Any functional action has particular spatial implications

1 The concept of space

'Like the spider with its web, so every subject weaves relationships between itself and particular properties of objects; the many strands are then woven together and finally form the basis of the subject's very existence.'

Jakob von Uexküll

The system of spaces

Man's interest in space has existential roots. It stems from a need to grasp vital relations in his environment, to bring meaning and order into a world of events and actions. Basically, man orients to 'objects', that is, he adapts physiologically and technologically to physical things, he interacts with other people, and he grasps the abstract realities, or 'meanings', which are transmitted through the various languages created for the purpose of communication. His orientation to the different objects may be cognitive as well as affective, but in either case it aims at the establishment of a dynamic equilibrium between him and his environment. Talcott Parsons says: 'Action consists of the structures and processes by which human beings form meaningful intentions and, more or less successfully, implement them in concrete situations.'[1] Most of man's actions comprise a *spatial* aspect, in the sense that the objects of orientation are distributed according to such relations as inside and outside; far away and close by; separate and united; and continuous and discontinuous. Space, therefore, is not a particular category of orientation, but an aspect of any orientation. It should, however, be stressed that it is only *one* aspect of the total orientation. To be able to carry out his intentions, man has to 'understand' spatial relations and unify them in a 'space concept'.

While the *pragmatic space* of animals is a function of inborn instincts, man has to *learn* what orientation he needs in order to act. In the languages of early or primitive civilizations, therefore, we find terms which express and communicate spatial relations, such as above and below, before and behind, right and left. The terms, however, are not abstract, but have direct reference to man himself as well as to his environment and express his 'position' in the world. Certain African languages, for instance, use the same word for 'eye' and 'in front of'.[2] The space of the ancient Egyptians was determined by the particular geography of the country, and their language introduced the directions 'downstream' and 'upstream' rather than north and south. In both cases it is clear that a *cognitive concept* of space had not been abstracted from the direct experience of spatial relations. The spatial intuitions of the primitive are concrete orientations which refer to objects and localities and therefore have a strong emotional colour.

The Greek philosophers, however, made space an object of reflection. Parmenides represented a transitory position when he maintained that space as such cannot be imagined and therefore is non-existent, but Leucippos considered space a reality, though it has no bodily existence. Plato took the problem further in *Timaeus*, introducing geometry as the science of space, but it was

1 T. Parsons *Societies* 1966, p. 5

2 H. Werner *Einführung in die Entwicklungspsychologie* 1953, p. 120

3 Titus Lucretius Carus *De Rerum Natura* I, 420

4 I. Kant, 'Von dem ersten Grunde des Unterschiedes der Gegenden in Raume' *Gesammelte Werke* (Akademie-Ausgabe), II, p. 376

5 A. Einstein *Geometrie und Erfahrung* 1921, p. 3

6 H. Reichenbach *The Rise of Scientific Philosophy* 1951.

7 For a more complete discussion of perception see C. Norberg-Schulz *Intentions in Architecture* 1963, pp. 27ff

8 J. Piaget *The Psychology of Intelligence* 1950.

left to Aristotle to develop a theory of 'place' (topos). For him space was the sum of all places, a dynamic field with directions and qualitative properties. His approach may be considered as an attempt to systematize primitive, pragmatic space, but it also foreshadows certain present-day concepts. Later theories of space were based on Euclidean geometry rather than Aristotle and defined space as infinite and homogeneous – one of the basic dimensions of the world. Thus Lucretius says: 'All nature is based on two things; there are bodies, and there is emptiness in which these bodies have their place, and in which they move'.[3] 1800 years later Kant still regarded space as a basic *a priori* category of human understanding, different from and independent of matter.[4] A particularly important elaboration of the theory of Euclidean space occurred in the seventeenth century with the introduction of the orthogonal co-ordinate system (Descartes).

The idea that Euclidean geometry gives a faithful representation of physical space collapsed with the creation of non-Euclidean geometries in the nineteenth century and with the theory of relativity. It was demonstrated that such geometries give a clearer approximation of physical space, and still more important, it was recognized that any geometry is a human construct rather than something found in nature. Thus Einstein says:

'When mathematical propositions refer to reality they are not certain; when they are certain, they do not refer to reality.'[5]

The ancient concept of a unified space, therefore, was split in several 'spaces': concrete physical spaces (micro, everyday and macro), and abstract mathematical spaces invented by man to describe the former with a greater or lesser degree of approximation.[6] The theory of relativity carried us even further, substituting the former idea of lumps of matter in a three-dimensional space, with a series of events in a four-dimensional space-time.

The physical and mathematical space concepts, however, satisfy only a small part of man's original need for orientation. By quantifying the primitive total experience a *cognitive* world of abstract relations resulted, which has little direct reference to everyday life. Although man conserved fragments of the original intuitions, certain aspects of his existence thereby became impoverished, such as the emotional relationship to the environment. We therefore ought to supplement the space concepts mentioned above, with others covering the *affective* aspects of behaviour.

The problem of 'human' space has been studied by psychologists for about a hundred years. Taking up the question of man's experience of his environment, it has been proved that *space perception* is a complex process, where many variables are involved. We do not simply perceive a world which is common to all of us, as naïve realists maintain, but different worlds which are a product of our motivations and past experiences.[7] In general, perception aims at valid assumptions about the nature of the environment, and these assumptions vary according to the situations in which we are taking part. A car-driver bases his actions on different assumptions from those of a pedestrian in the same street. Perception mediates a world which could also very well be described as 'events in a four-dimensional space-time'.

Just as physics aims at a structural description of physical events by means of mathematical models, psychology ought to describe the structure of psychic processes by means of a system of abstract concepts. Like those used in physics, early psychological concepts had a static, absolute character, but recently a more dynamic approach has been introduced. The absolute 'laws' of Gestalt psychology, for instance, have been replaced by Piaget's more flexible 'schemata'. A schema may be defined as a typical reaction to a situation. They are formed during mental development through the interaction between the individual and his environment and by this process a man's actions or 'operations' are grouped into coherent wholes.[8] Piaget describes the process as a combination of 'assimilation' and 'accommodation', 'assimilation' referring to the action of the organism on surrounding objects, and

'accommodation' to the opposite state. Thus the organism, rather than submitting passively to the environment, modifies it by imposing on it a certain structure of its own. 'Mental assimilation is thus the incorporation of objects into patterns of behaviour.'[9] Piaget ends by defining 'adaptation' as 'an equilibrium between assimilation and accommodation'.[10]

It is highly necessary that the organism should acquire schemata which directly mediate a three-dimensional world. Piaget shows that our 'space consciousness' is based upon operational schemata, that is, experiences with things. The space schemata may be of very different kinds, and the individual normally possesses more than one schema, to allow him a satisfactory perception of diverse situations. The schemata are culturally determined and comprise qualitative properties resulting from the need for affective orientation to the environment. Piaget sums up his investigations with these words: 'It is quite obvious that the perception of space involves a gradual construction and certainly does not exist ready-made at the outset of mental development.'[11]
We thus see that the synthetic space of primitive man has been split into several specialized constructs which serve us in our orientation and adaptation to different aspects of the environment. In addition to the cognitive spaces, we have within the psychological dimension to distinguish between immediate *perceptual space* and the more stable *space schemata*. The latter are composed of elements which have a certain invariance, such as universal elementary structures (archetypes) and socially or culturally conditioned structures, and, of course, some personal idiosyncrasies. Together these make up man's 'image' of his environment, that is, a stable system of three-dimensional relations between meaningful objects. We will therefore unify the schemata in the concept *existential space*. Perceptual space, on the contrary, is egocentric and varies continuously, although the variations are linked to form meaningful totalities (experiences) because they are assimilated to the subjects' schemata, which are in turn somewhat modified by the new experience. We have so far distinguished between five space concepts: the pragmatic space of physical action, the perceptual space of immediate orientation, the existential space which forms man's stable image of his environment, the cognitive space of the physical world and the abstract space of pure logical relations. Pragmatic space integrates man with his natural, 'organic' environment, perceptual space is essential to his identity as a person, existential space makes him belong to a social and cultural totality,[12] cognitive space means that he is able to think about space, and logical space, finally, offers the tool to describe the others. The series shows a growing abstraction from pragmatic space at the 'lowest' level to logical space at the top, that is, a growing content of 'information'. Cybernetically, thus, the series is controlled from the top, while its vital energy rises up from the bottom.[13]

One basic aspect, however, has still been omitted. From remote times man has not only acted in space, perceived space, existed in space and thought about space, but he has also created space to express the structure of his world as a real *imago mundi*. We may call this creation *expressive* or *artistic space*, and it finds its place in the hierarchy next to the top, together with cognitive space. Like cognitive space, expressive space needs a more abstract construct for its description, a space concept which systematizes the possible properties of expressive spaces. We may call this 'aesthetic space'. The creation of expressive space has always been the task of specialized persons, that is, builders, architects and planners, while aesthetic space has been studied by architectural theorists and philosophers. In the present book, therefore, we will talk about *architectural space* rather than expressive space, and aesthetic space as the theory of architectural space. In a certain sense, any man who chooses a place in his environment to settle and live, is a creator of expressive space. He makes his environment meaningful by assimilating it to his purposes at the same time as he accommodates to the conditions it offers.

What then are the relations between architectural space and the other members of the system? Architectural space certainly has to adapt itself to the needs of organic action as

9 J. Piaget *The Psychology of Intelligence* 1950, p. 8

10 J. Piaget *The Psychology of Intelligence* 1950, p. 8

11 J. Piaget and B. Inhelder *The Child's Conception of Space* 1956, p. 6

12 The social basis of schemata is discussed by Piaget in *The Psychology of Intelligence* p. 156ff., where he stresses that the social environment in part determines the interactions from which the schemata stem. He says: 'Without interchange of thought and co-operation with others the individual would never come to group his operations into a coherent whole: in this sense, therefore, operational grouping presupposes social life' (p. 163), and further: 'The grouping consists essentially in a freeing of the individuals perceptions and spontaneous intuitions from the egocentric viewpoint . . .' (p. 164)

13 The proposed model is related to Talcott Parsons' 'System of Action' (*Societies* p. 28). His system is divided into four sub-systems which form 'environments' to each other: the behavioural organism, the personality system, the social system and the cultural system

well as facilitating orientation through perception. It could also 'illustrate' certain cognitive theories of space, as when building a Cartesian co-ordinate system with concrete materials. But above all it is related to the space schemata of man's individual and public world. Obviously man's schemata are created through interaction with existing architectural spaces, and when these do not satisfy him, that is, when his image becomes confused or too unstable, he will have to change architectural space. Architectural space, therefore, can be defined as a concretization of man's existential space.[14]

14 For a discussion of the concept of 'concretization' see C. Norberg-Schulz *Intentions in Architecture* 1963, pp. 61ff

The concept of space in architectural theory

Much attention has been given to the problem of space in architecture. We do not need to discuss the spatial implications of early theories here; rather we should concentrate on the actual use of the term. Recently, as a matter of fact, 'space' has become a catchword, which to many critics seems to explain without further qualifications what architecture is all about. Bruno Zevi, thus, defines architecture as the 'art of space', but he does not really define the nature of the space he talks about.[15] Obviously his concept of space is naïvely realistic, as is the case with most writers on the subject, to whom space is a uniformly extended 'material' which can be 'modelled' in various ways. Many important investigations, however, *have* been made on this basis; I may for instance refer to the works of Paul Frankl, A. E. Brinckmann and Paul Zucker.[16] After all, the question of how to articulate Euclidean space is one aspect of the more comprehensive problem of architectural space.

Sigfried Giedion is probably the writer who has contributed most to the actualization of the space concept. In his book *Space, Time and Architecture*[17] he put the problem of space at the centre of the development of modern architecture, and in later works he has presented the history of architecture as a succession of 'space conceptions'.[18] In general he distinguishes between three basic conceptions. 'The first architectural space conception was concerned with the emanating power of volumes, their relations with one another, and their interaction. This binds the Egyptian and Greek developments together. Both proceed outward from the volume. The dome of Hadrian's Pantheon at the beginning of the second century signalized the complete breakthrough of the second space conception. From that time on, the concept of architectural space was almost indistinguishable from the concept of hollowed-out interior space.'[19] The third space conception, which is still in its infancy, is chiefly concerned with the problem of the interaction between inner and outer space. Giedion thus leaves the idea of a mechanistic combination of units in Euclidean space behind, and attempts to describe the qualitative differences which are related to the general development of man's image of the world. Thus he says:

'The process by which a spatial image can be transposed into the emotional sphere is expressed by the spatial concept. It yields information on the relation between man and his environment. It is the spiritual expression of the reality that confronts him. The world that lies before him is changed by it. It forces him to project graphically his own position if he wants to come to terms with it.'[20]

Giedion here approaches the concept of existential space, but he does not make his idea philosophically precise. His approach is still too naïvely realistic, although he makes some references to the process of visual perception.

