thought of less as a component. The 'focus' is shifting. Now it is generally called a 'Deltametropolis'.

A different focus is created upon the surrounding landscape based on the concept of a Deltametropolis, than one based on the concept of a north- and south-wing of the Randstad with Green Heart. The placing of the first components in the composition of the Netherlands determines the concept formation for the rest. In the figure below these concept shifts are represented using larger units (agglomerations, regions, parts of the country).

5   Succession of sprawl

6   Big cities around the Green Heart

7   North and South wing

8   Deltametropolis

Historical sciences show more examples of limited object constancy. Languages, people, nations and social categories appear, thrive, diminish, disappear or shift on the map in relation to their territory. The ability to free oneself from old categories, to choose a new focus, is the hallmark of creative researchers and designers (see also page 390).

4.3 UNRAVELLING SCALE

Changes in abstraction within a reasoning can lead to paradoxes like the statement "I am lying". If I am lying, I speak the truth and vice versa. It is a statement and at the same time a statement *about* the statement *itself*. Such self-reflexive statements were banished from the set theory at the beginning of the last century by Russell.[a] He would not allow changes in abstraction using a mathematical argument: "A set of sets may not contain *itself*". This wisdom has by no means entered into everyday language, not even in science.

The accompanying figure shows a spatial example of concept confusion, based upon a difference in the scale of consideration (scale paradox). It is shown here that identical spatial patterns allow different conclusions to be drawn when elements are involved in the consideration using a differing scope (scale level, largest frame, smallest texture grain).

For example if in figure 9 one takes one circle each time and the surroundings into consideration then one must ascertain a difference, although equality should be ascertained when one repeatedly compares groups of seven with the surroundings. Something similar applies to the consideration from inside to outside and from outside to inside. The paradoxical concept 'homogenous mixture' indicates precisely which dilemma this entails: it is homogenous at a specific scale level, at a lower abstraction level it is heterogeneous.

The concept 'bundled deconcentration', well known in Dutch urban planning, is another example. For concepts like that the question must be asked immediately: "using which scale for one, and which scale for the other?" Moreover, this figure shows that such confusion of tongues is possible using a factor three linear scale level difference. Between the grains of sand and the earth lie 7 decimals; therefore there are more than 14 concept confusions lurking.

This gave rise to allocation of a frame and a grain which differ systematically to other scale levels by a factor of around three for architectural categories, (discourses, drawings, uniformity in legends, concepts and objects) in the urban development[b] and the technology of building[c] in order to enable the *context* of the category in question to be defined (such as on other scale level).

The frame stated is labelled with a measurement, e.g. '10 m radius'. Such a 'nominal measurement' may be interpreted as 'flexible' up to the measurement of the adjacent radius, e.g. '3m up to 30m radius'.
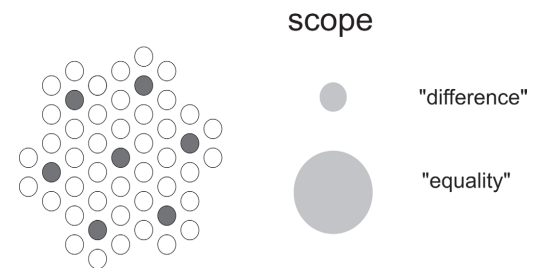

9   Scale paradox

| FRAME	NOMINAL RADIUS	
Global	10000	
Continental	3000	
Sub-continental	1000	
National	300	
Sub-national	100	
Regional	30	
Sub-regional	10	
Local	District	Borough	3	
Area	Village	1	km
Neighbourhood	Hamlet	300	
Ensemble	100	
Building complex	30	
Building	10	
Building segment	3	
Building part	1	m
Building component	300	
Superelement	100	
Element	30	
Subelement	10	
Supermaterial	3	
Material	1	
Submaterial	<1	mm

