Building Culture

by Ole Møystad

THE PHILOSOPHER Trond Berg Eriksen once held that a contemporary theory of the Opus would have to comprise the entire process from the artist's conception of the Opus to the observers use of it.[1] So doing he implied a link between behaviour and physics, thought and act, being and doing.

Within the general field of architecture the extension of OpA is described by the amount of space-time it actualises. Its extension is hence spatial as well as temporal. I will here specify its three parameters.

Space

Whereas Berg Eriksen was speaking of basically any kind of Opus, I will confine my interest here to the one of architecture. The reason for this is that architecture belongs to a kind of activities that can be said to be rather basic to man. As a matter of fact most of these activities we have have in common with most animals. We must all eat, copulate, communicate and seek shelter in order to survive as species. What however gives man a certain superiority in the zoological pyramid, at least in his own eyes, is that which we can observe as a surplus of form within these kinds of activities.

We do not only eat in order to satisfy our need for nutrition. We do not copulate only in order to breed. On the contrary; we often go through all sorts of intricate procedures in order to copulate without causing reproduction, and it has passed a long time since our grunts and cries became poetry and prose with the ends not merely restricted to rut or warning. The same can be said of protection, even if Norberg-Schulz may be right in claiming that being an architect is the world's oldest profession only second to one.[2] Our architecture serves more diverse functions than our caves, paths and landmarks did.

Tema
SEMIOTIK

This article will suggest an ontological stratification of architecture in the Opus of Architecture (OpA), the Object of Architecture (ObA), and the general Field of Architecture (FoA). It will describe the three levels, and interrelate them according to the structure of a Peircean sign relation.

Ole Møystad
Fac. of Engineering and Architecture
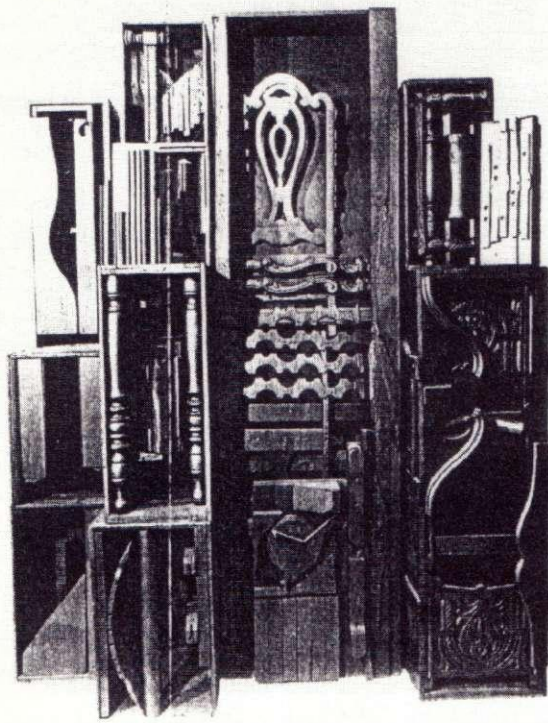American University of Beirut, Lebanon

Figure 1. Louise Nevelson (b. 1899) assembles metal or wood fragments that interest her – volumes and curves that make for marvelously subtle rhythmic harmonies – and organizes them into totally controlled architectonic shapes. Moon Garden Wall II, 1975. The Pace Gallery, New York.

I consider this surplus of form to be of a nature somehow equivalent to the surplus that could be observed during the Baroque as various excesses. What is added is a sign aspect, by which the basic phenomenon, food – sex – shout/gesture – shelter, is turned into a basic resource of cognition. It is turned into "…a kind of tool directly related to the mind, and fabricated out of its own special 'etheralised' resources: signs and symbols"[3] by which, says Lewis Mumford, the objects are brought into relationship with the brain.

The Opus of Architecture is hence serving a more basic function than for instance the opus of a Musician, a Sculptor – or an Engineer, and its meaning rests on an accordingly basic ground. Consequently every OpA extends from the most intimate, private touch to the public scene. By constitution it belongs to the sphere of *elementary pragmatics* and *collective horizon* alike, as opposed to an opus of the Fine Arts which may rest forever in the privacy of its creator – or his client[4], and still be a work of art. The Opus of the Engineer, which is essentially an assembly line product – let us say an engine, can however hardly be conceived as pertaining to anything else than our collective toolbox; we all have an engine.

Time

A purely aesthetic opus, a work of art, is conceived in the consciousness of an artist, hence in the present.[5] Before the conception of the Sunflowers in the mind of Van Gogh, there was no trace of it, there was nothing in the sunflower fields in Provence to indicate the future coming into being of this masterpiece. Posterior to its creation it however seems to go on for ever capturing the thoughts and feelings of whoever is exposed to it.