Most studies of architectural space still suffer from a lack of conceptual definition. In general they can be divided into two classes: those which are based on Euclidean space and study its 'grammar', and those which try to develop a theory of space on the basis of perception psychology. The Euclidean approach has recently been stimulated by the importance of three-dimensional geometry in connection with space-frames, prefabricated building systems and certain utopian city-planning schemes.[21] A typical attempt at systematization is represented by Walter Netsch's 'Field Theory'.[22] Netsch and many others believe they have found the key to the organization of architectural space in a systematic development of two- and three-dimensional patterns of geometrical character. It cannot be denied that geometry forms a part of the syntactics of architectural space, but, as I will try and show later, it has to be integrated in a more comprehensive theory to become meaningful. So far we can only point out that man's image of the environment, his existential space, obviously cannot be described solely in terms of geometrical grids. Christopher Alexander also centres his attention upon the concept of pattern, but defines it in terms of function rather than geometry, and thereby takes an important step towards the development of a useful theory of architectural space.[23]

The cool and abstract character of combinational geometry has led many writers to maintain that architectural space is basically 'different' from mathematical space. The criticism of a purely quantitative study of space was already voiced by the art historian Hans Jantzen in 1938, who wrote:

'Formalistic spatial analysis that examines the space represented in the work of art as a separable stylistic form must be complemented by a consideration of the represented space as a dimension of the meaning embodied within the work of art.'[24]

The Swiss critic Vogt-Göknil takes this criticism as her point of departure, and tries to develop a theory of architectural space as 'Umraum' (surrounding space). She does not, however, recognize the fundamental difference between perceptual and existential space, and therefore gets stuck with imprecise terms like 'Erlebnis eines Raumes' (perceived space) and 'Gesamteindruck' (total impression) or talks about 'an unbiassed encounter with the spatial totality'.[25] As a matter of fact, the word 'Umraumerlebnis' (perception of surrounding space), which appears in the title of her book, ought to be defined in terms of perception psychology. To illustrate her thesis, Vogt-Göknil discusses three types of space: 'Der weite Raum' (extensive space), 'der enge Raum' (limited space), 'der gerichtete Raum' (ordered space). In doing this, she touches upon several important properties of existential space, but lacking a coherent system of well-defined concepts, her research could not arrive at any useful general conclusions.

Vogt-Göknil's attempt to replace the current quantitative space concept with a more 'human' concept based on man's 'experience of space', is characteristic of numerous recent essays on the subject. Günther Nitschke, thus, in his article 'Anatomie der gelebten Umwelt' contrasts Euclidean space with 'experienced or concrete space', which he defines as follows:

'It has a centre which is perceiving man, and it therefore has an excellent system of directions which changes with the movements of the human body; it is limited and in no sense neutral, in other words it is finite, heterogeneous, subjectively defined and perceived; distances and directions are fixed relative to man . . .'[26]

Nitschke here gives a good definition of perceptual space, but he does not recognize the fact that any perception must be referred to a more stable system of schemata (images) to become meaningful. It is impossible to discuss architectural space systematically when perceptual space is taken as the point of departure. What one describes in this way are subjective architectural *experiences*, and one would have to arrive at the absurd conclusion that 'architecture comes into being only when experienced'. It is, therefore, nonsense to say that man is always the centre of *architectural* space, and that the directions of architectural space change with the movements of the human body. Architectural space certainly exists independently of the casual perceiver, and has centres and directions of its own.

15 B. Zevi *Architecture and Space* 1957. His space concept seems to be a combination of action space and Euclidean space, as he says: 'Architecture is like a large hollow structure into which man enters and around which he moves'. (author's own trans)

16 P. Frankl *Die Entwicklungsphasen der neueren Baukunst* 1914; A. E. Brinckmann *Baukunst* 1956; P. Zucker *Town and Square* 1959

17 S. Giedion *Space, Time and Architecture* 1941

18 S. Giedion *The Eternal Present: The Beginnings of Architecture* 1964

19 S. Giedion *The Eternal Present: The Beginnings of Architecture* 1964, pp. 522ff

20 S. Giedion 'Die Ungreifbarkeit des Raumes' *Neue Zürcher Zeitung* 22/8-1965

21 See the works of A. Neumann, E. Schultze-Fielitz, the Archigram group, etc.

22 See W. Netsch 'Forms as Process' *Progressive Architecture* March 1969

23 C. Alexander *Notes on the Synthesis of Form* 1964

24 H. Jantzen 'Ueber den kunstgeschichtlichen Raumbegriff' *Sitzungsberichte der Bayerischen Akademie der Wissenschaften* 1938, p. 5

25 U. Vogt-Göknil *Architektonische Grundbegriffe und Umraumerlebnis* 1951

26 G. Nitschke 'Anatomie der gelebten Umwelt' *Bauen + Wohnen*, September 1968

The same imprecise use of space concepts characterize Jürgen Joedicke's essay 'Vorbemerkungen zu einer Theorie des architektonischen Raumes'.[27] Joedicke stresses the importance of defining the spatial concept employed, and excludes mathematical space, economical space, geographical space, political space, as well as 'the space concept of O. F. Bollnow' (to which we shall return later). What he wants to talk about is 'space in architecture', starting from 'the axiom that buildings consist of spaces, and that architectural space therefore exists'(!). Joedicke, thus, starts with the well known approach of naïve realism, but later he says: 'We can speak of architectural space as an experiential space', and 'architectural space is tied to man and his perception'. His conclusion is logical: 'Space is the sum of successive perceptions of places'. What has been said above concerning the shortcomings of perceptual space as a point of departure for defining architectural space, also applies to the study of Joedicke.

An article by Michael Leonard with the characteristic title 'Humanizing Space',[28] contains many relevant observations and contributions towards a theory of space, but again the interpretation is hampered by the belief that the 'psychological dimensions of space' are found in immediate perception. Leonard says: '. . . it is man who creates and experiences the *sensation* of space', and 'the final product in the perceptual process is a single sensation – a "feeling" about that particular place . . .'.

We may thus conclude that recent studies on the concept of space in relation to architecture have either tended to leave man out by discussing abstract geometry, or have made man 'enter' by reducing space and architecture to impressions, sensations and studies of 'effects'. In both cases space as an existential dimension, as a relation between man and his environment, has been forgotten. No wonder that many people are getting tired of the problem of space in architecture and want to talk about 'structure', 'system' or 'environment'. But little is gained by this attitude. Structures and environments concern the architect above all because of their spatial aspects, and sooner or later the problem of space has to be faced. In the following, therefore, we will discuss some contributions towards a more satisfactory theory of architectural space, a theory where space is really understood as a dimension of human existence, rather than as a dimension of thought or perception.

Architectural and existential space

A few years after the second world war, art historian Dagobert Frey and architect Rudolf Schwarz independently of each other formulated ideas which opened up new and inspiring possibilities. Let us start by taking a look at the little known contribution of Frey. In *Grundlegung zu einer vergleichenden Kunstwissenschaft* he introduces the concepts of 'path' (*Weg*) and 'goal' (*Mal*) to describe spatial structures. These concepts have the advantage of referring both to properties of existential space and concrete architectural space, and represent a true attempt at bridging intellectually the gap between man and his environment. Frey talks about 'archetypal motifs of world experience' and says:

'The goal already contains the path as its point of reference, directional indicator and ultimate end; and movement may be directed towards the goal, may emanate from it or may encircle it. All architecture is a structuring of space by means of a goal or path. Every house is an architecturally structured "path": the specific possibilities of movement and the drives towards movement as one proceeds from the entrance through the sequence of spatial entities have been pre-determined by the architectural structuring of that space and one experiences the space accordingly. But at the same time, in its relation to the surrounding space, it is a "goal", and we either advance towards this goal or depart from it.'[29]

27 J. Joedicke 'Vorbemerkungen zu einer Theorie des architektonischen Raumes, zugleich Versuch einer Standortbestimmung der Architektur' *Bauen + Wohnen*, September 1968

28 M. Leonard 'Humanizing Space' *Progressive Architecture*, April 1969

Frey uses the word 'experience' (perception), but he implies that architectural space is not a function of this experience, rather it has a structure which ought to be experienced, because it expresses basic properties of human existence. We recognize here an early attempt at overcoming the abstract use of Euclidean space, as well as the limitations of immediate perceptual space.[30]

Related ideas were brought forward by Rudolf Schwarz in his magnificent but somewhat esoteric books *The Church Incarnate* and *Von der Bebauung der Erde*.[31] His carefully worked out concepts will be discussed in more detail later, but it should already be pointed out that his aim is to describe the fundamental structure of existence, of 'being in the world', and to translate this structure into concrete properties of architectural space. A few quotations may illustrate this point.

'Man cannot plan the world without designing himself.' 'At the time he took his land, he already decided the plan of his life and he measured the earth accordingly and placed the ground-plan of his historical existence within it.'

While Frey wanted to arrive at a better knowledge of history, and Schwarz aimed at a fuller understanding of existence as a basis for building and planning after the destructions of the war, the American Kevin Lynch takes the concrete problems of our modern cities as his point of departure. Lynch maintains that man's orientation presupposes an 'environmental image, a generalized mental picture of the exterior physical world . . . This image is the product both of immediate sensation and of the memory of past experience, and it is used to interpret information and to guide action . . . A good environmental image gives its possessor an important sense of emotional security.'[32] Lynch's concept of 'image' thus corresponds to the space schemata referred to above, and he tries to interpret the environment (city) in relation to an existential space. Lynch goes on to single out what he considers the fundamental properties of space, arriving at conclusions similar to those of Frey and Schwarz. Thus he says: 'The world may be organized around a set of focal points, or be broken into named regions, or be linked by remembered routes'.[33] As the works of Frey and Schwarz have remained known only to a relatively restricted number of people, Lynch's work which is more easily understood and actual has been met with great interest among architects and planners since it was published in 1960. Indeed it represents a very promising point of departure for further research on the problems of existential and architectural space, but so far little has been done. It may be that the general implications of Lynch's ideas have hardly been understood; rather than recognizing the true humanism of his work, he is often considered a romantic intent on saving man by giving him back the *piazza*.

Several other contributions to the development of a satisfactory theory of architectural space could be mentioned, and the particular ideas of Robert Venturi, Aldo van Eyck, Paolo Portoghesi and others will be returned to later. For the moment, however, let us take a brief look at recent thinking about space in general.

From what has been said above, it is clear that further research on architectural space is dependent upon a better understanding of existential space. To arrive at such an understanding, we have two possible sources of information: the social sciences and philosophy. Although the social sciences have scarcely studied the problem of existential space as such, a great deal can be inferred from the writings of certain psychologists, sociologists and anthropologists. In particular, Jean Piaget's work on the development of the child illuminates the basic structures of man's environmental image very clearly. It is also significant that Piaget, in a recent book, integrates the psychological structures in a more comprehensive 'structuralism'.[34]

Several fundamental studies on space have been published by philosophers. Most important are Gaston Bachelard *The Poetics of Space* (1964). Otto Friedrich Bollnow *Mensch und Raum* (1963), the chapter on space in Merleau-Ponty *The Phenomenology of Perception* (1962) and above all the funda-

29 D. Frey *Grundlegung zu einer vergleichenden Kunstwissenschaft* 1949, p. 6

30 Already in *Gotik und Renaissance als Grundlagen der modernen Weltanschauung* (1929) Frey recognized the importance of the 'image', saying, 'The basis of a cultural history is a history of the development of human imagination.'

31 R. Schwarz *The Church Incarnate* 1958; *Von der Bebauung der Erde* 1949

32 K. Lynch *The Image of the City* 1960, p. 4

33 K. Lynch *The Image of the City* 1960, p. 7

34 J. Piaget *Le Structuralisme* 1968

mental pioneer works of Martin Heidegger *Being and Time* (translated 1962) and 'Bauen Wohnen Denken' (in *Vorträge und Aufsätze* 1954).[35] Merleau-Ponty criticizes the superficiality of certain theories of perception psychology and demonstrates that 'the "signs" (*cues*) which ought to acquaint us with the experience of space can convey the idea of space only if they are already involved in it, and if it is already known'. He concludes: '. . . depth is the most "existential" of all dimensions'.[36] Later he discusses the existential meaning of place and direction on the basis that 'there is a determining of up and down, and in general of place, which precedes "perception" . . . I arrive in a village for my holidays, and it becomes the centre of my life . . . Our body and our perception always summon us to take as the centre of the world that environment with which they present us. But this environment is not necessarily that of our own life. I can be somewhere else while staying here.'[37] For Merleau-Ponty, space is one of the structures which express our 'being in the world': 'We have said that space is existential; we might just as well have said that existence is spatial'.[38]

Merleau-Ponty, as well as Bachelard and Bollnow, obviously owes much to Heidegger, who was the first to maintain that 'existence is spatial'. 'You cannot divorce man and space. Space is neither an external object nor an internal experience. We don't have man and space besides . . .'[39] In *Being and Time* he is already stressing the existential character of human space and says: 'The "above" is what is "on the ceiling"; the "below" is what is "on the floor"; the "behind" is what is "at the door"; all "wheres" are discovered and circumspectly interpreted as we go our ways in everyday dealings; they are not ascertained and catalogued by the observational measurement of space.'[40] He therefore concludes: 'Spaces receive their being from places and not from "the space".'[41] On this basis he develops his theory of 'dwelling' and says: 'Man's relation to places and through places to spaces consist in dwelling.'[42] 'Only when we are capable of dwelling can we build.' 'Dwelling is the *essential property* of existence.'[43]

Bollnow discusses similar ideas in more detail, and develops a comprehensive theory of existential space, with numerous references to architectural space. He quotes Graf von Dürckheim to define his aim:

'The concrete space of developed man must be considered in its totality, including the important events experienced within it. For the particular quality of this space, its disposition and order reflect and express the subject that experiences it and dwells within it.'[44]

Starting from this point Bollnow discusses the concept of place (*Ort*), basic orientations such as vertical and horizontal, before and behind, right and left, the concept of centre (*Mitte*), geographical directions, horizon and perspective. He goes on to investigate the phenomenology of 'open' and 'closed' worlds, and finally discusses the spaces of action, of expression, and of human being together. He concludes with a chapter on the 'spatiality of human life'. Being speculative rather than scientific, Bollnow's work has been met with a certain suspicion. His material, however, is very rich, drawing its references from nature, literature, art, history, anthropology, psychology and philosophy. His arguments are weighty and substantial, and create a most inspiring basis for further research.