10   Scale articulation
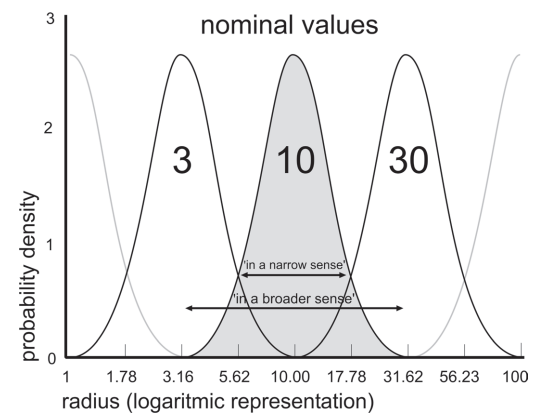
11   Scope of nominal measures

a   Russell, B. (1919) *Introduction to mathematical philosophy*.
b   Jong, T.M. de and M. Paasman (1998) *Een vocabulaire voor besluitvorming over de kaart van Nederland*.
c   See Eekhout, A.C.J.M. (1998) *Ontwerpmethodologie*.
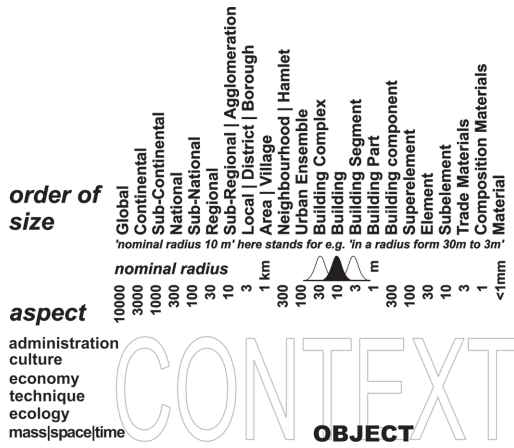
12 Object and context
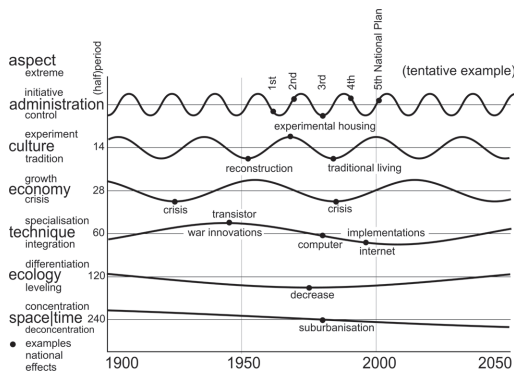
13 Different dynamics and perspectives

radius						m				mm
frame stage	300	100	30	10	3	1	300	100	30	10
initiative										
programme										
development										
design										
effect analysis										
execution										
usage										
maintenance										
evaluation										
demolition										

14 The context during the building process

4.4   CONTEXT: GROUND OF COMPONENTS AND CONCEPTS

As soon as one has 'placed' an architectural proposal, object, concept, conception, research or design on a scale level or 'radius', the rest is 'context'. The concept has obtained an 'interior' (everything which is smaller than the texture grain of the object) and an 'exterior' (everything which is greater than the frame of the object). This does not just mean in the widest sense of 'spatial context', but, also, more specifically, an 'ecological', 'technical', 'economical', 'cultural', or 'managerial' context. These contexts are also scale sensitive.

When naming the scale boundaries a concept is, from a particular viewpoint, spatially 'placed', regardless of the way a similar problem exists in the time. The concept 'Perspective' in time exists here as an analogy for 'context' in space, which becomes significant when the intended and unintended effects of a design are to be interpreted, named and estimated. In which perspective does this happen, with which plan horizon and under which assumptions with regard to external developments (initiating or controling government, an opportunity- or tradition directed culture, growing or stagnating economy, technology which is successful using function combinations or on the contrary using function separation, an increasing or decreasing spatial pressure).

Articulation of scale can clarify the concept 'goal' and 'mean' on the level of policy: if the State wants to reach a goal through a subsidy, this mean may be a goal for more local authorities. In this way economies are sub-divided in micro, meso and macro economies. Concepts like 'loss', 'profit', 'savings' and conclusions about them may not be inter-changed between them, even if the used words sound the same. Something similar is valid in time: if a goal has been reached, the result has become a mean for a goal further away. It needs no mentioning that the meaning of a concept depends on the context and the perspective within it is used and that it is often used 'removed from its context'.[a]

The building process always takes place in a social and material context and in a perspective based thereon. Each stage can have a different political, cultural, economical, technical, ecological and spatial context and employ, by the same token a language game.[b] The resulting conceptual confusion can often be solved by asking on which scale level the ambiguous concepts have been intended.