The invention of, let us say, the steam engine is, however, rather easily retraceable. In retrospect we can observe that prior to its official invention by James Watt in 1769, a chain of discoveries and inventions were done, starting with Papin in 1690 and Newcomen in 1705, to which the first application of the steam engine by Watt in "The Albion Mill" in 1785 was a more or less a logical consequence. It did astonished its contemporaries, but once they had understood the principles of it, the spell was broken. From there on the interest was turned to ways of exploiting and improving its performative capacity.
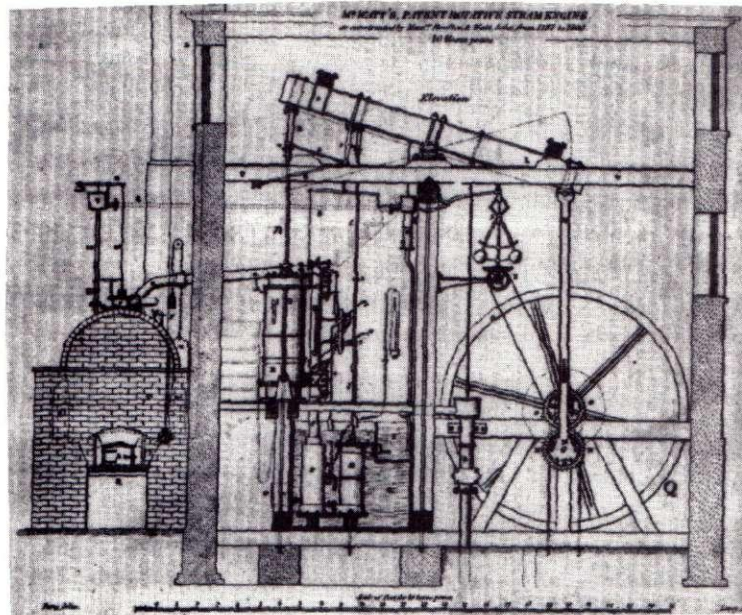
Figure 2. Watt engine depicted in an 1826 illustration. The engine transformed the vertical action of the piston rod (*n*) into rotary motion through the flywheel (Q). From John Farey, *Treatise on the Steam Engine*, 1827. Science Museum, London.

I am deliberately simplifying things. Contemporary philosophy of science is questioning this way of perceiving scientific discovery as a logical chain where one link follows the other, where every discovery comes as a necessary consequence of a prior chain of discoveries. Prigogine illustrates this by the classical dictum that without Bach we would not have had the 'Matheus Passion', whereas 'The Theory of Relativity' would have been discovered quite irrespective of Einstein or somebody else doing it. Prigogine supports his doubts about the truth value of the dictum referring to significant facts that were ignored for long periods of time "... because the cultural climate was not yet mature for taking them up in a consistent schema".[6] It will lead us far beyond the scope of this study to go into a profound discussion of this problem, but Prigogine indicates the evolutionary pattern of science to be of a nature equivalent to a morphogenetic field. Whereas the dictum concerning Bach and the relativity presupposes an absolute finality of science, Prigogine proposes to renounce the absoluteness and to turn towards a conditionality as suggested by René Thom, which is nevertheless a finality.

This problem is important to keep in mind, but it concerns the principles of science, its global aspects, and not necessarily its local ones. I think Prigogine would agree that the invention of the steam engine was made, may be not *necessary*, but certainly *probable* by prior inventions, and that the same can not be said to be true about Van Gogh's Sunflowers. This does not change the fact that the power of the steam in a boiling kettle had been known for ages before 'the cultural climate' was ready to exploit that energy technologically.
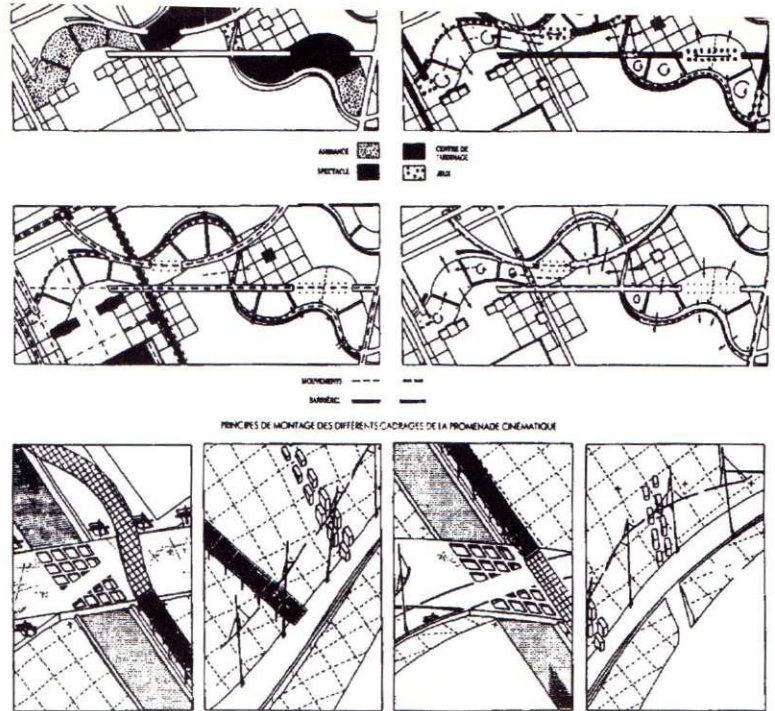
Figure 3. Bernard Tschumi's design strategy for Parc de la Villette is based on architecture as a space-time phenomenon. His superpositions of space, structure and succession of events give a clear example of an architecture conceived as Opus, rather than as object.