The aim of this chapter has been to outline the basic space concepts man needs to orient himself in his world and to point out that most studies of architectural space have hitherto been hampered by imprecise conceptual definitions and the omission of the key construct, 'existential space'. In *Intentions in Architecture* (1963) I maintained that the space concept is of limited importance in architectural theory, and concluded that 'there is no reason to let the word "space" designate anything but the tridimensionality of any building'.[45] This stand was based on the fact that studies of geometry or visual perception only grasp relatively superficial aspects of the problem. By introducing the concept of existential space, however, these limitations are overcome, and space regains the central position it ought to have in architectural theory.

35 See also E. Minkowski *Le temps vécu* 1933 and Graf K. von Dürckheim 'Untersuchungen sum gelebten Raum' *Neue Psychologische* Studien 6 1932

36 M. Merleau-Ponty *The Phenomenology of Perception* 1962, p. 256

37 M. Merleau-Ponty *The Phenomenology of Perception* 1962, p. 285

38 M. Merleau-Ponty *The Phenomenology of Perception* 1962, p. 293

39 M. Heidegger 'Bauen Wohnen Denken' p. 31

40 M. Heidegger *Being and Time* 1962, p. 103

41 M. Heidegger 'Bauen Wohnen Denken' 1954, p. 29

42 M. Heidegger 'Bauen Wohnen Denken' 1954, p. 32

43 M. Heidegger 'Bauen Wohnen Denken' 1954, p. 35

44 Graf K. von Dürckheim 'Untersuchungen zum gelebten Raum' 1932, p. 389; O. F. Bollnow *Mensch und Raum* 1963, p. 20

45 C. Norberg-Schulz *Intentions in Architecture* 1963, p. 97

2 Existential space

The Vale of Blackmoor was to her the world, and its inhabitants the races thereof. From the gates and stiles of Marlott she had looked down its length in the wondering days of infancy, and what had been a mystery to her then was not much less than mystery to her now. She had seen daily from her chamber-window towers, villages, faint white mansions; above all the town of Shaston standing majestically on its height; its windows shining like lamps in the evening sun. She had hardly ever visited the place, only a small tract even of the Vale and its environs being known to her by close inspection. Much less had she been far outside the valley. Every contour of the surrounding hills was as personal to her as that of her relatives' faces; but for what lay beyond her judgment was dependent on the teaching of the village school. . . .

Thomas Hardy *Tess of the d'Urbervilles*

The elements of existential space

We have defined existential space as a relatively stable system of perceptual schemata, or 'image' of the environment. Being a generalization abstracted from the similarities of many phenomena, existential space has 'object-character'.[1] Piaget says: 'An object is a system of perceptual images endowed with a constant spatial form throughout its sequential displacements and constituting an item which can be isolated in the causal series unfolding in time'.[2] He demonstrates that the idea of a structured world gradually develops during childhood (perhaps on the basis of a few *a priori* intuitions), and that, necessarily, it comprises a developing series of spatial notions. How, then, does this development take place? Piaget usually characterizes the process with the word 'conservation'. The most basic experience is that things are *permanent*, although they may disappear and return again. The goal is 'the construction of permanent objects under the moving images of immediate perception'.[3] This means, firstly, that the child learns to *recognize*, that is, to construct the world as a system of similarities, and, secondly, that he connects the things recognized with particular *places*, situating them in a more comprehensive totality, a *space*. 'So long as the child does not undertake special searches to find objects which disappear, so long as he does not succeed in deducing their displacement in space when he no longer sees them, one should not yet speak of object conservation.'[4] Gradually the child learns, however, to distinguish between stable and mobile objects, and to use the former as a frame of reference for the latter. The development of the concept of place, and of space as a system of places is therefore a necessary condition for finding an existential foothold. Piaget concludes: 'The universe is built up into an aggregate of permanent objects connected by causal relations that are independent of the subject and are placed in space and time. Such a universe, instead of depending on personal activity, is on the contrary imposed upon the self to the extent that it comprises the organism as a part in a whole.'[5] As to the nature of space he says: '. . . the true nature of space does not reside in the more or less extended character of sensations as such, but in the intelligence which interconnects these sensations'.[6] 'Space is therefore the product of an interaction between the organism and the environment in which it is impossible to dissociate the organization of the universe perceived from that of the activity itself.'[7]

But it is not enough to point out that space forms a necessary part of the structure of existence, we ought also to *describe* this particular structure in detail. The problem comprises two aspects, one 'abstract' and one 'concrete'. The abstract aspect consists

1 C. Norberg-Schulz *Intentions in Architecture* 1963, p. 28

2 J. Piaget *The Child's Construction of Reality* 1955, p. 92

3 J. Piaget *The Child's Construction of Reality* 1955, p. 91

4 J. Piaget *The Child's Construction of Reality* 1955, p. 90

5 J. Piaget *The Child's Construction of Reality* 1955, pp. 351f

6 J. Piaget *The Child's Construction of Reality* 1955, p. 212

7 J. Piaget *The Child's Construction of Reality* 1955, p. 217

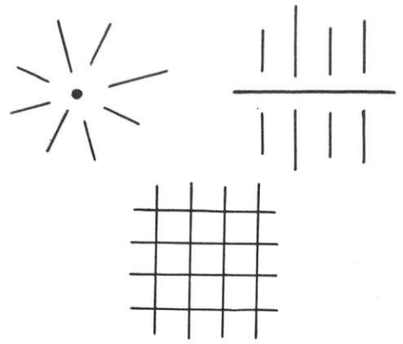
8 C. Norberg-Schulz *Intentions in Architecture* 1963, pp. 43ff., also Piaget and Inhelder *The Child's Conception of Space* 1960

9 M. Wertheimer 'Laws of Organization in Perceptual Forms', *A Source Book of Gestalt Psychology* (ed W. D. Ellis) 1938

10 M. Eliade *Patterns in Comparative Religion* 1958, p. 380

of the more general schemata of a topological or geometrical kind, and has been studied by Piaget in detail. The concrete aspect refers rather to the grasping of 'environmental elements': landscape, townscape, buildings and physical things, and has been discussed in the works of Frey, Schwarz, Bachelard, Bollnow and Lynch. A theory of existential space must comprise both.

The world of the child is 'subjectively centred'. Motorically and perceptually a child has little ability to 'reach out' into the surroundings, and the environmental image consists of few stable elements. But this does not mean that a child's world is different from the world of other individuals. Psychologists have shown that the elementary structures are interpersonal, and that the development of schemata follows a normal course. Piaget thus demonstrates that the infant's space can be described as a collection of separate 'spaces', each entirely centred on a single activity. The first relations which bring order into these spaces, are of a topological kind and are established even before form- and size-constancy. Topology does not deal with permanent distances, angles and areas, but is based upon relations such as proximity, separation, succession, closure (inside-outside) and continuity.[8] The topological schemata are in the beginning tied to the things themselves. The most elementary order obtained is based on the proximity relation, but the 'collection' thus established, soon develops into more structured wholes, characterized by continuity and enclosure.[9] Piaget's findings are here in accordance with Gestalt psychology, although he gives the organizational principles a different, genetic explanation. If we want to interpret these basic results of perception psychology in more general terms, we may say that the elementary organizational schemata consist in the establishment of *centres* or places (proximity), *directions* or paths (continuity) and *areas* or domains (enclosure). To orient himself, man above all needs to grasp such relations, whereas the geometrical schemata develop much later, to serve more particular purposes. In fact, primitive man mostly manages very well without any geometric notions.



It is of fundamental importance to recognize that the topological schemata are similar to the basic concepts established by Heidegger, Frey, Schwarz, Bollnow and Lynch. The elementary properties of existential space, therefore, seem to be quite clear, and ought to be discussed in more detail.

Centre and place

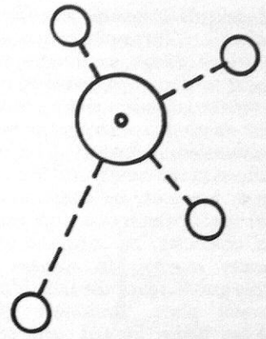
In terms of spontaneous perception, man's space is 'subjectively centred'. The development of schemata, however, does not only mean that the notion of centre is established as a means of general organization, but that certain centres are 'externalized' as points of reference in the environment. This need is so strong that man since remote times has thought of the whole world as being centralized. In many legends the 'centre of the world' is concretized as a tree or a pillar symbolizing a vertical *axis mundi*. Mountains were also looked upon as points where sky and earth meet.[10] The ancient Greeks

placed the 'navel' of the world (*omphalos*) in Delphi, while the Romans considered their Capitol as *caput mundi*. For Islam the *Ka'aba* is still the centre of the world. Eliade points out that in most beliefs it is *difficult* to reach the centre. It is an ideal goal, which one can only attain after a 'hard journey'. To 'reach the centre is to achieve a consecration, an initiation. To the profane and illusory existence of yesterday, there succeeds a new existence, real, lasting and powerful.' But Eliade also points out that 'every life, even the least eventful, can be taken as the journey through a labyrinth. The sufferings and trials undergone by Ulysses were fabulous, and yet any man's return home has the value of Ulysses' return to Ithaca.'[11]

If the 'centre of the world' thus designates an ideal, public goal, or 'lost paradise', the word 'home' also has a closer and more concrete meaning. It simply tells us that any man's personal world has its centre. The *Odyssey*, however, shows that the home, too, is easily lost and that it takes a 'hard

journey' to find it again. The notion of home as the centre of one's world goes back to childhood. The first points of reference are tied to the home and house, and the child only becomes able to cross its borders very slowly. When I once asked my twelve-year-old son if he could tell me something about his 'environment', he replied: 'Then I want to start with home, because it is from there I go out to all the other places'. From the very beginning, then, the centre represents to man what is *known* in contrast to the unknown and somewhat frightening world around. 'It is the point where he acquires position as a thinking being in space, the point where he "lingers" and "lives" in the space.'[12] We also remember Archimedes' famous statement: 'Give me a place to stand, and I will move the world!'

During growth the actions of the individual are differentiated and multiplied, and new centres therefore come to supplement the original 'home'. All the centres are 'places of



action': places where particular activities are carried out, or places of social interaction such as the homes of relatives and friends. 'The place is always limited, it has been created by man and set up for his special purpose.'[13] The actions, in fact, are only meaningful in relation to particular places, and are coloured by the character of the place. Our language expresses this state of affairs when we say that something 'takes place'. The places are goals or foci where we experience the meaningful events of our existence, but they are also points of departure from which we orient ourselves and take possession of the environment. This 'taking possession' is also related to places which we *expect* to find, or *discover* by surprise. It could be maintained that the gradual multiplication of the places constituting our existential place would lead to a final liberation from place attachment. We will discuss the problem of 'mobility' in more detail later, but should point out here that a structured environment depends on our ability to *recognize* it, that is, on the existence of relatively invariant places. An ever-changing world would not allow for the establishment of schemata, and would therefore make human development impossible.