4.5   UNRAVELLING OVERLAPS

Once the perspective and context of the architectural system of concepts have been determined, one must check as to how far the concepts overlap. Overlapping concepts are lucrative in the acquisition of research, because one is allocated a budget in order to research the same thing using another name and possibly with slightly different limitations. However, they actually hinder retrievability and accumulation of research results and therefore growth of knowledge and proficiency. With this in mind one must not disallow new concepts (and then for example create a 'thesaurus' using permitted and well-defined concepts.) After all, the value of university research is in extending boundaries, shifting perspectives and changing focus.

The domain of overlapping concepts can be divided by giving the overlap a new name of its own. Supposing that, in a building one makes a distinction between load bearing, dividing and finishing structures to determine their effect on the required design-effort, their effect on manpower by production or to divide the budget between three participating parties. Then overlapping can lead to disagreement.

a   The functional CIAM separation 'living, working, recreation and traffic' resulted into separation of living and working on a much larger distance (1000 metres) than was called for by the hinder between both (100 metres).
b   A term of Wittgenstein, L. (1953) *Philosophische Untersuchungen*. Recent edition: Wittgenstein, L. and G.E.M. Anscombe (1997) *Philosophical investigations*.

WAYS TO STUDY AND RESEARCH

Set theory offers in this case symbols for 'without' (asymmetric difference, represented using \) and the 'overlapping between' (diametre, represented using ∩). This results in 5 exclusive concepts: (1) supporters\partitions (2) supporters∩partitons (4) partitions∩finish, (5) finish\partitions and (3) partitions\(supporters∪finish), whereby ∪ stands for 'union' (in this case from two disjunctive sets which are not considered to be overlapping). One can here also use concepts like (1) 'non-partitioning supporters', (2) 'partitioning supporters' etc.

Things become more complex, when a designer creates (6) a bearing construction as a finish. The Venn-diagram then indicates three overlapping circles with the categories 'bearing and finishing' and 'bearing and dividing and finishing' If this was unforeseen during the budget apportionment, to which budget must the time spent on the design be charged? Who makes the profit during execution? Therefore, in practice, an incorrect concept formation leads to confusion, let alone in science. This is very much the case when one wishes to compare different situations whereby the overlapping areas are not specified. It is also plausible in this case that an implicitly overlapping system of concepts is an obstacle for combined architecture innovations.

Neologisms may be required on the road to unambiguity, if one locates their domain in such a manner with respect to other concepts, (for example using Venn-diagrams) in order to accomplish a system of concepts. The requirement to avoid overlapping areas applies again to the other concept location.

The procedure is: to divide the domain of overlapping concepts once again into exclusive concepts and, if required, summarise them in order to accomplish a system of inclusive concepts giving insight into abstraction levels. The question "can one imagine 'B' without 'A' ", combined with the reverse question can aid this and yields surprising results especially with an inclusive system of concepts.[a] If the answer to both questions is negative and/or affirmative then these are respectively overlapping and/or exclusive concepts. If the answer is different, these are inclusive concepts with an asymmetric relation.

An irritating concept confusion exists when one places non-equivalent categories of different abstraction level against each other such as 'man and society' or 'man and the environment' and then also includes this in a schedule, which conceals more than it clarifies. A good example of this is Udo de Haes'[b] environmental definition, however, almost every scientist was an accessory to this.

However the technical environmental professors (Duijvestein, De Jong and Schmidt) present a 'technical definition'.[c] After all, one cannot imagine a society without an environment, but one can imagine an environment without people. The first schedule is, therefore, misleading from a technical point of view. Maybe this definition difference is typical for a contrast in language games between empiricists and designers, the way in which they reduce reality. The example puts the problems of the relations between concepts up for discussion. The second representation implies an actual asymmetry in the relationship between man and the environment, lacking in the first representation.