The engineers making the preparatory inventions were not consciously preparing for the invention of the steam engine. The bringing into being of the opus of engineering hence commences *somewhere* in its past, and is fulfilled in present. The aesthetic opus on the other hand, is brought into being in present and goes on unfolding into *somewhere* in future.

The Architectonic Opus is initiated by a malfunction or some other discontinuity, Alexander calls it a misfit[7], in the architectonic field. The 'misfit' can be somebody in need of a dwelling – or a hospital – or a city hall, it can be an individual speculant or a community with a vacant lot wanting it developed, or an engine factory in need of an extension etc. It can be any of these things and an infinity of others that causes somebody to take on the role of client, find an architect and ask him to do something about it. The OpA hence extends towards its past, like the engine. Inasmuch as the architect conceives his opus with respect to a future use which will be unfolded far beyond the scope of his consciousness, the opus will go on, like the sunflowers, to fill its users with wonder – for good as for bad – till somewhere in the future.

The OpA does in other words extend from somewhere in its past to somewhere in its future. Neither its beginning nor its end is final. They are however both regulated by the 'present'. Inasmuch as this opus is an effect of a prior cause, a discontinuity or misfit in the FoA, which it in its turn regulates, we may say that we are in touch with a *final cause* (*une cause finale*) in the sense that René Thom gave to the concept.[8]

Actualisation

At this point I will concentrate on the 'present' of the Opus, where its 'ethereal'[9] substance is materialised. This is the *mise-en-œuvre*, the act of making actual that which up to this point was virtual, and of thereby initiating new virtuality.

The conceptual entity, whose form has been generated in the course of its past by that part of the architectonic field which it has traversed, is now given material being. It hence becomes part of the same field of architecture in general. This means that the conceptual entity reflecting the initial discontinuity, is first given the form of a commission by the client/user[10]. The client/user then commissions the architect to solve the problem. The solution that the architect produces is to restructure the architectonic field in such a way as to re-establish its continuity on the point in question. The solution is usually, but not necessarily, represented by an Object of Architecture.

The conceptual entity hence passes from receiver of form to giver; from concept-being-generated to being-generator-of-concept. Please observe that only 'it', the substrate carrying the conceptualisation, changes ontological status; ObA comes into *being* and gives OpA a material ontology. The concept, or OpA, is however *becoming* all the way – it remains dynamic.

With respect to architecture as a basic way of human behaviour and cognition, one aspect of the Opus is particularly important to keep in mind. According to the experiencialist theory of Cognitive Semantics[11], thought, also conceptualisation as outlined here above, is organised and stored in conceptual categories (as opposed to arbitrary symbols like words). Such categories are defined by schemas basically generated by our bodily and mental interaction with our environments. Piaget taught us that. Recent cognitive studies confirm it, and develop its epistemological implications in schemas called *Kinaesthetic Image-Schemas*. They rest on a reciprocal mind-body-world logic basically equivalent to the one of the Force Dynamic Theory.[12] The hence established table of categories is furthermore stratified. The stratification is organised around a level which is *cognitively* (but not necessarily philosophically!) basic, wherefrom super- and subordinate levels are derived. In terms of architecture the individual Opus, for instance NN's residence, would be the basic level of categorisation. The next level super ordinate to the basic level category would be residential architecture and then architecture in general. The subordinate level would be the particular wooden, or concrete, structure to be found at NN's address, then for instance the wall, the floor, the ... etc.

super ordinate:	vehicles	forest	urban structure	FoA
basic:	car	tree	skyscraper	OpA
subordinate:	Citroën DS	oak tree	Lever House	ObA

Figure 4. Schema of categories and their stratification.