A place is characterized by a certain 'size'. We should here distinguish between the immediate *Eigenraum* or 'territoriality', and the more abstract image of the places known. The *Eigenraum* has been studied by Edward T. Hall who says: 'Territoriality is usually defined as the behaviour by which an organism characteristically lays claim to an

11 M. Eliade *Patterns in Comparative Religion* 1958, p. 382

12 O. F. Bollnow *Mensch und Raum* 1963, p. 58

13 O. F. Bollnow *Mensch und Raum* 1963, p. 41

14 E. T. Hall *The Hidden Dimension* 1966, ch. 1 and 2. See also R. Sommer *Personal Space* 1969

15 R. Schwarz *Von der Bebauung der Erde* 1949, p. 194

16 O. F. Bollnow *Mensch und Raum* 1963, p. 131

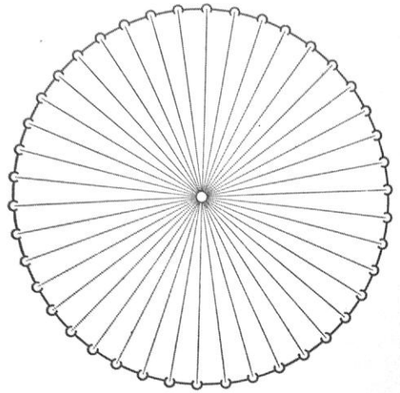
17 K. Jaspers *Von der Wahrheit* Munich 1947, p. 50

18 R. Schwarz *Vom Bau der Kirche* (*The Church Incarnate*) pp. 24ff. (author's own translation)

area and defends it against members of its own species . . . Territoriality provides the frame in which things are done – places to learn, places to play, safe places to hide . . . Basic to territoriality is a sharp sense of the limits that mark the distance to be maintained between individuals.'[14] The 'personal space' defined in the concept of 'territoriality' should not, however, be confounded with existential space, which to a large extent has a 'public' character, bringing the members of a society together in *common* places. Within this public space the individual finds his personal place. Both are generally imagined as being limited and relatively small. Thus Rudolf Schwarz says: 'A domain can only become a home if it is small . . . The settlements must remain within an imaginable scale if they are to become a home.'[15] Bollnow uses the word *Geborgenheit* to express this fact, and quotes the psychiatrist J. Zutt who has studied the concept of 'home' from a medical point of view. Zutt says: 'In the common dwelling we have a maximum of spatial security.'[16] For its definition therefore, the place needs a pronounced limit or border. The place is experienced as an 'inside' in contrast to the surrounding 'outside'.

The limited size of known places naturally goes together with a centralized form. A centralized form primarily means 'concentration'. A place, therefore, is basically 'round'. In this connection it is interesting to recall Karl Jaspers' words: 'In itself every existence appears round.'[17] The round form consists of two elements, a centre and a surrounding ring. In *The Church Incarnate* Rudolf Schwarz has described the existential character of these elements.

'The ring unites man to man through the infinite chain of hands. The individual is absorbed by a superior form, and thereby he becomes stronger. When men agree, they form a ring, as if they were following a secret law. The ring has neither beginning nor end, it begins and ends everywhere. Curved back into itself, it is the most sincere and potent of all figures, the most unanimous. Hand in hand men are united by the ring, but they are not completely absorbed by this



attachment. Their eyes are free. Through the eyes life goes out, and returns saturated with reality. The eyes are brought together in the centre as the common focus. Thereby the fellowship attains a stricter form. Everyone is still open to the inside, but only completely open to the central point. In this point men are united. But not in such a way that the individual becomes lonely; rather, he knows that the real road inwards, to the hearts of the others, goes through the centre. The meeting now becomes a meeting in the common centre of meaning. Between the centre and the ring a star is formed, through which men transmit their existence to the world around.'[18]

The notions of proximity, centralization and closure therefore work together to form a more concrete existential concept, the concept of *place*, and places are the basic elements of existential space.

Direction and path

I have already pointed out that the concept of place implies an inside and an outside, and that existential space usually comprises many places. A place is therefore 'situated' within a larger context, and cannot be understood in isolation. If that had been possible, man's history would have lacked its dynamism. Any place, in fact, contains *directions*. The only place that can be imagined without directions, is a sphere freely floating in Euclidean space. This form, however, is only of interest as a border-line case, if we consider man's existence on earth.[19] The semi-sphere already expresses the basic difference between the horizontal and vertical directions in existential space.

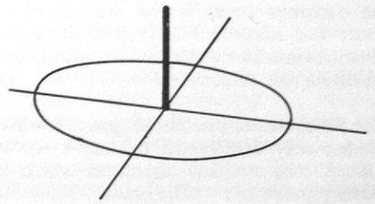
Aristotle recognized the qualitative distinctions above and below, in front of and behind, and right and left, distinctions which are rooted in man's constitution and in his relationship to the gravitational field. The vertical direction expresses a rising up or falling down, and has since remote times been endowed with a particular meaning. Erich Kästner says:

'The climbing of a mountain reflects redemption. That is due to the force of the word "above", and the power of the word "up". Even those who have long ceased to believe in Heaven and Hell, cannot exchange the words "above" and "below".'[20]

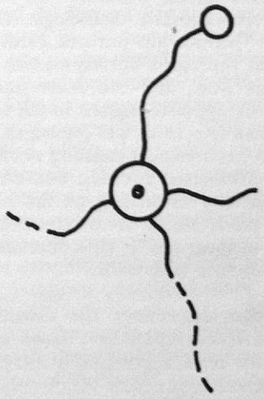
The vertical, therefore, has always been considered the *sacred* dimension of space. It represents a 'path' towards a reality which may be 'higher' or 'lower' than daily life, a reality which conquers gravity, that is, earthly existence, or succumbs to it. The *axis mundi* is thus more than the centre of the world, it represents a connection between the three cosmic realms, and it is only at the central axis that a breakthrough from one realm to another can occur.[21]

The vertical direction, however, also has a more concrete meaning. In connection with the home it expresses the very process of *building*, that is, man's ability to 'conquer nature'. In Ibsen's play *The Master Builder* the tower becomes the symbol of victory and defeat, and Serlio already interpreted the vertical column as an expression of man's power of creation.[22] Gaston Bachelard defines the basic properties of the house as 'verticality' and 'concentration', and he discusses the cellar and the attic as particularly meaningful places.[23] Quoting Joe Bosquet he also characterizes modern man as 'having one storey only'.

If verticality has something surreal about it, the horizontal directions represent man's concrete world of action. In a certain sense, all horizontal directions are equal and form a plane of infinite extension. The simplest model of man's existential space is, therefore, a horizontal plane pierced by a vertical axis. But on the plane man chooses and



creates paths which give his existential space a more particular structure. Man's taking possession of the environment always means a departure from the place where he dwells, and a journey along a path which leads him in a direction determined by his purpose and his image of the environment. 'Forward', thus, means the direction of man's activity, while 'behind' denotes the distance he has covered. Man 'strides forward' or 'draws back'. Sometimes the path leads him to a known goal, but often it only indicates an intended direction, gradually dissolving into the unknown distance. The *path*, therefore, represents a basic property of human existence, and it is one of the great



19 It is interesting to notice that the sphere appears in architectural projects to express a 'liberation from place'. See H. Sedlmayr *Art in Crisis* 1957. Sedlmayr uses the term 'das Bodenlose' (foundationless) to characterize the spherical projects of Ledoux, Boullee and Tatlin. He quotes El Lissitzky, 'One of our ideas for the future is to overcome the foundation, to no longer be earthbound'.

20 E. Kästner *Ölberge, Weinberge* 1960, p. 95

21 M. Eliade *Patterns in Comparative Religion* 1958, p. 111

22 O. F. Bollnow *Mensch und Raum* p. 171 says, 'By standing up man gains stature in the world, he is enabled to keep his independence vis à vis the world and he can shape the world and himself. Going to sleep means abandoning the position . . . as we lie down to sleep, stretch out, we give ourselves over totally to the world . . .'

23 Bachelard *The Poetics of Space* 1964 ch. I

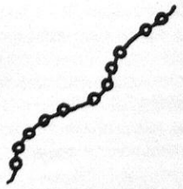
original symbols. Our language expresses this fact in terms such as 'parting of the ways', 'stand in one's way' and 'on the right road'.[24] Man's ways, however, also lead back home, and the path, therefore, always contains a tension between the known and the unknown. 'The double movement of departure and return divides space into two concentric domains, an inner and an outer: the narrower inner is the domain of the house and homeland and from there man advances into the wider outer domain, from which he also returns.'[25]

The directions of existential space, however, are not only determined by man's actions. Nature, too, contains directions which indicate qualitative differences. Thus the

cardinal points have since remote times been given prime importance among the factors determining the structure of the world. The word 'orientation' comes from *Orient*, the direction of sunrise. Christian churches were always oriented by the altar towards the east. 'The east as the origin of light is also the source of life – the west as the place of the setting sun is filled with all the terrors of death.'[26] In certain theories the cardinal points were united with the *axis mundi* to form a comprehensive cosmology. Vitruvius says that 'Nature has put one *cardo* of the world axis through a northern point behind the Great Bear, and the other under the earth to the opposite regions in the south.'[27] The Roman city, thus, was organized around the *cardo* (*axis mundi*) running north-south and the *decumanus* running east-west. 'He founds his city by tracing on the land two crossing roads which divide the world as a compass in four, and he then surrounds this central juncture with walls.'[28]

Nature also determines the directions of man's existential space in a more concrete sense. Any landscape contains directions as well as determined spaces which help man in finding a foothold. His possibilities for movement are limited, and the paths do not follow the mathematical rule that the shortest distance is the straight line. In an early essay, Kurt Lewin studied this problem introducing the term 'hodological space' (from the Greek word *hodos* meaning way),[29] which could be translated into 'space of possible movement'. Rather than straight lines, hodological space contains 'preferred paths' which represent a compromise between several domains such as 'short distance', 'security', 'minimal work', 'maximum experience' etc. The demands are determined in relation to the topographical conditions. When these are uniform, and no particular human activity influences the situation, hodological space approaches Euclidean space. In hodological space, however, we usually have to follow directions which do not correspond to the geometrical direction towards the goal, and investigations of people's movement in cities show that different individuals often chose different paths to reach the same place.[30] Bollnow also points out that the preferred path of an individual may vary according to his immediate state of mind, or situation. We will, for instance, take a short cut when we are in a hurry.[31]

Perceptually and as a schema, any path is characterized by its *continuity*. Whereas the place is determined by the proximity of its defining elements, and eventually by closure, the path is imagined as a linear succession. Primarily it is a direction to be followed towards a goal, but during the journey events happen and the path is also experienced as having a character of its own. What happens 'along' the way, thus, is added to the tension created by the goal to be reached and the point of departure left behind. In certain



24 Particularly significant are the German words 'Scheideweg', 'Worsicht' and 'Fortschritt' – literally 'dividing ways' (i.e. crossroads), 'foresight' (i.e. caution), 'away step' (i.e. progress)

25 O. F. Bollnow *Mensch und Raum* 1963, p. 81

26 E. Cassirer *The Philosophy of Symbolic Forms* 1955, vol 2, p. 99

27 W. Müller *Die heilige Stadt* 1961, p. 16

28 R. Schwarz *Von der Bebauung der Erde* 1949, p. 15

29 K. Lewin 'Der Richtungsbegriff in der Psychologie. Der spezielle und allgemeine hodologische Raum *Psychologische Forschung* 19, 1934

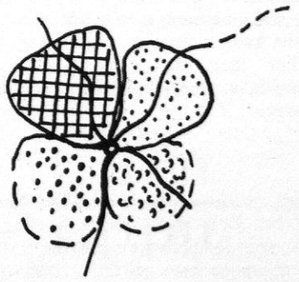
30 K. Lewin says, 'The geometry of *Lebensraum* including its directions depends on the condition of the individual.' (*op cit.*, p. 286)

31 O. F. Bollnow *Mensch und Raum* 1963, p. 197

cases the path has the function of being an organizing *axis* for the elements by which it is accompanied, while the goal is relatively less important. Kevin Lynch illustrates this fact with many examples, but he also says: 'People tended to think of path destinations and origin points: they liked to know where paths came from and where they led. Paths with clear and well known origins and destinations had stronger identities, helped tie the city together, and gave the observer a sense of his bearings whenever he crossed them.'[32]

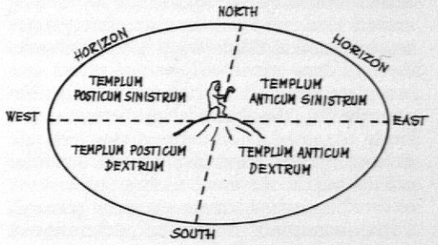
Area and domain

Paths divide man's environment into areas which are more or less well known. We will call such qualitatively defined areas 'domains'. The known domains are surrounded by a relatively unknown world whose imagined character is determined by the general directions north, south, east and west and by what we have learnt of geography. In a certain sense the domains are



'places', because they are defined by closure or by proximity and similarity of the constituent elements. For this reason Frey and others do not introduce the concept of domain, but describe space exclusively in terms of goals and paths. But the distinction between place and domain *is* useful, as our environmental image obviously comprises areas to which we do *not* belong and which do not function as goals. The domain can therefore be defined as a relatively unstructured 'ground', on which places and paths appear as more pronounced 'figures'. The domain has a certain unifying function in existential space. It 'fills out' the image and makes it become a coherent space. If we think of our own country, or of the earth as a whole, we primarily think of domains: oceans, deserts, mountains and lakes, which form a continuous mosaic. These 'natural' domains are combined with political and economical domains to create a more complex pattern.