Does defining consist of making connections with other concepts? Are concepts therefore nothing more than a summary of potential connections (valencies) with the rest, their context? Is a property something different from a relation, an action that shows the feature? What name should we give to such actions? Does the naming of actions form another sort of concept than the naming of objects? It is quite similar to the physics argument: whether light is a wave- (action-) phenomenon versus is light a particle- (object-) phenomenon.
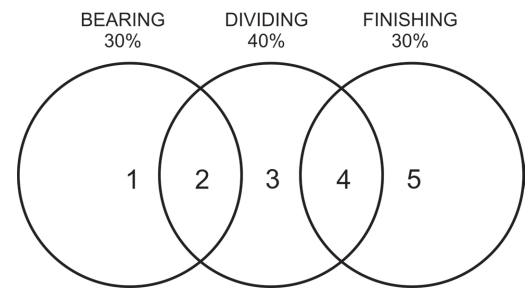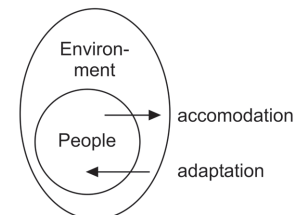

15 Overlapping concepts
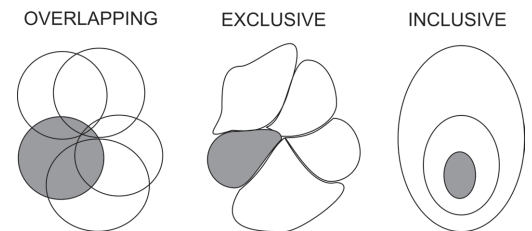
16 Exclusive and inclusive concepts

Environment is the physical, non-living surroundings of society in reciprocal relationship
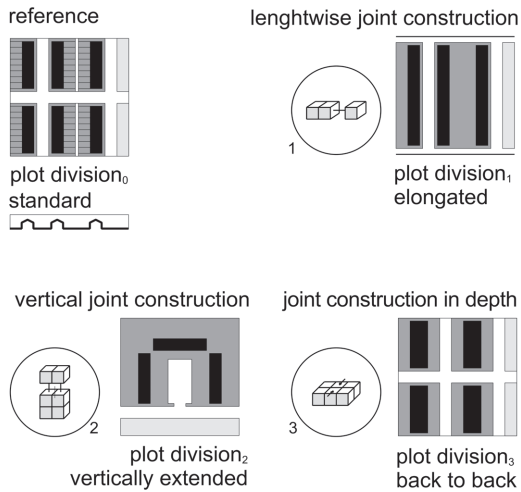

17 Environment according to Udo de Haes

Environment is the set of conditions for life

18 Environment in technical sense

a   Jong, T.M. de (1998) *Sustaining design*.
b   Boersma, J.J., J.W. Copius Peereboom et al. (1984) *Basis-boek Milieu*.
c   Jong, T.M. de (1997) *Inleiding technische ecologie en milieuplanning*.

reference

plot division$_0$
standard

lengthwise joint construction

plot division$_1$
elongated

vertical joint construction

plot division$_2$
vertically extended

joint construction in depth

plot division$_3$
back to back

19   Three transformations on one reference

reference

plot division$_0$
standard

plot division$_4$
urban villa's

plot division$_5$
narrow deep

plot division$_6$
strips

20   Transformations difficult to name

a   Latin for: 'other things being equal'.
b   In logic it is usage to place in this notation (full-sentence function) the operations (the verbs) outside the brackets. In order to be able to retrieve drawings with such full-sentence functions, it would be better to place the result (the object) outside the brackets.
c   The legends for a drawing may be regarded as its vocabulary.
d   Between the result and the reference no space is written.
e   Latin for 'part for the whole'.

4.6   NAMING TRANSFORMATIONS: INSTRUMENTS OF CONCEPT FORMATION

Figure 19 shows a reference plot division$_0$ with 48 houses on one hectare with an operation $O_{1..3}$ transformed into another plot division$_{1..3}$ with the same number of houses per hectare (*ceteris paribus*[a]).