The properties making a *basic level* cognitively basic can be summarized in four respects:

i) Perception; the members of a basic level category have an easily overall perceived shape. A residence is easily identifiable, and re presentable, in one mental image, which can also represent the entire category of Architecture. The same is not true for architecture in general or for a wooden structure.

ii) Function; it is at the basic level that most cultural functions of a category member is determined. It is difficult to speak of the cultural function of architecture in general without reference to individual buildings, or of the curtain wall without reference to a sky scraper. We have general motor programs for interaction with buildings and sky scrapers. The same is not true for architecture in general – or for Lever House in particular; architect or user alike.

iii) Communication; at the basic level we find the most commonly used and contextually neutral words designating the category members, first to enter lexica and first learned by children. Children start drawing houses long before they care about environmental design or construction, most persons never go beyond the basic level of architecture at all in this respect. This is true also for quite a few architects.

iv) Knowledge Organisation; most of our knowledge about the category is stored at its basic level. Most people know a lot more about houses than about architecture or construction.

OpA is in other words our access gate to Architectural Knowledge. However; without super ordinate category levels of higher abstraction as cognitive syntax (*architecture*) and subordinate category levels of concrete matter as let us say cognitive syntagms (*architectonic objects*) there is not much knowledge obtainable, maybe only the shrill of a phenomenological, but unintelligible experience.

The Object of Architecture

I will also remind my reader of the difference between *architectural* and *architectonic*. The first predicate refers strictly to a physically built object or entity, the second has a wider definition. It has a more abstract meaning referring strictly to the structural property of something. A political proposition can be architectonic, but not architectural. A building can be both.

When I use 'Object of Architecture' in the context of this text, I refer to a physical *objectivity*, but not necessarily to one homogenous object, like a house, a perimeter block, or a square. The reason for using 'Object of Architecture' is to have the category comprise points of conjuncture. The meeting point between a local ur-

ban structure and the European railroad network (the TGV) in Lille can hence be considered an 'Object of Architecture'[13]. An example on a smaller scale would be the street corner which is a point of conjuncture between let us say one local artery, one main street, and at least one building.

Conjunctures are far too rarely defined as objects in their own right and given as a commission to an architect. This is however necessary; how can we expect continuity if points of conjunction are only points where one object randomly juxtaposes with another, or where an object simply ends? At their worst such points are referred to as 'Space-Left-Over-After-Planning' (SLOAP). Then it is no point of conjunction, but void or conflict.

Nota bene; continuity is something very different from 'holism'. Continuity is something which is created locally and piecemeal.[14] Holism is imposed globally by reducing *Architecture* in general to one *Object of Architecture*.

Use

I will adopt the proposal of Norberg-Schulz to abolish the distinction between 'function' and 'symbolic value' as irrelevant.[15] In their place I will put *use*. *Use* hence contains some basic properties of man's relation to his architectural environment, by which it constitutes man as user, and it constitutes the context in which the user experiences the discontinuity which initiates the OpA. *Use* is furthermore subjectively constituted. This means that it is based

Figure 5. The abandoned bunker at Vigsö in Denmark, once part of Nazi Germany's Atlantic Wall, now deprived of the context that once generated it, presents itself as naked object – as Heideggerian *Ding*.
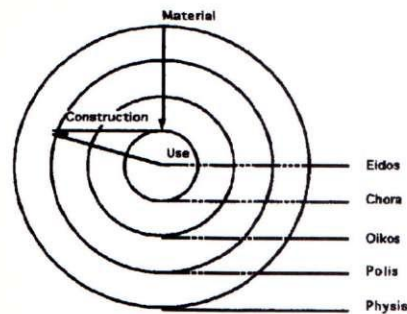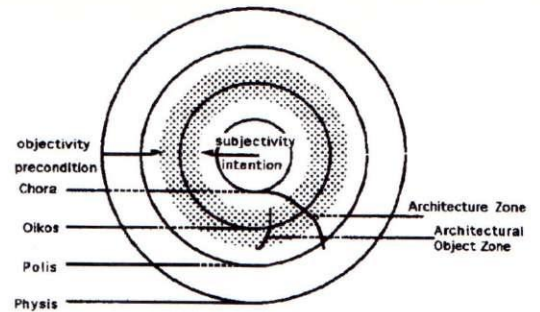
Figure 6. Chorematics of Construction.

Figure 7. Chorematics of Architecture.

in the subject, but not that all use is subjective. As we can read from the choremaic in fig. 6, it extends far beyond the realm of the subject which hardly exceeds Chora. It is hence exposed to a strong objective influence and regulation.

Use is consequently the context within which the continuity must be re-established.

Material

I mean literally stone, wood and all the other objective substances from which we build our environments. I will use a *Chorematic Schema* to elaborate on the position of the material.