Because of their general properties, domains function as potential places for man's activities. Taking possession of the environment, therefore, implies structuring the environment into domains by means of paths and places. The Roman settlement is again relevant, where the two main axes not only define the cardinal points, but also divide the



area into four domains or 'quarters'. It is significant to remember that city districts are still called quarters. From ancient times the world was imagined as consisting of four parts, and the Roman city can thus be interpreted as an *imago mundi*. The rituals performed during the foundation of any larger Roman layout, demonstrate that the purpose was to define a comprehensive spatial order related to a central point.[33] This order was established within the natural area defined by the horizon, the *finalis circulus*. Werner Müller discusses the ancient symbolism of dividing the world into domains and explains the idea as an expression of man's general need for imagining his world 'as an ordered cosmos within an unordered chaos'.[34]

Structuring the world into domains defined by 'natural' directions, ancient man gained an existential foothold. He no longer felt

32 K. Lynch *The Image of the City* 1960, p. 54

33 W. Müller *Die heilige Stadt* 1961, p. 38

34 W. Müller *Die heilige Stadt* 1961, p. 227

35 K. Lynch *The Image of the City* 1960, p. 62

36 O. Spengler *The Decline of the West* 1934, vol 1, p. 188

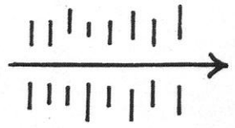
lost and helpless, as even the 'blank spots' on his personal map could be 'placed' within the general all-embracing scheme. Modern man, however, can no longer find the same security. He asks for a concrete knowledge of individual places, rather than accepting general 'characteristics'. When we are travelling in foreign countries, the regions we visit have relatively little meaning for us. No personal experiences are attached to the spaces perceived and they really remain 'domains', although as such they may interest the visitor. Today we are no longer able to make up for this lack of deeper meaning with a cosmological image which gives each domain its character. Paradoxically, thus, the foreign has become more foreign today, in spite of all modern media of communication.

Domains may be defined in different ways. Sometimes they are delimited by strong natural elements, such as shore lines, rivers and hills, called 'edges' by Kevin Lynch who says: 'Edges are the linear elements not considered as paths: they are usually, but not always, the boundaries between two kinds of areas'.[35] Sometimes domains are defined by the particular human activities carried out in the area, such as agriculture or dwelling, which create a certain 'texture'. Social conditions may also determine a domain's character, as the east- and west-ends of many cities show. Often different factors come together to reinforce the image of distinct domains. On a larger scale, even climate creates distinguishable domains which are experienced as such. Modern topoclimatology also illustrates that there are smaller climatically defined domains which we are hardly aware of, but which have evidently been recognized by man during history as factors determining the distribution of areas for agriculture and housing. It is therefore clear that man's image of domains is influenced by physical and functional as well as social and cultural factors, that is, by the basic objects to which he has to orient.

Elementary interaction

Places, paths and domains are the basic schemata of orientation, that is, the constituent elements of existential space. When they are combined space becomes a real dimension of human existence. It has already been pointed out that the character of a place must be understood as a product of its interaction with the surroundings; that a path without a goal becomes rather meaningless; and that domains, finally, function as a less structured, but unifying 'ground'. The elements can be combined in several ways. The existential space of nomadic

people gives primary importance to the domain within which the paths have a great range of freedom, but their place concept is less developed. Early agricultural civilizations were 'place-oriented', living a static life within a centralized, 'closed' area. Their paths have a circular, engirdling movement, rather than functioning as a direction towards a goal outside. In ancient Egypt, however, the path was the basic symbol.



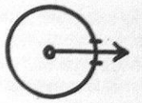
'The Egyptian soul saw itself as moving down a narrow and inexorably-prescribed life-path to come at the end before the judges of the dead. That was its *Destiny-idea*.'[36] Even the Egyptian 'domain', the long and narrow oasis of the Nile valley, can by its very nature be defined as a 'path'. In later civilizations the three elements entered in ever new meaningful combinations. An analysis of existential space, therefore, ought to start investigating the relative importance given to each of the basic elements. Thereafter the interaction of the elements should be studied.

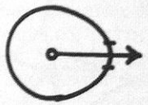
When places interact with their surroundings, a problem of *inside* and *outside* is created.[37] This topological relation, therefore, is a fundamental aspect of existential space. 'To be inside' is, obviously, the

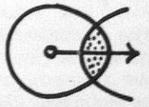
primary intention behind the place concept, that is, to be somewhere, away from what is 'outside'. Only when man has defined what is inside and what is outside, can we really say that he 'dwells'. Through this attachment, man's experiences and memories are located, and the inside of space becomes an expression of the 'inside' of personality.[38] 'Identity', thus, is closely connected with the experience of place, especially during the years when personality is shaped. To function as an inside a place obviously has to satisfy certain formal demands. We have already quoted Rudolf Schwarz's description of the ring as a maximally 'closed' form, and could add that the closure may be increased through geometrization, that is,

by making the ring circular. Geometrization, in general, does away with all the casual directions of the topological form, and has always been used by man to make the intended relationship more precise.

Any closed form, however, has to be *entered*, and a direction is thereby introduced. 'For a house not to become a prison it must have openings into the world beyond, that connect this inner world with the outer.'[39] The direction unites inside and outside more or less strongly, and we see again that a geometrically straight line is more powerful than a topological curve. The place as such is also influenced by the direction; it is 'stretched' towards the outside, at the same time as the outside penetrates the border,

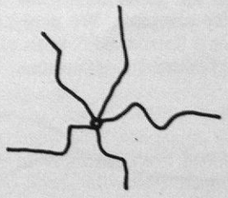






creating an area of transition. This area is related to an *opening* which may be given various forms to express the degree of continuity in existential space. No wonder, therefore, that the door since remote times has been one of the important symbolic elements of architecture. The door can close off or open up, it can unite and separate. Psychologically it is always open and closed *at the same time* although one aspect is dominating, as any door may be opened. The opening is the element that makes the place become alive, because the basis of any life is interaction with an environment. A single opening in an enclosure, however, does not take the cardinal points into consideration. Being part of a natural context the place is already 'oriented', and the ancient city which was divided into quarters symbolized a fourfold 'opening', which made the city a part of the surrounding world. In general, the opening expresses what the place 'wants to be' in relation to its environment.

A place is usually related to several directions by a system of paths; these often form a 'star' around the centre. As the paths are



37 For a more detailed discussion of open and closed forms see Norberg-Schulz *Intentions in Architecture* 1963, pp. 136ff

38 For a discussion of the existential aspects of the inside-outside relationship see Bachelard *The Poetics of Space* 1964, ch IX

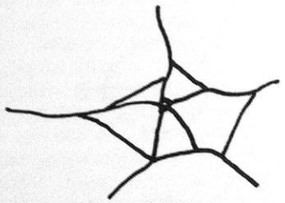
39 O. F. Bollnow *Mensch und Raum* 1963, p. 154

40 O. F. Bollnow *Mensch und Raum* 1963, p. 100

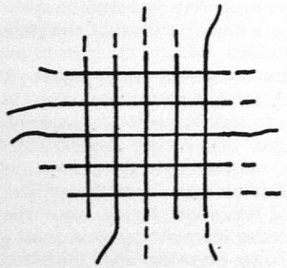
41 M. Heidegger 'Bauen Wohnen Denken 1954, p. 26

42 See H. Dittmar *Der Kampf der Kathedralen* 1964

determined by related human activities which form a coherent action-pattern, the paths are usually connected among themselves. The result is a network which may be



more or less uniform and geometrical, according to the type of activities and the topographical conditions.[40] Some paths are experienced as such because they lead to significant places, whereas others (which lead to the places of other individuals) are only known as a characteristic textural feature of a domain. Holland is a good example of a country which is easily imagined because of its regular path system.



The Dutch countryside, in fact, is divided to form regular grids, because of the system of reclaiming land from the sea, or 'polders'. When two paths meet several expressive solutions are possible on the basis of the continuity principle. We may have a 'bifurcation' or a 'crossroads', both of which have strong existential implications. The choice,

in fact, is a basic problem of human life, especially when posed as a choice between which direction to take to reach a more or less clearly imagined goal. The 'bridge' is a particularly expressive path. Joining two domains and containing two directions, it is usually in a strongly felt state of dynamic equilibrium. Heidegger says: 'Bridges assemble the earth as landscape around the river.'[41] The system of paths, therefore, expresses man's possibilities of movement, the range of his world. We here return to Lewin's hodological space, a concept which ought to be revived and further developed.

The relation between place and path creates a basic dichotomy, which has been strongly felt by European man throughout history. We may call it 'the tension between centralization and longitudinality'. Whereas centralization symbolizes the need for belonging to a place, the longitudinal movement expresses a certain openness to the world, a dynamism which may be physical as well as spiritual. Whereas centralization has ancient roots in the Orient, where it expresses the idea of an 'eternal return', longitudinality was introduced by the Jews who imagined life as a 'path'. The Bible, in fact, states the theme clearly with its opening words: 'In the *beginning* God created Heaven and Earth . . .'. When beginning and end are distinguished, the continuous (and possibly straight) line becomes the appropriate spatial counterpart. In ancient Rome the two images were brought together, and later remained linked, although centralization was to dominate the world image of Eastern Europe and longitudinality the more dynamic intentions of the West.[42]

The system of paths, together with the topographical conditions, creates domains of varying 'density' in our environmental image. The domains with a higher density will be experienced as 'shapes', whereas the

lower densities define a more neutral 'ground'. This simply means that we know the denser areas better, because physically or intellectually we have 'conquered' them by means of more paths. The denser areas thus become places, although they may not have a clearly defined boundary, whereas the other areas remain domains. This aspect of the problem is mentioned to stress that human identification with the environment presupposes *varying* densities, and above all, dense foci which serve as basic points of reference.

The environmental image is therefore composed of a few basic elements, which interact in characteristic ways. In the next section this interaction will be discussed in more detail, and interpreted in human and cultural terms. But to conclude this elementary part of the theory of existential space, we will recall the old concept of *genius loci*. Since remote times man has recognized that different places have a different character. This character is often so strong that it in fact determines the basic properties of the environmental images of most people present, making them feel that they experience and belong to the same place. The *genius loci* in many cases has even proved strong enough to dominate any political, social and cultural changes. This, for instance, holds true for cities like Rome, Istanbul, Paris, Prague and Moscow.[43] Indeed, the truly 'great' city is characterized by a particularly pronounced *genius loci*. I want to point to this fact to stress that existential space cannot be understood in terms of man's *needs* alone, but only as a result of his *interaction* with an environment, which he has to understand and accept. In this way we return to Piaget's double concept of assimilation and accommodation. Existential space, therefore, symbolizes man's *being in the world*, or in Heidegger's words: 'Das Dasein ist räumlich'.[44]

43 See C. Norberg-Schulz 'Möte med Istanbul' *Byggekunst* 1967, p. 104

44 M. Heidegger *Being and Time* 1962, p. 146

The levels of existential space

So far the basic schemata which form the elements of existential space have been discussed. If we look upon the problem in a more concrete way, we find that the elements appear on several levels within a hierarchy of which the most comprehensive are levels of 'geography' and landscape, while at the opposite end of the hierarchy is an order of furniture and still smaller objects. The levels are determined by the given environment as well as by man's constitution. It would, in fact, be wrong to imagine our environment as being 'continuous'. Certain sizes of spatial units are simply of no use, or if they are produced, have an illusory and amusing effect.[1] The lowest level is determined by the *hand*. The sizes and shapes of articles for use are related to the functions of grasping, carrying and in general of extending the actions of the hand. The next level, furniture, is determined by the size of the *body*, especially in relation to such activities as sitting, bending and lying down. The third level, the house, gets its dimensions from the more extended bodily *movements* and actions, as well as from 'territorial' demands. The urban level (which comprises sub-levels) is mainly determined by *social interaction*, that is, by the common 'form of life'. The landscape level results from man's *interaction with the natural environment*.[2] We can also add still more comprehensive geographical levels, which are developed by travelling from one landscape to another, or on the basis of a general knowledge about the world. The system of levels, the different schemata developed on each level, and the interaction of levels constitute the structure of existential space.

Most civilizations possess all levels, but some of them may be rather undeveloped. Nomadic people, for instance, have little contact with urbanistic schemata, whereas urban people in our time have lost most of the landscape level, although they usually

1 In theatre-decoration, thus, we find 'large furniture' or 'dolls' houses', as well as 'miniature landscapes'. Palladio in his Teatro Olimpico produced a whole townscape behind the stage. Visitors will remember the absurd effect created when a person walks down the 'streets'

2 Needless to say, the determinants on all levels are physical as well as psychic

possess some geographical images learnt in school. We will discuss the question of the organization of each level in the following, but should point out in this context that the schemata usually vary from level to level. The house image, for instance, may show a high degree of geometrization, whereas the urban image is topological in character.