All representations (images, nouns, adjectives and verbs) in this figure are concepts, abstract representations. They represent a collection of examples in reality (extension of the concept) and do not form the image of one specific situation. The square images are plot divisions: possible layout distribution of built-on space and a few categories of open spaces with mutual bearing. The open space is split into public landscaped areas and private grounds (light and dark grey) and public road space (white). They maintain a *bearing* upon each other *within* the plot divisions in the sense that if the built-on area (independently) varies, then the open space will also (dependently) vary. It can also be said that: open space y is influenced by, or an action of, built-on space x: y(x) open space(built-on space). The expression y(x) is called a sentence function. As soon as this connection is operational then the concept has become a function: y=f(x), composed of operations between variables (see paragraph 24.19). A Mathematical operationalisation would be: open space = total space – built on space. However, there are innumerable qualitative design-operationalisations (transformations) possible within this quantitive rule.

From the diagram with the plot division transformations the operation of lengthwise joint construction, can be read on a reference: long blocks(plot division). Such a notation object(subject) where the brackets mean 'as operation of', is also a full-sentence function that has become independent.[b] The operation is dependent on the way in which one builds adjacently: in the length, the width or the height of the building block. The function can be used as key-word for the drawings specified by transformations.

The noun 'plot division' and its depiction are comprising here this way the constituent legend units[c] (constituent concepts) and (spatial) connections between the legend units. In the word 'plot description' this stays implicit, in the picture it is explicit. Focus can change by alternative grouping if 'private space' is a legend unit composed of built-up area and gardens. The meaning of 'plot-division' changes accordingly, perhaps better named by 'parcelling'.
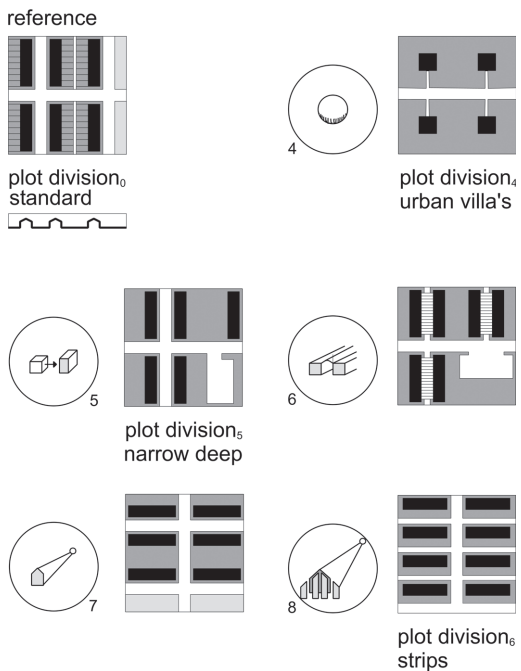
The verb (evoked in the circles) pre-supposes an imaginary connection within time between the plot divisions mutually: first, the reference, then the operation and then the result. If one is opting for a different reference (for instance neighbourhoods rather than houses), the same operations would have a different result. This connection can more generally be described as 'plot division' as operation of a reference: plot division(reference).[d]

The adjectives give one property of the plot division, or actually of the built part of it (*pars pro toto*[e]). However the concept 'plot division' is a set of properties; most of them lack verbal equivalents. A property can be described as an operation. Zoning is an operation of the plot division: resulting in a property zoned(plot division(reference)). If a property serves the identifying of a depiction, this property is termed an attribute.

In figure 20 operations are visualised using the same reference plot division, however these can not be reproduced using just an existing verb. However, naming the transformation by a sentence function result (origin) could be efficient for retrieval.

Design operation$_4$ could be called 'compact building' or 'concentration' in three dimensions (length, height, and depth) on a scale level of one quarter of a hectare. This results in urban villas measuring 15x15x15m. On a scale level of the hectare as a whole, however, the concentration (*ceteris paribus*) would accommodate one building measuring 24x24x24m. So, the term 'concentration' is a scale sensitive transformation

Operation$_5$ is a form of concentration in length. The result being a narrow and deep dwelling when using an equally sized plot division surface (*ceteris paribus*). This has a number of effects upon the open space and its technical facilities.