A *Chora* is Greek and means "space/site/place which is occupied by something or somebody"[16]; in other words a place considered in relation to a subject, by which the subject can be inside or outside a condition, a position, a room, a community, a meaning, an opinion, a territory – or whatever constitutes the chora. When a subject hence is defined in relation to a chora, we have a *choreme*. With such choremes we can construct a chorematic by which it is possible to analyse more complex subject – object relations. Chorematics are in other words a transcultural proxemic schema[17]. At this point I have constructed the Chorematics of construction based on the continuum of thought according to Per Aage Brandt[18]. As basic chora I have used the human body, and within 'Chora' (cf. 'choreography') 'Eidos' is located.

Eidos however is a difficult entity within a chorematic, because the subject can only be inside it. To go outside it, the subject must die and become object. The only object, to my knowledge, to which it is possible to become subject is the human embryo. Death and birth may be semiotically significant entities, but ontology concentrates on that which *is being*, on life so to speak. For the present ends I have therefore not given Eidos any extension, but represented it as the point forming the centre of the chorematic.
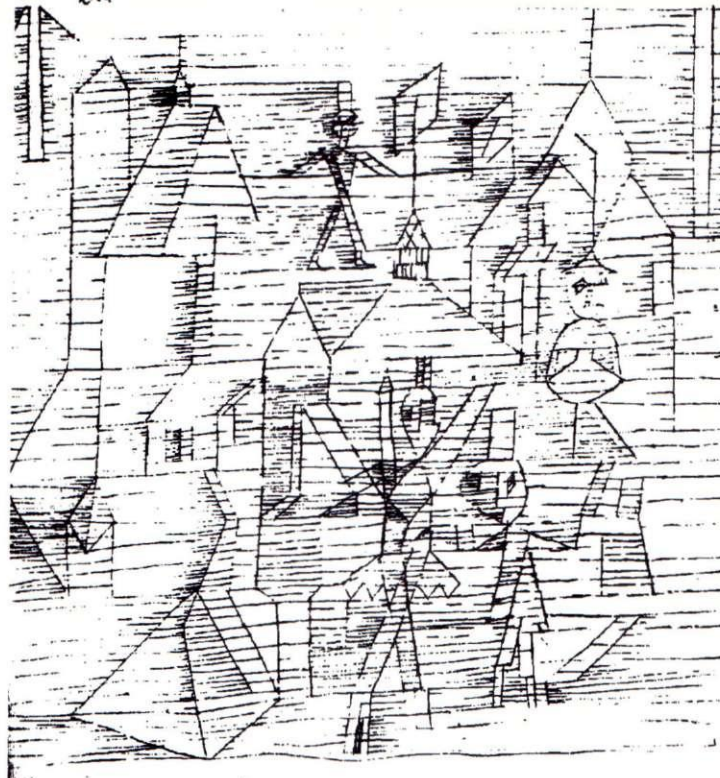
Figure 8. *Jongleurs en ville*, 1929/50, 25,5x24,5 cm. Paul Klee. The virtual architecture of FoA.

Materials arise in Physis, and following our chorematic schema of construction, figure 6, they move towards Eidos. When they reach Polis, they enter the sphere of subjective influence. They enter into use where they are used for purposes that originate closer to Eidos and move in the opposite direction.

Material contains some basic properties of nature's relation to man's architectural environment. When Louis Kahn asked the stone what it wanted to be, he was at the outskirts of town, in the transitional zone between Polis and Physis. Inasmuch as the stone answered 'Give me the Arch' it must already have been under some influence of *Use*. A stone in the middle of physis would probably have answered 'I am what I am, what is *want*?'.

When a material becomes a building material, it demonstrates the static preconditions that nature sets for construction.

Construction

The static preconditions of a building material regulate the relation between the material and what happens to be its *possible* respectively *necessary* form. Use modifies and discursivates the same preconditions. Construction is hence the form of the tension which is generated between use and material. Understood like this it abo-

lishes the distinction between an 'ethereal' entity as use and a physical one like material.

When construction submits to the preconditions given by the material, the tension goes towards zero, and less form is generated. Tension rises when use modifies and discursivates the preconditions, and more form is generated.

A condition of no tension at all and hence no form can only be imagined outside Physis. Even nature has form and construction, which of course rises the question of subjectivity, intention and ultimately of intelligence – in nature. I will however avoid that discussion by leaving the question open and concentrating on FoA. In order to outline our field of interest and relate it to an inside and an outside, I will again refer to the *chorematic schema*.

The Field of Architecture

Chance is first, Law is second, the tendency to take habits is Third. Mind is first, Matter is second, Evolution is third.

Such are the materials out of which chiefly a philosophical theory ought to be built, in order to represent the state of knowledge to which the nineteenth century has brought us.[19]

I would not say the twentieth century has made it necessary to use other materials, but I do think it has made it necessary to admit that we still do not know very well how to use the ones we have.