Geography

The geographical level has a cognitive character. It is 'thought' rather than 'lived', but may influence the more directly and fully experienced levels. In the past the geographical level hardly existed. Instead we find a 'cosmological' level which was just as real to man as geography is today. We have already mentioned that ancient man conceived his more concrete existential levels as images of the cosmological level.[3] In a certain sense this still happens today, when houses and towns are built on the same Euclidean principles as the space of naïve realism, or when certain works of architecture are inspired by the space-time continuum of relativity. The geographical level, however, hardly serves as a model to be imitated, rather it gives identity to 'objects' such as 'Europe', the 'country' or the 'region', and in so doing assures a considerable political and cultural importance. It also furnishes economical and ecological information which influences man's orientation in the widest sense of the term. The places and paths of geographical space have an abstract character: they do not represent what is directly known, but are *potential* elements of existential space. The content of the geographical level primarily consists of various domains. (In cosmological space the situation is similar, with the difference that the domains symbolize idealized life situations, such as Heaven and Hell.) Peter Haggett, in a fundamental study on geographical theory, uses the concepts of 'network' (i.e. system of routes or paths), 'node', 'surface' (i.e. domain) and 'hierarchy' to describe geographical structure.[4]

Landscape

The level of landscape has generally been that of the 'ground' on which the configurations of existential space have developed. Strangely, however, man's 'being in the landscape' has hardly been studied. The only coherent theoretical attempt known to us, is found in Rudolf Schwarz's book *Von der Bebauung der Erde*. Obviously the schemata of the landscape level are formed through the interaction of man's activities with topography, vegetation and climate. The same landscape, thus, is in some sense different for the peasant, the miner and the tourist, without, though, becoming entirely different. As any landscape offers a limited range of possibilities for orientation and identification, we may say that it has a certain 'capacity' determined by its structural properties.[5] These structural properties ought to be described in terms of places, paths and domains. Rudolf Schwarz says:

'. . . we talk about landscape spaces and think of a house; the mountains are walls, the fields floors, the rivers paths, the coasts are edges and the lowest point in the mountain range, the door.'[6]

Although being primarily background, landscape thus has a structure of its own. It offers areas where the development of places is particularly favoured, and it indicates possible paths and natural domains. If we bring together the different human needs which are satisfied by the place concept, we arrive at a formula where identity/security leads to activity. A place is formed where this formula finds its physical counterpart. In concrete terms this means a naturally protected space, which, however, can easily interact with its surroundings. The great cities of the past, therefore, were located on natural paths of communication, such as rivers,[7] at points which offered physical protection as well as a characteristic identity (*genius loci*). In a few cases both demands were satisfied maximally, as for instance in Constantinople-Istanbul, where 'paths' from East and West, North and South meet at a point of incomparable beauty.[8] Landscape obviously also contains potential places which can only satisfy *one* of the basic demands. In such cases the other demand has to be met by artificial means, by planning and building. The formation of paths is also to a large extent determined by natural conditions. Kurt Lewin's idea of the 'preferred path' is confirmed by modern geographical research, where it is pointed out that movement usually follows an optimal path, according to the *lex parsimoniæ*. Deviations from the straight line, however, are usual, either to obtain something ('positive deviation') or to evade an obstacle ('negative deviation').[9] In particular, domains are defined by natural elements. Slopes, edges, variations in texture (vegetation etc.) strongly suggest areas which become part of man's environmental image. Often these areas correspond to those used for a particular purpose, such as agriculture, but mostly the correspondence is not one to one, whereby a wonderful counterpoint between natural and man-made domains results.

But landscape structure, it must be admitted, is in general relatively diffuse. The elements only occasionally have a clear definition, such as a lake, and vegetation and topographical forms rarely correspond exactly. A certain correlation is sometimes found as, for instance, when a cultivated field stops against a wood-clad hill, but regular or geometrical forms hardly exist. When they do occur, man tends to bestow upon them a particular significance: Mount Fuji in Japan is traditionally considered holy, and Vesuvius is even more interesting because of its regular contour, accentuated by the isolated position of the mountain. It would, however, be wrong to consider landscape as formless. A landscape with weak formal properties may exist, but it does not offer the same possibilities for orientation and identification as a landscape where large and small dimensions accentuate each other reciprocally, where masses and spaces inspire us to imagine the experience of taking possession of it by physical and psychic movement. The imagined process of taking possession of landscape during the changing seasons also determines its infinitely varying expressions: it may be intimate or forbidding, smiling or sombre; but all these expressions have a *general* character. As nature is not man-made, it keeps us at a certain distance and offers great but relatively undifferentiated experiences. Correspondingly, the structure of landscape consists of general topological relationships: we may, for instance, talk about 'a chain of mountains' or 'a glade in the forest'. Let us repeat that landscape always has the function of forming the continuous background of our environmental image (as well as of our visual field). If this condition is corrupted, we stop talking about landscape.[10]

The urban level

On the urban level we find structures which are mostly determined by man's own activities, that is, by his interaction with a *man-made* environment. On this level, therefore, the basic form is what could be called 'our place'. During his development the individual discovers a structured whole which he shares with others and which more than anything else gives him a sense of identity. In fact, during history the town has simply been *civitas*, the known and safe world which secured man's foothold in relation to the unknown world around. The primary quality of the urban image, therefore, is the single identifiable place. To satisfy this condition, the settlement ought to have *figural* character in relation to the landscape. The principles of closure and proximity of the constituent elements, therefore, are of prime importance. The settlement in any case has to have a higher density than its surroundings. This does not mean, however, that the town is a closed system, isolated from its environment. We have already talked about the dialectic of departure and return, of inside and outside and of the meaning of 'openings'. The town, thus, communicates with elements of other levels. But communication presupposes that the town has something to contribute, that is, has a clearly defined identity. Communication does not mean to dissolve into the surroundings.

We have maintained that the identity of a settlement relative to its surroundings depends on a certain density. The question then arises whether this density is also motivated from within. Certainly villages and towns from any period or part of the world were characterized by being dense. This quality, therefore, seems to satisfy a basic

3 Even furniture and objects have in the past been considered images of the world. The chandeliers of the Ottonian and Carolingian epochs, for instance, were images of 'Heavenly Jerusalem'. See H. Sedlmayr *Die Entstehung der Kathedrale* 1950, p. 125

4 P. Haggett *Locational Analysis in Human Geography* 1965, p. 18

5 For the concept of 'capacity' see Norberg-Schulz *Intentions in Architecture* 1963, p. 155

6 R. Schwarz *Von der Bebauung der Erde* 1949, p. 11

7 This fact is expressed by all the names of towns ending with 'ford' (German: *Furt*), meaning 'shallow place where a river may be crossed by wading'

8 See C. Norberg-Schulz 'Möte med Istanbul'

9 P. Haggett *Locational Analysis in Human Geography* 1965, pp. 32, 62ff

10 For a further discussion of the properties of landscape see C. Norberg-Schulz 'Il paesaggio e l'opera dell'uomo' *Edilizia Moderna* 78, 1966

human need. One might refer to the need for defence, a factor which certainly has played an important role, but density also appears where defence was unnecessary. The motivation, therefore, lies deeper. We know that the Egyptian hieroglyph for 'city' also meant 'mother'. The city was experienced as something close, warm and embracing. When I once asked one of the inhabitants of a small Italian village how she would describe her village to somebody who did not know the place, she answered: 'it is like a warm coat I can put on'.[11] Density thus seems motivated also from within. In general it corresponds to what is usually known as *human scale*.

The discussion of urban structure is not exhausted, however, by pointing out a general place-quality. It also comprises an interior organization which we have already mentioned in connection with the research of Kevin Lynch. Lynch is certainly not the first to define urban structure in terms of 'nodes', 'paths' and 'districts'; conventional descriptions of towns usually refer to squares (*piazza*, *Platz*, *place*), streets and quarters and we may quote the writings of A. E. Brinckmann and Paul Zucker as an example.[12] But he has given these well known terms a new existential dimension, rather than reducing them to aspects of a 'visual' problem. His approach finds significant confirmation in an essay by Claude Lévi-Strauss, who discusses the image natives have of their village.[13] Lévi-Strauss shows that the image is based on simple,

topological relations, but that it varies according to the individual's position in the social structure. He also points out that the image-types correspond to real arrangements found in primitive villages.[14] The inner urban structure is thus a complex result of individual and social functions which 'take place'. The same basic elements are found everywhere; they can, however, be combined into several typical urban images. The most elementary of these are the 'enclosure' and the 'cluster', which are the direct expressions of functions taking place and of social 'togetherness'. These two structures also often appear in combination, as when a cluster is given a precise delimitation. Continuity along a path is also a characteristic model, mostly determined by particular environmental conditions. In larger cities these structures form hierarchical systems. A higher or lesser degree of geometrization may appear on all sub-levels.

Kevin Lynch uses present-day American cities as his material, but still arrives at the same conclusions. Man needs an urban environment which facilitates the image-making, he needs districts which have a particular character, paths which lead somewhere, and nodes which are 'distinct and unforgettable places'. In his fascinating analysis of formless Los Angeles, he quotes a characteristic statement of one of the persons interviewed: 'It's as if you were going somewhere for a long time, and when you got there you discovered there was nothing there, after all.'[15] Within the urban level, the individual usually possesses his more 'private' existential space, but it is essential that this is understood as part of a larger whole. Such an understanding grows together with man's gradual becoming part of a social context. 'Socialization', thus, has to be accompanied by the development of existential space to become really meaningful.[16] Rudolf Schwarz says: 'The individual is born in the village which existed before him. But slowly this village becomes his homeland, a place lived in and full of memories.' 'Paths and places became memories, time and space became the history of his life.'[17]

The house

The private spaces we find within the common urban level, are *houses* in the fullest sense of the word. The house really brings us inside and represents the need for being situated. But there are also houses which have a public character. This either means that they remain part of the urban level, or that the public realm is recognized as an extension of the private world, so that man can be said to 'dwell' in the public buildings as well as in his own house. In other words, the concept of 'home' may have a varying range. Some forms of life, in fact, give prime importance to the common, public environment; the inhabitants dwell *together* as one large community, whereas elsewhere the house of the *family* is the basic element. In both cases, however, the fundamental function of *dwelling* is fully expressed. Heidegger says:

'What does it mean to build? The old German word for to build was "buan" and means to dwell. That is, to stay, to remain . . . The word "bin" (am) came from the old word to build, so that "I am", "you are" means: I dwell, you dwell. The way that you are and I am, the way men *are* on earth is "Buan", dwelling . . .' 'Dwelling is the basic principle of existence.'[18]

The house, therefore, remains the central place of human existence, the place where the child learns to understand his being in the world, and the place from which man departs and to which he returns. The poet Milosz says:

'I say Mother. And my thoughts are of you, oh, House. House of the lovely dark summers of my childhood.'[19]

and a house-inscription by Hermann Broch reads:

'In der Mitte aller Ferne
steht dies Haus
drum hab es gerne.'[20]

Consequently Gaston Bachelard describes the house as 'one of the great integrative forces in man's life'.[21] In the house man finds his identity.

The structure of the house is primarily that of a place, but as such it also contains an interior structure which is differentiated in several subordinate places and connecting paths. Different activities take place in the house, and their co-ordinate totality expresses a form of life. The activities have a varying relation to the outside and to the basic directions of vertical and horizontal. When Bachelard gives prime importance to the verticality of the house, he obviously recognizes the fundamental relationship discussed by Heidegger: to dwell does not only mean 'to be on earth', but also 'to be under the Heavens'.[22] The house gives man his place on earth, but the 'vertical' is always with him. In general, the house expresses the structure of dwelling, with all its physical and psychic aspects. It is imagined as a system of meaningful activities concretized as a space consisting of places with varying character. To illustrate the depth which is given to the world 'character' in this context, Bachelard quotes C. G. Jung who says: 'Conscience behaves like the man who hearing a suspicious noise in the cellar rushes up to the attic to make sure that there are not thieves and subsequently that the noise was a figment of his imagination. In reality the cautious man hadn't dared to go down to the cellar.'[23] The image of the house, therefore, depends on the existence of differentiated places which interact among themselves and with the environment in varying ways. Above all, however, the character is determined by concrete 'things' such as the fire-place, the table and the bed.

When Alberti called the house 'a small city', he probably felt that we dwell in cities as well as in houses, and that the basic elements of existential space determine both. But the analogy is not completely valid. The house, thus, does not give the same importance to the path as does the city. Whereas the city mainly lives by means of its paths, the house is a function of place. In fact, we can follow a logical progression from the domain-dominated landscape over the path-dominated city to the place-dominated house. At the same time we notice a growing precision of form and structure, that is, an increasing tendency towards geometrization.[24] The more man is 'at home', the more precisely he can define his environment.