Operation$_8$ results in southerly directed strip plot divisions, therefore, enabling all of the houses to be orientated towards the sun and, therefore, can also be internally zoned for warm and cold rooms. This operation is difficult to describe using a verb; this is why it is visualised with the aim of this operation (zoning), which requires a reference point outside the plot division (the sun, the south).

The adaptations of the plot divisions are mainly geared towards the built-on space, but at the same time they also have a spatial effect, which is difficult to define, on the public landscaped areas, paving and the open private space. The result is known as an effect on the built-on space, but the result of the adaptation is much broader.

In architectonic and urban development, designing always contains an intervention in an existing situation, focusing on specific effects. When one is in the position to name these interventions as design operations (transformations), then one can summarise many patterns as result of a few transformations on every reference. The concept 'concentration' is an example, if one specifies this concept per scale level and direction.

4.7   CONDITIONAL POSITIONING OF CONCEPTS

What is called 'assumption' in our imaginative capacity is, in reality, a 'pre-condition'. If I am driving a car, I assume that there is petrol in the tank. This is also a pre-condition to actually being able to drive. If something does not 'work', then one of the conditions for its working is lacking, in this example the petrol. Such a pre-condition is a 'cause of failure', the 'cause' of a non-event that one had indeed expected (assumed). Yet, the classical notion of 'cause' does involve an 'occurring event', even though one does not expect it (for example, the cause of a fire). With the concept of 'cause', then, one is actively thinking about an event that has come before and that caused perceived consequences (active cause).
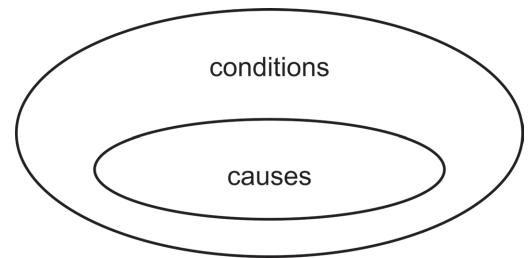
All these causes are a condition for something to happen, but not all conditions are also causes.

21   Not every condition is a cause, but every cause is a condition for something to happen

There are many more conditions than there are causes. Petrol, for example, is not the only pre-condition necessary to be able to drive a car. There also have to be pipes that supply the petrol to the engine, there must be an engine, and this engine must be able to transfer its capacity to the wheels. And, indeed, the car must have these wheels. The design of the car is actually the collection of pre-conditions needed for one to be able to talk about a car. These are object pre-conditions, but there are also a basically infinite number of context pre-conditions. I cannot drive a car if I am sick, if there are no cars or roads for me to drive upon, or if someone prevents me from doing so for whatever reason. Thus, the context is a collection of pre-conditions for the architectural object.

22   Any probable event is per definition possible, but there are improbable possibilities
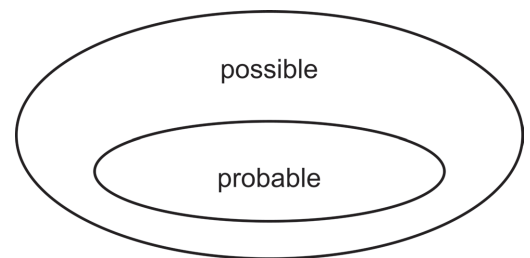
Studying the context and object pre-conditions does not result exclusively from the linear logic of causal thinking. Under certain conditions, something *can* happen, or in the case of a certain cause it *probably will* happen. Conditional logical does not always unlock the probable, but it does unlock the possible.

This logic fits in with study by design. Just as there are chains of cause and effect, there are also pre-conditional chains by which, under certain circumstances, patterns and processes are not so much predictable, but rather imaginable. This imaginability is introspectively verifiable using the test, "if I can imagine A without B, but not B without A, then A is the pre-condition for B".[a] We call it 'conditional analysis'.
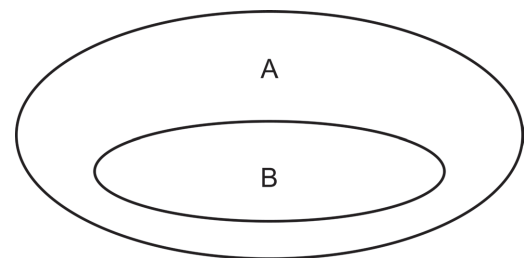