Cognition studies like Force Dynamics as well as Catastrophe Theory and Cognitive Semantics use metaphors, or image schemas, from the world of material ontology and from our interactions with it, in order to represent matters of semiotic nature. Chorematics is one such schema, and architecture is the structure of the central chorematic zone in which the most part of these metaphors are produced. This indicates that such schemas are epistemological *metaphors* only when applied outside architecture. Within architecture they should probably be considered *propre epistems*.

Apprehended like this, 'Architecture' – FoA – emerges as something of a basic level category of *Existence*. I am now reasoning close to Heidegger; it is however essential to keep in mind that if there is a *Cause Finale*, it rests in OpA – not in FoA. That is also the level on which the interaction schemas are generated; we do not interact with architecture as such – do we? Within a cognitive context FoA is therefore a, or *the* super ordinate category of the OpA, to which the equivalent of Heidegger's *Ding* – the ObA – is subordinate.

When we superimpose the chorematics of Construction, figure 6, on the chorematics of Architecture, figure 7, the location of the ObA is indicated by the overlap of 'Construction' and FoA. Even if characterising as 'basic level category of *Existence*' is no fallacy, it would be more precise to refer to it as the 'Construction' of culture.

Ideas

> I think we may safely say that the studies preliminary to the construction of a great theory should be at least as deliberate and thorough as those that are preliminary to the building of a dwelling house.[20]

This dictum of Peirce's rests upon what he refers to as "philosophical architectonics"[21], and of which the quotation introducing the present paragraph is a basic principle.

Ideas pertain to mind; to Eidos in the chorematics. When Peirce speaks of 'First, Second and Third', he refers to three modes of being. In "The Principles of Phenomenology"[22] he calls these three modes, called 'Firstness, Secondness and Thirdness'. I will outline the first mode immediately. The second and the third will be outlined below.

Firstness is the being of qualitative possibility, or what I have referred to as *virtuality*. In Peircean architectonics ideas will hence belong to the category of "Firstness", and so will *knowledge* as a possibility, a promise, or a quality of the Knowledge-Object[23]. Quality has no temporal or spatial extension, neither have ideas, knowledge, intention or *Use* as such. They may be considered as qualities in this sense; qualities of FoA.

I suggest to apprehend that which is experienced as an urge to cultivation, civilisation, education, form, as an urge to think, to plan, to create order, the welfare state, the utopia of the classless Marxist society, I suggest to apprehend these sometimes irresistible urges as effects of such qualities of FoA. Such quality is, I believe, 'Architecture''s *first mode of being*.

The effects of the urges, however, or the urges when they have effects, belong to its *second mode of being*.

Matter

Secondness is the being of actual fact. Entities pertaining to this, second, mode of being tend to resist our will, to react upon it. A mere quality has no form, no effect, and does not react or resist. When a quality, like the urge outlined under 'Ideas', has effect, it is not virtual, but actual. This means that it has come into actual being and become matter. The matter of 'Architecture' is not necessarily physical. 'Matter' is an ontological property signifying that something has a stable and actual being; that it is a fact. We can now see the difference between the 'Matter' of 'Architecture' and the 'Material' of the 'Architectonic Object'.

'Matter' hence signifies the impact of that which is actually being, and I will situate it chorematically in Physis. I am aware that many facts are encountered in Polis, Oikos, and even in Chora; many facts have come into being only there. Their stability however, their very capability of reaction to will, or Use, rests upon

the preconditions given by Physis. Not one Utopia, to my knowledge, has become a fact.

When even the Scandinavian Welfare State hardly seems to survive the generation who conceived it, it is due to facts whose opposition to first rate social democratic ideas is so strong that it is now changing the form of the Scandinavian Societies. To put it bluntly; the *idea* is social and material safety and equality for all members of the community. This is a quality – a possibility. The *matter* of fact in the case of a society seems to be rather more related to the principles of survival and group formation as we know it from nature in general; among animals and in biological organisms.

The same kind of *matter* of fact is at play in 'Architecture'. What happened at Pruitt-Igoe in 1972 (fig. 5 show the blowing up of the blocks) was an abrupt change of Architecture's form due to *facts* of 'Architecture' rather strongly opposing modern *ideas* of 'Architecture'. Such facts are 'Architecture''s second mode of being.

Morphogenesis
Form is that which is generated in the field of tension, of dynamic, between idea and matter. Culture is such form, and civilisation. Culture and civilisation evolve with a certain habitual regularity, and so does 'Architecture'.