The thing

How, then, should we consider the lowest level of existential space, that of furniture and objects-for-use? Here we can no longer talk about a system of places and paths, but

11 See 'Giglio Castello' *Byggekunst* 6/1969

12 A. E. Brinckmann *Deutsche Stadtbaukunst der Vergangenheit* 1911, *Stadtbaukunst* 1920; P. Zucker *Town and Square* 1959

13 C. Lévi-Strauss *Structural Anthropology* 1963, ch. VIII

14 In Appendix A to his book, Lynch refers to rich anthropological material providing further confirmation of the point

15 Lynch *The Image of the City* 1960, p. 41

16 For the concept of 'socialization' see Norberg-Schulz *Intentions in Architecture* 1963, pp. 37ff

17 R. Schwarz *Von der Bebauung der Erde* 1949, pp. 193ff

18 M. Heidegger 'Bauen Wohnen Denken' 1954, pp. 20, 21, 35

19 Quoted by G. Bachelard *The Poetics of Space* 1964, ch. II, 4

20 H. Broch *Gedichte* 1953, p. 68. (In the middle of all distance stands this house, therefore be fond of it)

21 G. Bachelard *The Poetics of Space* 1964, ch. I, 1

22 M. Heidegger 'Bauen Wohnen Denken' 1954, p. 23

23 G. Bachelard *The Poetics of Space* 1964, ch. I, 5

24 This, of course, is not a rule. The Hellenistic town, thus, shows a higher degree of geometrization on the urban level, than in the individual house

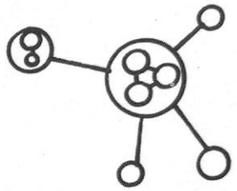
are left with *things*, which interact with their surroundings in different ways.[25] Being directly connected with certain functions, 'things' usually have a maximum of precise form, and are known by man in the most direct way possible. We have already mentioned that elements on this level may serve as foci in the house. The fire-place, for instance, has since ancient times been the very centre of the dwelling, and the table was the 'place' where the family joined to form a 'ring'. Bollnow points out that the bed represents the centre even more convincingly, being the place from where man starts his day, and to which he returns in the evening. In bed the circle of the day, and of life, is closed.[26] The bed, therefore, *par excellence* is the place where man 'comes to rest', where his movements find their goal. Bollnow also points out that man's active relationship to the world is characterized by his vertical position; he takes 'a stand'. To sleep means to give up this position and return to the very 'point of departure'. When the Château de Versailles was centralized on the bed of Louis XIV, it symbolized more than a mere demonstration of power. Gaston Bachelard also gives an interpretation of such 'things' as cupboards and drawers. 'In the cupboard,' he says, 'there lives a centre of order, which protects the whole house against chaos.'[27] He points to the fascination we feel when we hear the words 'Open Sesame!', and says: 'The cupboard and the chest of drawers are *things, which may be opened*'.[28] They are therefore connected with the basic actions of hiding and revealing, of conserving and remembering.

The interaction of levels

The levels of existential space form a structured totality which corresponds to the structure of existence. Man exists in relation to many objects: to physical objects, psychic objects, social objects and cultural objects.[29] *All* these objects he encounters at several levels: the levels of things, of house, of city and of landscape. And yet there still seems to be a natural correspondence between objects and levels. Did not man always search for God in nature?[30] Did he not meet his fellow men in the city, and did he not find himself in the house? Did not the things give him the physical assurance of grasping and holding? From the level of things to the level of nature the range widens at the same time as precision decreases. In things everything is *focused*, in nature everything is *contained*. And in between there is man's dwelling. From his dwelling he can search out as well as he can look in; he can find the depth of distance as well as the depth of nearness. The levels of thing, of dwelling and of nature, therefore, are general properties of existential space, but they do not always appear in the same way. We have already mentioned variation in the public and private aspects of dwelling, and hinted at the fact that modern man to a large extent has lost the level of nature. The easiest level to preserve through all changes seems to be the level of things. But is it really preserved today, when everything is thrown away after use?

It is of great importance that the levels can *represent* each other, which is also a consequence of the fact that 'things focus' and 'nature contains'.[31] On the one hand, things, houses and cities may be cosmological symbols, or a house or a thing may represent a city etc., or again the cosmological image may imitate the form of a city, a house or a thing. Such representations probably result from the common tendency to imagine things unknown on the model of things known, or from practical difficulties in realizing a certain image on the appropriate level. A representation from the top towards the bottom of the hierarchy means that the higher levels are 'concretized' by the lower. In other words, man 'receives' the environment and makes it focus in concrete buildings and things. The things thereby 'articulate' the environment and make its character precise. That is the basic function of *detail* in our surroundings. The details 'explain' the environmental character, and thereby become meaningful. Even the *genius loci*, therefore, needs man's concretization and, in fact, is mainly known through such a manifest influence. A representation from the bottom towards the top means that man 'projects' himself into the environment. He communicates something to the environment, which in turn unifies his 'things' in a larger meaningful context. The interaction between man and the environment, therefore, consists of two complementary processes which are directed inwards and outwards respectively, in accordance with Piaget's principle of assimilation and accommodation. The level-hierarchy of existential space is therefore a product of man's taking possession of his environment.

Existential space can also be described as a simultaneous totality where the levels interact to form a complex, dynamic *field*. Through perception, parts of the field are experienced, but the general image exists independently of the individual situation. This field is neither continuous nor uniform.



Firstly it contains a system of centres, with one centre usually dominating. The centres can be inside each other, as when we think of the different 'known' places of a town, which as a whole functions as a centre in a larger context, or when we think of the various places or foci of a house. This means that the levels contain each other. On each level, the centres are related by paths. It follows that domains may also contain subdomains as well as places and paths. The degree of acquaintance with an area, therefore, is determined by the sub-elements known. These elements, on the other hand, are influenced by the character of the surrounding domain. In general, we may say that existential space consists of several overlapping and inter-penetrating systems which interact with each other.[32] In such a complex totality ambiguity and conflicts are bound to occur, it is even maintained that they ought to occur, because of 'the richness and ambiguity of (modern) experience'.[33] The question of complexity has been discussed by Amos Rapoport and Robert E. Kantor who refer to recent works by psychologists investigating the degree of environmental complexity preferred.[34] In general, human beings prefer complex environments to simple ones. Experiments with rats have shown that an enriched environment produces an increase in brain weight and intellectual capacity. 'Since healthy behaviour is exploratory, varying, venturesome in nature, it requires an environment which allows, indeed encourages, the development and exercise of such behaviour . . . Yet this preference for the complex and ambiguous is not limitless. Stimuli which are too simple lead to quick boredom; those which are too complex lead to confusion and avoiddance. This suggests the idea that for each person there is an optimal perceptual rate.'[35] The authors also discuss a similar interest in ambiguity among present-day architects and quote Aldo van Eyck who says: 'Each place is multi-suggestive.' In particular van Eyck gives importance to the inside-outside relation. His statements reflect what we have found to be basic properties of existential space, and van Eyck himself realizes the determining force behind it, when he says: 'Man is both centre bound and horizon bound'.[36] The structure of existential space expresses the incessant tensions inherent in life.

25 O. F. Bollnow *Mensch und Raum* 1963, p. 165

26 O. F. Bollnow *Mensch und Raum* 1963, p. 166

27 G. Bachelard *The Poetics of Space* 1964, ch. III, 4

28 G. Bachelard *The Poetics of Space* 1964, ch. III, 6–7

29 For the theory of objects see Norberg-Schulz *Intentions in Architecture* pp. 27ff

30 M. Eliade says, 'The sky directly, "naturally", reveals the infinite distance, the transcendence of the deity'. *The Sacred and the Profane* 1961, p. 117

31 For a discussion of representation see Norberg-Schultz *Intentions in Architecture* 1963, pp. 167ff

32 The *island* represents a relatively closed system and may therefore give rise to a particular kind of existential space. We may also point out the common root in the words 'island' and 'isolate'. See Lynch *The Image of the City* p. 129

33 R. Venturi *Complexity and Contradiction in Architecture* New York 1966, p. 22

34 A. Rapoport and R. E. Kantor 'Complexity and Ambiguity in Environmental Design' *American Institute of Planners Journal*, July 1967

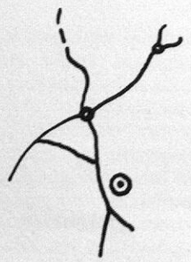
35 A. Rapoport and R. E. Kantor 'Complexity and Ambiguity in Environmental Design' p. 214

36 A. Rapoport and R. E. Kantor 'Complexity and Ambiguity in Environmental Design' p. 216

Conclusion

It has been maintained that the development of an existential space forms a necessary part of the orientation of the individual, and that the basic properties of its structure ought to be public, in order to allow for social integration. Orientation and social integration, however, have many dimensions. Space is only one of the aspects of existence. Could not, for instance, social integration be achieved by cultural or political means rather than by the development of common space concepts? We do not want to reduce the importance of any of the dimensions of human action, but should point out that *any* activity has spatial aspects, because any activity implies movements and relations to places. Existence and existential space cannot be separated. Heidegger says: 'The world at any time reveals the spatiality of the space which belongs to it.'[37] Any activity means 'to be somewhere'.

What, then, does it mean 'to be somewhere'? It simply means to be located in one's existential space. We may be 'at home', 'away' or 'astray'. The term 'away' expresses that we are on our way to get 'somewhere else'. The German word *weg*, in fact, means 'way' as well as 'away'. The term 'lost' expresses that we have left the known structure of existential space. The *experience* (perception) of space, thus, consists in the tension between one's immediate situation and existential space. When our immediate location coincides with the centre of our existential space, we experience being 'at home'. If not, we are either 'on our way', 'somewhere else', or we are 'lost'.



'To be somewhere', however, has many forms. Bollnow talks about 'Der Handlungsraum' (space of action), 'Der gestimmte Raum' (expressive space) and 'Der Raum des menschlichen Zusammenlebens' (space of human interaction). The space of action may also be called 'space of work', and consists mainly in a spatial organization of objects for use.[38] Expressive space, on the other hand, is determined by affective identification. Bollnow refers to the varying character of natural space, and talks at length about the forest, which is generally experienced as being simultaneously closed and open. This character furthermore changes with day and night and with the climatic conditions. As particularly interesting phenomena, Bollnow mentions the effect of snow and of fog,[39] and of dawn and dusk. He quotes the well known verse by Goethe:

'Dämmrung senkte sich von oben,
schon ist alle Nähe fern . . .'.[39a]

The concepts of 'narrow' and 'wide' are especially suitable for describing such 'character'. 'Narrow' is what restricts life (but in certain cases: protects life), while 'wide' is what allows life to unfold. The expression or character of the environment, therefore, is neither something subjective within man, nor something to be found outside, but an aspect of man's being in the world. The expressive spaces created by man primarily aim at the realization of such characters. In fact, Sedlmayr defines art as the 'shaping of an intelligible character' and says, 'the achievement of the artist lies in creating an intelligible equivalent for the particular complex that he has experienced'.[40]

In the space of human interaction, the spaces of action and of expression are unified to create, in its highest form, what Bollnow calls 'the space of loving communal life'.[41] He points out that marriage among primitive people is often connected with the building of a house and says: 'The space which they (the lovers) jointly produce is their home.'[42] When space of love becomes public, as a common ideal image of existential space, it gains the character of a *sacred* space. Sacred space always centres on one or more sacred places, that is, *foci* where the common cosmic image is represented. Often the centres are connected by sacred paths which lead to the meaningful goal. Pilgrimage, thus, is one of the great symbols of human existence.[43]

The sacred path implies that 'to be on the way' also has many forms. It is closely related to the problem of pace and rhythm, that is, the changing character of movement. In fact, *how* we get from one place to another is a basic aspect of man's being in the world. We can run, stroll, march or dance, thereby expressing different ways of taking possession of the environment. Life itself can be understood as a movement from one condition to another. This movement is incessant and continuous, but it has rhythm and form. Even man's basic organic needs, such as hunger and thirst, follow rhythmic patterns. Furthermore, man is part of a system of natural rhythms, such as night and day, the change of seasons and his own 'ages'. Piaget says appropriately: 'Life is a creator of patterns'.[44] In other words, we become what we do. In this sense, life interprets itself as space by taking possession of the environment.

To conclude we may say a few words about some actual problems connected with man's existential space. Whereas the human environment so far has had a structure corresponding to the existential space described above, present-day development seems to favour a new *mobility*. Technical means of communication have freed us from direct human contact, and an increasing number of people have become physically mobile. Many seem to believe that this development offers possibilities for a richer social interaction. Thus the American city-planning theorist Melvin Webber says: 'It is interaction, not place, that is the essence of the city and city life'.[45] The Dutch utopist Constant Nieuwenhuis has given a particularly illuminating image of a mobile world in his 'New Babylon' fantasy. He says: 'In New Babylon people would be constantly travelling. There would be no need for them to return to their point of departure as this in any case would be transformed . . . It follows that New Babylon could not have a determined plan. On the contrary, every element would be left undetermined, mobile and flexible.'[46] But such a mobile world, which is not based on the repetition of similarities in connection with a stable system of places, would make human development impossible. Piaget's research indicates that a mobile world would tie man to an 'egocentric' stage, while a stable and structured world frees his intelligence. Nor would a mobile world allow for real human interaction. Christopher Alexander thus points out that 'the social pathologies associated with urban life – deliquency and mental disorder – follow inevitably from the lack of intimate contact'. To have such an intimate contact 'the people concerned must see each other very often, almost every day'. He also maintains that mental disturbances occur when people only have 'nonpatterned encounters with each other'.[47] In fact, it is a misunderstanding to believe that a stable world and corresponding environmental images hamper man's mobility. Kevin Lynch says that 'the environmental image has its original function in permitting purposeful mobility', and 'the terror of being lost comes from the necessity that a mobile organism be oriented in its surroundings'.[48] Heidegger furthermore points out 'When I go towards the exit of a room I am already there and would not be able to go there unless I was already there.'[49] In other words, *mobility* presupposes a structured image of the environment, an existential space which contains generalized as well as particular orientations.