23   'A not imaginable without B'

Petrol is the pre-condition for a working petrol engine, but a petrol engine is not a pre-condition for petrol. This is not a case of causality since petrol is not the cause of the working, but only one of its conditions. A load-bearing structure is the pre-condition for a roof, but a roof is not a pre-condition fort a load-bearing structure. Thus, one can pre-conditionally position

a   Jong, T.M. de (1992) *Kleine methodologie voor ontwerpend onderzoek*. Here, quite a few concepts from design and research are compared by conditional analyses.
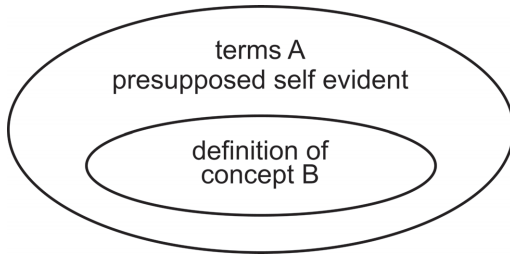
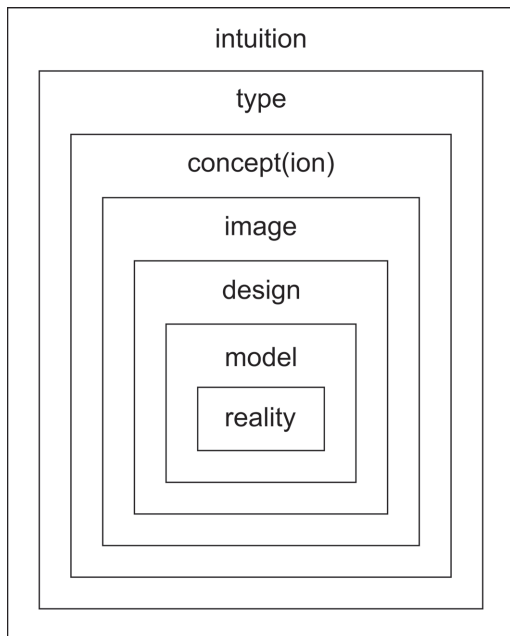24   Terms A pre-supposed in a definition of B

25   Stairs of imagination

design elements in regard to one another. Aspects of the context can be studied as pre-conditions for parts of the design. Design study and study by design considers variations in pre-conditions. Within the design process, results from certain design phases are pre-conditions for a continuing of the design.

Mutual conditional positioning of concepts shows the very possibility of definition itself. One can not define a concept in terms that pre-suppose the concept itself. Whether the concept to define is contained in the defining terms or not is brought into light by conditional analysis.

The conditional analysis goes:

1   "Could you imagine terms A without B?"
2   "Yes."
3   "Could you imagine B without terms A?"
4   "No."
5   "Then terms A are pre-supposed by B."

B could be defined using terms A.

Conditional analysis can help positioning terms for defining abstract and vague concepts. A useful example is given in figure 266 'From possibility to norm'. In the next sections of this book crucial concepts in describing design processes could be positioned like in figure 25. However, in this figure the focus is on imagination of not yet existing objects produced in a design process. It is a designer's focus defining a model in terms of design. An empirical scientist perhaps pre-supposes a reality without which s(he) can not imagine models. S(he) will position the terms the reverse and define a design in terms of a model. To understand differences in focus one should enter a higher level of philosophical abstraction of discussing such differences on itself. In Chapter 44 (see page 413) we will discuss them in the perspective of idealism and materialism.

4.8   CONCLUSION

In this Chapter we tried to discuss naming concepts and components in a conditional way. It started with focus as pre-condition of choosing components, frame and grain, getting grip on context, unraveling overlaps, naming transformations and conditionality in technical design and in defining concepts. So the sequence supposes conditionality on a higher level of abstraction than the subjects discussed, the level of the discussion itself. Should we start on that level of discussing discussions with conditionality and end with focus? That kind of focus perhaps goes beyond imagination. Anyway, the Bible starts with naming.