At first one can be lead to look for the laws of this evolution, but "...when we see both sides of the shield we call (them) thoughts."[24] This evolution process is not quality. Quality does not change or grow, and quality has no reason. There is no reason why red is red, it quite simply is red without any reason. Thoughts have reasons, but they are not facts. Facts are actually existing and they are particular. Thoughts are general and can be referring to non existent things like unicorns just as well as to existing ones like horses. We are therefore having to do with a mode of being of 'Architecture' which is neither quality nor fact. I will call thought in this context the habit of generating form, and refer to this as 'Architecture''s third mode of being. It is according to this mode of being that it is doing the labour of constructing culture.

Pour conclure

i) *Architecture* as a general concept, FoA, will then constitute the syntax by which the Opus and the Object can be understood. It is that cognitive structure or function which enables us to connect the two and hence render them intelligible. I will therefore give *Architecture* the position of the *Interpretant*.

ii) The *Opus*, OpA, is that level of architecture to which the use as well as the design of architecture refers. It is the level in which our experience of architecture is founded, and on which our interrelation with it is at its most intense and extensive. This corre-

sponds to what Peirce calls the idea behind – or "the *ground*" of the sign or representamen.[25] The position is usually referred to as the *Representamen*, and that is the position I will give to the OpA[26].

iii) The object, /O/, is that particular entity for which the sign – *in some repects relative to the ground* – stands. It is furthermore the object which actually induces the experience of which the *ground* is ground. It stands behind the /R/ which represents it. The object position will hence be the position of the *Object of Architecture*, ObA.

This is a rough schematization which in no way is sufficiently precise or elaborate, but it will suffice as a point of departure. Its graphic representation is shown in figure 9.
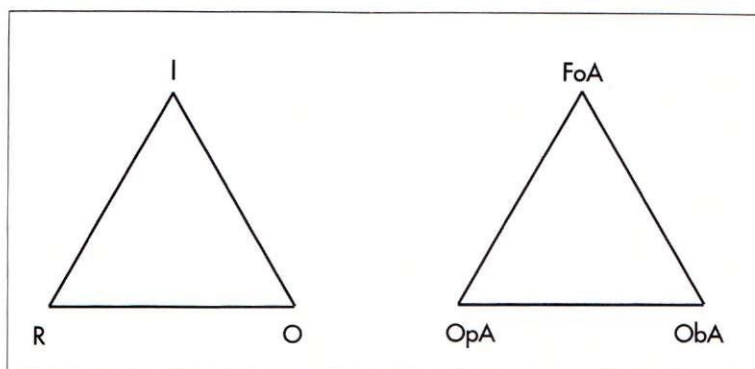

Figure 9.

Notes

1. Berg Eriksen held this in a lecture called "The Space of Information" at The Oslo School of Architecture 2/4 1990.
2. Said in a lecture given at a seminar on basic problems of aesthetics at The Norwegian Polytechnical School in Trondheim 17/11 1990.
3. Mumford 1967, p. 43.
4. Further elaboration in Møystad 1991 b.
5. Strictly speaking 'now' has no internal time, it is a point. Pragmatically however, we refer to the present as the zone of influence of this point. The extension of this zone has no precise limit, but whatever occurs within it can be experienced by the consciousness, and whatever occurs outside it can not. I will therefore suggest to define 'the present', in the context of the present study, as that zone of time which is accessible to one's consciousness.
6. Prigogine 1979, p. 321: "... omdat het culturele klimaat er nog niet rijp voor was ze in een consistent schema op te nemen."
7. Alexander 1971, p. 24.
8. Thom 1988, p. 219 ff.

9. Mumford 1967, p. 43.
10. Client and user can be, but does not have to be the same instance.
11. Lakoff 1987, p. 269 ff. A short outline of it is printed in Eco eds. 1988, p. 119 ff.
12. Talmy 1985.
13. In 1988 Rem Koolhaas was engaged as architect for the network of "Le Centre des gares". Cf. "L'intelligence Cumulative", *Le Moniteur Architecture*, Paris, March 1991, and Lille, Rem Koolhaas, Paris 1990.
14. Alexander emphasizes this by stating that "… the whole grows piecemeal, bit by bit." in Alexander 1987, p. 14.
15. Norberg-Schulz in lecture at The Norwegian Polytechnical School in Trondheim 17/11 1990.
16. Brandt 1983, p. 242 ff. For the presise translation of the Greek term Brandt is referring to C. Berg: *Græsk-Dansk Ordbog*, København 1963.
17. Cf. Umberto Eco's discussion of the proxemics and semiotics of Edward T. Hall (Hall 1966) and Claude Levy Strauss in "Function and Sign: The semiotica of Architecture" in Broadbent, Bunt & Jencks eds. 1980.
18. Cf. Brandt in Møystad 1992, p. 112 (*NA* No 2, 1992).
19. Ch. S. Peirce in "The Architecture of Theories", Buchler 1955, p. 323.
20. Peirce in Buchler 1955, p. 316.
21. Peirce in Buchler 1955, p. 323. Mikhail Bakhtin (1895–1975) was another great, all too late known outside Russia, neo-Kantian philosopher and thinker of Architectonics. Cf. Holquist 1990 and Bakhtin 1991.
22. In Buchler 1955, p. 74 ff.
23. The concept of Knowledge-Object is elaborated in Møystad 1991 (*The Yearbook of the Oslo School of Architecture 1991–1992*)
24. Peirce in Buchler 1955, p. 78.
25. In Buchler 1955, p. 99.
26. According to convention of Peircean literature this position in the sign relation is designated with an /R/ for representamen. This position hence has a double role; it is a position within the relation, the position of what can be understood as the phenomenological experience, at the same time it represents the entire signrelation as such. It is thus the representation of the whole in one position internal to itself.