The discussion of the human environment has thus taken a new direction. Until a few years ago we discussed whether man ought to live in one-family houses or flats. Today we have penetrated deeper into the problem and ask what we should demand in order to make the environment a satisfactory part of human existence. As an answer to this question, the idea of a mobile world is anything but realistic. It confuses psychic and physical mobility, as well as psychic and physical distance, and substitutes real identification with a chaotic consumption of stimuli. Hans Sedlmayr has grasped the tendency at its very root, talking about 'the lost centre'.[50] The environmental

37 M. Heidegger *Sein und Zeit*, p. 104

38 K. Lynch *The Image of the City* 1960, p. 128

39 See Bollnow *Mensch und Raum* 1963, p. 212 who quotes the poem by Hermann Hesse
Seltsam, im Nebel zu wandern!
Einsam ist jeder Busch und Stein,
kein Baum sieht den andern,
jeder ist allein . . .
Seltsam, im Nebel zu wandern!
Leben ist Einsamsein.
Kein Mensch kennt den andern,
jeder ist allein.
(it is strange to walk in fog when every bush and stone stands solitary, no tree sees the other, each is alone . . . It is strange to walk in fog. Life is being solitary. No man knows another, each is alone) Bollnow *op. cit.* p. 220

39a (dusk falls from above, soon all proximity is far)

40 H. Sedlmayr 'Ursprung und Anfänge der Kunst' *Epochen und Werke* I, 1959, p. 9

41 O. F. Bollnow *Mensch und Raum* 1963, pp. 257ff

42 O.F. Bollnow *Mensch und Raum* 1963, p. 264

43 See K. Goldammer *Die Formenwelt des Religiösen* 1960, ch. IV, 2 'Heiliger Raum und heiliger Weg'

44 J. Piaget *The Psychology of Intelligence* 1950, p. 167

45 M. M. Webber 'Urban Place and Nonplace Urban Realm' *Explorations into Urban Structure* 1964

46 C. Nieuwenhuis 'New Babylon' *Architectural Design* June 1964

47 C. Alexander 'The City as a Mechanism for sustaining Human Contact' *Environment for Man* ed. W. R. Ewald 1967.

48 K. Lynch *The Image of the City* 1960, pp. 124, 125

49 M. Heidegger 'Bauen Wohnen Denken' p. 32

50 H. Sedlmayr *Art in Crisis: the lost centre* 1957

problem we are facing, therefore, is not of a technical, economical, social or political nature. It is a human problem, the problem of preserving man's identity. In his 'free' arrogance he departed from his place and 'conquered' the world. But he is left with emptiness and no real freedom. He has forgotten what it means to 'dwell', and remember Rilke's words:

'O Heimweh der Stätten, die nicht genug
Geliebt wurden, einst in flüchtigen
Stunden –
Wie gern gäb ich ihnen, handelnd von Fern
Versäumtes, den Umriss abzurunden.'

The Odyssey is still a valid tale.

Perhaps man's departure was motivated by a wrong idea of 'freedom'. Heidegger reminds us that the words 'dwell', 'protection', 'peace' and 'freedom' originally belonged together,[51] and everything seems to indicate that this is still the case. Freedom still presupposes security, and security is only possible through the human identity of which existential space is one aspect. This is the essence of 'dwelling'. But we have to learn to dwell. In fact, our experience today shows us that man does not spontaneously find his foothold. The problem of environment, therefore, is a problem of intentions and attitudes. As Rudolf Schwarz says: 'Man cannot plan the world without designing himself.'[52]

51 M. Heidegger 'Bauen Wohnen Denken' 1954 p. 23

52 R. Schwarz *Von der Bebauung der Erde* 1949, p. 12

3 Architectural space

It is the city which should be judged though we, its children, must pay the price.
Lawrence Durrell *Justine.*

The elements of architectural space

Architectural space may be defined as a 'concretization' of existential space. 'Existential space' is a psychological concept, denoting the schemata man develops, interacting with the environment, in order to get along satisfactorily. The result of this interaction, however, will not be a finished, complete image, it will normally contain contradictions, and parts will be missing, for example, the feeling of belonging to a particular place. When a group of 'lost' young people in Oslo recently protested against the commercialized use of land and buildings in the centre of the city, their slogan was: 'a place to stay'. The environmental image, therefore, comprises wishes and dreams. To satisfy these wishes, man tries to *change* his environment. In other words, architecture concretizes an image which goes beyond the already existing environment. It always reflects a wish to *improve* man's conditions. Man's existential space is thus determined by the concrete structure of the environment, but his needs and wishes create a feedback. The relationship between man and environment is therefore a two-way process, a real interaction. 'Architectural space' is a concrete, physical aspect of this process.[1] We could also say that existential space, being one of the psychic structures which form part of man's being in the world, has architectural space as its physical counterpart.[2]

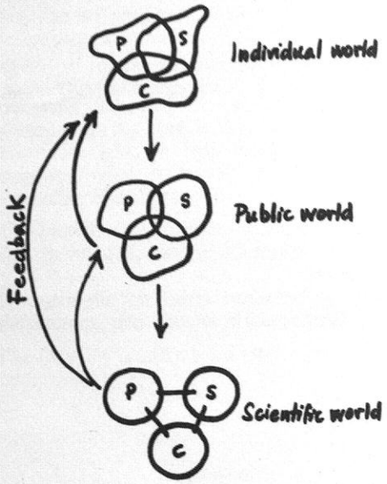
Ideally, there should be an isomorphic relation between existential and architectural space but, in practice, this is not fully achieved. Architectural space is given 'ready made' to the individual, that is, it is the creation of others and reflects *their* existential spaces. A particular attitude is therefore needed to grasp its structure,[3] and when we try to create architectural spaces which concretize our existential space, the result may not be liked by others. Man's relation to architectural space therefore consists, on the one hand, in trying to integrate its structure into his personal schemata, and on the other in translating his schemata into concrete architectural structures. In order that he succeed in the first, and that the second may become a contribution to the development of the existential spaces of others, architectural space must necessarily have a pronounced *public* character. To understand this better, we may introduce a simple model which represents three 'levels of generalization'; the private or individual, the public or social and the objective or scientific.

Our private world is obviously based on a series of generalizations, as we order our experiences according to their similarities. But the concepts or 'objects' we arrive at have relatively imprecise boundaries and a low degree of articulation. Our conception

1 To simplify the problem we do not here distinguish between 'natural' and man-made elements in the environment. What man *selects* from nature to serve his purposes, we also call 'architecture'

2 This does not mean, however, that we reduce architecture to its physical aspects. Architectural space represents existential space, and thereby the 'higher' social and cultural objects of man's world

3 Hans Sedlmayr was the first to stress that the work of art requires an 'adequate attitude' from the perceiver. See 'Zu einer strengen Kunstwissenschaft' *Kunstwissenschaftliche Forschungen* 1, 1931



of a tree, for instance, may only consist in a general idea of its shape or colour. A gardener or a botanist, however, will probably have a more complete conception. This is because individual worlds (within a particular field) have been further structured by special knowledge, which in our diagram is illustrated by a feedback-arrow from science. But man's individual concepts are not only vague, they also have an inevitable tendency to *interfere*. A man's concept of a tree is thus influenced by the situation in which it is experienced: harvesting apples, climbing the branches, or engraving a heart pierced by an arrow. In fact, it is this interference[4] which gives things individual 'colour' and makes the individual world something more than a mechanical reaction to physical stimuli. But at the same time is is clear that this interference, if it took place in an accidental and subjective way, would have catastrophic consequences for our intercourse with physical things as well as with other people. Individual concepts and interference patterns must, therefore, be based on *social* experiences. This is also illustrated in the diagram by a feedback-arrow. In other words, our different individual worlds must have common basic structural properties to enable us to become part of society. These common concepts and interference patterns we may call the *public world*. The public world is characterized by a more stable and generalized structure than the individual, but is obviously deprived of all the varying shades which distinguish the latter. As a matter of course, the public world has, to a greater extent than the individual, to make use of scientific insight. It is therefore more objective, but may never *correspond* to the *scientific world*, which is characterized by the disappearance of interference, as far as that is possible, or, in other words, by the absence of values. Only by leaving out values does science become 'exact'. The scientific world is a world of precisely defined and lawfully interrelated objects. As it is interference which determines what we call 'qualities', it is natural to characterize the scientific world as 'quantitative'. If the public world corresponded to the scientific all meaningful feelings and expressive activities would become impossible.

One of the key words used above is 'value'. To possess a system of values means that one wants and is convinced that the world *ought to have* a certain structure. Values, therefore, influence our choice of alternatives, they make our actions *intentional*. They may even lead us to accept solutions which are disadvantageous from a practical point of view. Such solutions can be defended if they are necessary to manifest values needed by society. They should, however, be rejected if they only express private idiosyncrasies. When we lay stress on the word *intention*, it is to say that both the (environmental) needs and the (architectural) forms which satisfy them are the result of meaningful choices (conscious or unconscious). This holds both for perception and production. Only in exceptional circumstances do we intend forms which correspond exactly to the measurable, physical stimulus. Usually the stimulus symbolizes a 'higher' objective, that is, we experience a meaning.[5] We thus *interpret* the situation *relative* to a system of values. To avoid becoming a victim of prejudice, it is essential that perception be based on a value system which gives the stimulus an *adequate* meaning, that is, a sufficient 'intentional depth'.[6] A modern pluralistic society where different value systems interfere, makes great demands on the intentional depth. We therefore ought to have knowledge of value systems other than the one we personally profess, and be able to change attitudes when necessary. But the different systems ought also to have some basic properties in common to avoid inherent conflicts in society. When we say that forms are 'expressive', it therefore means that they manifest higher objectives, which eventually are based on systems of values. The forms are expressive because they engage, because they mean something to us. We could also talk about 'symbolic forms', whereby 'symbol' means something quite different from a naïve depiction. 'Expressive forms' and 'symbolic forms' are, therefore, synonyms, signifying that measurable physical forms (perceived or produced) mediate a higher meaning. The symbol-function is basic to all human behaviour. Without symbols which concretize his value-oriented being in the world, man would be inexpressive.

How, then, does architecture enter this model? Should the environment we create be adapted to the private, the public or the scientific world? It is obvious that the last alternative has to be rejected. It is of course possible to reduce architecture to a mere rationalistic activity, and hope that the other arts succeed in showing man that his world is meaningful. Our analysis of existential space, however, tells us that this reduction would make man 'homeless' in the widest sense of the term. Let us therefore hope that our environment may still acquire a 'meaning' to transcend the merely practical aspect. Should it, in this case, correspond to the private or the public world? As it is one of the purposes of architecture to help integrate the individual in a common form, the first alternative is not satisfactory. That is, individual needs certainly have to be satisfied, but they have to be understood, as part of a larger context. In other words, even our individual expressions ought to have a common denominator. In general, architecture should serve the *public* world. This does not mean that we hypothesize *one* collective system of values and let everything be determined by that; rather we should use the *role-structure* of society as our basis; a problem, however, that we have discussed in further detail in other contexts.[7]

In conclusion, architectural space concretizes a public existential space which includes many private existential spaces. It is a symbolic form which mediates the higher objects of man's world through a certain structural similarity, whereby the places, paths, domains and levels of existential space find their concrete, physical counterpart – a fact which follows logically from the discussion of existential space. Creating architectural space, therefore, means integrating an intended form of life in the environment. Rudolf Schwarz says: 'People put the earth within them in the land they find, place the landscape within them on the landscape without, and both become one.'[8]

Place and node

The first problem to discuss is the architectural definition of 'centre'. It has already been shown that centre means the creation of a place, or, in Lynch's terminology a 'node'. Lynch says: 'Nodes are the strategic foci into which the observer can enter, typically either junctions of paths, or concentrations of some characteristic'.[9] Lynch also introduces the term 'landmark' to denote 'point references considered to be external to the observer'.[10] Landmarks often correspond to centres in existential space, but sometimes their function is more to indicate boundaries or directions. In general, the definition of a place is based on the Gestalt principles of proximity and closure. Proximity creates a clustering of elements, that is, a concentration of masses. Hence we find throughout the history of architecture the tendency to mark a place by means of a large mass. Enclosure, on the other hand, determines a space which is separated from its surroundings as a particular place. Such spaces exist in nature, for instance as caves. The initiation rites of the Dogons take place in caves, and the centre of meaning is furthermore indicated by a concentrated mass placed inside the cave, an erect stone of phallic character.[11] We thus find the two original architectural symbols of place brought together.

D. Frey discusses the 'mass-centre' or *Mal-Motiv* extensively. He points out that the mass expresses the condition of *being*

4 Interference leads to what Egon Brunswik has called 'intermediary objects'. The phenomena perceived are intermediary objects, while science aims at the abstraction of 'pure' objects. See Norberg-Schulz *Intentions in Architecture* 1963, pp. 32ff

5 See C. Norberg-Schulz 'Meaning in Architecture' *Meaning in Architecture* ed. C. Jencks and G. Baird 1969

6 See C. Norberg-Schulz *Intentions in Architecture* 1963, p. 31

7 See C. Norberg-Schulz 'Intention und Methode in der Architektur' *Der Architekt* 6/1967

8 R. Schwarz *Von der Bebauung der Erde* 1949, p. 59

9 K. Lynch *The Image of the City* 1960, p. 72

10 K. Lynch *The Image of the City* 1960, p. 78

11 See H. Haan 'Dogon' *Byggekunst* 2/1965 p. 32