Ole Møystad, Professor Dr.ing. Architect MNAL, Faculty of Engineering and Architecture, American University of Beirut, Beirut, Lebanon.

Bibliography

Alexander, Christopher, 1966 (1964), "A City is not a Tree", *Design* 206 p. 46–55, February.

—, 1971 (1964) *Notes on the Synthesis of Form*, Harvard University Press, Cambridge, Massachusetts and London.

—, 1987, *A New Theory of Urban Design*, Oxford University Press, New York.

Brandt, Per Aage, 1983, *Sandheden, sætningen og døden* – Eget forlag, Aarhus (Basilisk?).

Broadbent, Bunrt & Jencks (eds.), 1980, *Signs, Symbols and Architecture*, John Wiley & Sons, Chichester, New York, Brisbane, Toronto.

Hall, Edward T., 1966, *The Hidden Dimension*, Doubleday & Co, Garden City, New York.

Lakoff, George, 1987, *Women, Fire and Dangerous Things*, The University of Chicago Press, Chicago and London.

Mumford, Lewis, 1961, *The City in History*, Secker & Warburg, London.

—, 1967, *The Myth of the Machine*, Secker & Warburg, London.

Møystad, Ole, 1991, "Quelques réflexions sur la nature de l'archeme", lecture manuscript, Småtrykk, Arkitekthøgskolen i Oslo, Oslo.

—, 1991, "Brev om by og betydning", *Nordic Journal of Architectural Research* No 2, 1992, Gothenburg.

—, 1990, "Dwelling and the Post Modern – A Conversation with Jean-FrançoisLyotard", *Skala* #22, Copenhagen.

—, 1991, "Courage", review of *Métro, réseau, ville. Éssai de sémiotique topologique*, in *Almen Semiotik* No 4, Aarhus.

—, 1994a, "A Catastrophe Theoretical Approach to Design Theory," *Nordic Journal of Architectural Research* No 1, 1994, Gothenburg.

—, 1994b, "Brussels – Oslo is a Doughnut", *B* 51, Aarhus 1994.

Peirce, Charles Sanders, 1931–58, *Collected Papers I–VIII*, Harvard University Press, Cambridge, Mass.

—, 1955, *Philosophical Writings of Peirce*, edited by Justus Buchler, Dover Publications, Inc., New York.

Prigogine, Ilya & Stengers, Isabelle, 1990 (1979), *Orde uit chaos*, Uitgeverij Bert Bakker, Amsterdam.

—, 1980, *From Being to Becoming*, W. H. Freeman and Company, New York.

Thom, René, 1989 (1972), *Structural Stability and Morphogenesis*, Addison-Wesley Publishing Co., Inc. U.S./U.K.

—, 1983 (1980), *Paraboles et catastrophes* (Entretiens sur les mathématiques, la sciénce, et la philosophie réalisés par Giulio Giorello et Simona Morini), Flammarion, Paris.

—, 1988, *Esquisse d'une Sémiophysique*, Intereditions, Paris.

—, 1990, *Apologie du logos*, Hachette, Paris.

Talmy, Leonard, 1985, "Force Dynamics in Language and Thought", in *Parasession on Causatives and Agentivity*, Chicago Linguistic Society (21st Regional Meeting), University of Chicago.

Sources of Illustrations

1. Machlis, Joseph, 1979, *Introduction to Contemporary Music*. 2nd edition. Norton & Company, USA.

2. *Technology in Western Civilization*, Volume 1, 1967, Edited by Melvin Kranzberg and Carrol W. Prussel jr. Oxford University Press.

3. Tschumi, Bernard, 1994, *Architecture and Disjunction*. The M.I.T. Press, USA.

4. (tabell)

5. "Heideggers /Ding/". Bunker at Vigsö, Denmark. Photo: Ole Møystad.

6. © Møystad.

7. © Møystad.

8. Geehlar, Christian, 1972, *Paul Klee et le Bauhaus*. Editions Idés et Calendes. Neuchâtel, Suisse.

9. © Møystad.