Analysing Architectural Determinism the Physical Environment as a Mnemonic Device

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Abstract: Space is the outcome of a necessity. However architectural space has a social value, cultural connotations, political implications and a theoretical message. One of its abstract layers is its ability of becoming a mnemonic device. Physical settings remind people of what is expected of them through certain cues imbedded into them. It might be a certain type of behaviour or response, or, it can be a reminder of who we are, what we like and to which social group we belong. Thus, the aim of this paper is to deconstruct and reconstruct this concept based on a comparative analysis of two specialised environments: psychiatric wards and office spaces.

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The Meaning of the Environment

Browsing through the many meanings of the concept of space, one can range between the absolute void to the interspace of the atoms. There are many layers to be peeled between the concrete space enclosed by four walls to the metaphorical boundaries that are crossed each time a person yells "you are in my space!". Architecturally speaking, as Rudolf Arnheim¹ suggested many decades ago, space in itself does not exist, unless we perceive it as a structure, as a relationship between the objects that inhabit it. Perceiving space is a subjective experience. In order to perceive it, we have to establish an origin against which we can then organise - thus perceive - all objects that furnish the space and the relationships established among themselves. Therefore space itself is homogeneous and only through our interference as dwellers, as designers, does space become organised: it receives quality and meaning, or as Christian Norberg-Schulz would say, it becomes a place.²

But even the mere act of perceiving is not a simple, passive process, it is rather an active one through which we - as perceivers - see, recognise, attribute meaning and then decide what action to take, or how to interact with the environment. Each time we look at a chair, we perceive it, recognise it and then we know that we can use it for sitting

¹ Rudolf Arnheim, *The Dynamics of Architectural Form* (Berkeley, Los Angeles, London: University of California Press, 1977), 10

² Christian Norberg Schulz, *Genius Loci – Towards a Phenomenology of Architecture* (New York: Rizzoli International Publication, 1980), 5

down. This layer of meaning, that we attach to every object or space we come across, has a major role in understanding how human behaviour works and how it relates to space. But how does it work? Amos Rapoport¹, in an extensive study entitled The Meaning of the Built Environment - A Nonverbal Communication Approach, emphasises the importance of this two-step process of coding a meaning into the environment and then, the second step, of decoding the embedded meaning. This twoway process is actually the backbone of our daily routine: behind every object or every space, there was a designer who thought of the best way to build and encode its meaning into it, so that the user would recognise its purpose and know how to operate it; then we, the users, interact with the object, recognise it, decode its meaning, and act or adopt a matching behaviour. Rapoport says that it is just like reading a text: first we see the letters, then we combine them to form words, sentences - close the door - and eventually we deduce a meaning and understand how we need to act - we put our hand on the handle and push the door shut. This is what the author calls the low level of meaning -"everyday and instrumental meanings: mnemonic cues for identifying uses for which settings are intended and hence the social situations, expected behaviour, and the like; privacy, accessibility; penetration gradients; seating arrangements; movement and wayfinding; and other information which enables users to behave and act appropriately and predictable, making co-action possible."²

Beside this basic level, we can distinguish another one, a middle level, from which we can read features like identity, status, wealth or power - the door we have just shut can tell us a great deal about the space it encloses: whether it is a maximum security facility or a park entrance; whether it is a vault or a bird cage. In other words, the way we dress, the way we furnish our homes, the way we behave, all emanate cues which others can read and afterwards gather information about our status, identity and so on. This level of meaning has a major cultural component. If the first level of meaning is largely understood - pretty much everyone knows how or with what purpose they can use a chair - the middle level of meaning depends on the cultural structure of the society. From a reductionistic point of view, we can view cultures as specific systems of rules which model our behaviour and teach us what is "appropriate" and what is not. Of course, one could argue that the term "appropriate" is relative, and in fact it is! Labelling something as being appropriate or inappropriate is, in fact, subjective and depends on a cultural system of values - shaking hands might be appropriate in a European context, when you meet someone for the first time, but, in Asia, it is more adequate to bow. Enculturation is the term used by intercultural psychologists³ for this process of learning the norms of the particular culture we grow up in. Thus, one of the main features of a culture is to disseminate the manner in which cues should be read and decoded into meanings. The other way one can learn specific cultural behavioural patterns, is through acculturation - the notion associated with the process of naturalisation of immigrants. Either way, this encoding-decoding process is culturally sensitive and if the encoding system differs from our decoding system, we might act or react in an improper manner -

¹ Amos Rapoport, *The Meaning of the Built Environment - A Nonverbal Communication Approach* (Tucson: University of Arizon Press, 1990, second edition)

² Rapoport, *The Meaning of the Built Environment*, 221

³ Alin Gavreliuc, *Psihologie interculturală* (Intercultural Psychology) (Iași: Polirom, 2011)

there will be a discrepancy between the way in which we behave and the way we are expected to behave. This discrepancy is also known as cultural shock: "It is not ordinarily possible even to get into a building unless one 'recognises' that a wooden panel approximately 3 feet wide by 7 feet high with a knob at one edge and hinges at the other is a door (an object which one can open and pass through). Use of a 3-by-7 foot panel as the door is not automatic. It depends on meaning, which in turn depends on experience. Would an Eskimo or a South Sea Islander automatically understand its use?"¹.

The last level of meaning, or the high level, deals with more subtle aspects like world views, cultural schemata, philosophical systems or the sacred². It is a more diffuse level, a rather theoretical and metaphorical one, which allows different meanings to overlap in the same physical space. Such an example is the monument³: its original significance is strongly related, not only to a cultural context, but also to a historical one. After that, its original use, its purpose is lost and all that is left is the significance of what it used to be. In certain cases, the space ends up being reused according to a new system of meanings and rules, thus overlaps occur between the original significance and the new function. It is in fact what Michel Foucault⁴ defined as heterotopia. Foucault describes this process as folding several metaphorical meanings into a single physical space.

Between Architectural Determinism and Spaces Seen as Mnemonic Devices

However, the environment as a whole is a rather complex entity. Beside its physical form, it also comprises a social structure and cultural attributes. In fact the social environment is the one to establish the coding system through which the physical environment can be read and understood. The question that arises is not whether the environment has or can transmit a meaning - this should be self-evident - but rather if the environment, or more specifically the physical or the built environment, can determine a specific behaviour. This issue has been under debate catalogued alternatively as being fact or fiction on many levels, starting on the larger scale of environmental determinism - also known as climatic determinism or geographical determinism. Authors like Kevin Lynch⁵ and Yi-Fu Tuan⁶ argue that there is a link between the behavioural pattern of different groups and the geographical area they inhabit. Their point of view is emphasised by the fact that the individuals' particular behavioural pattern is mirrored in the construction of their vocabulary, as well. Thus, groups living in flat landscapes, when orienting themselves, use particular features of the landscape, which by others might be thought to be too subtle. This is reflected in their vocabulary as well, therefore

¹ Robert G. Hershberger, "Predicting the Meaning of Architecture," in *Designing for Human Behavior: Architecture and the Behavioral Sciences*, ed. Jon Lang , Charles Burnette, Walter Moleski, David Vachon, (Stroudsburg: Dowen, Hutchinson & Ross, Inc., 1974), 147-56

² Rapoport, *The Meaning of the Built Environment*, 221

³ Ciprian Mihali, *Inventarea spaț iului - arhitecturi ale experienței cotidiene* (Inventing Space - architectures of everyday experiences), (Bucharest: Paidea, 2001), 161

⁴ Michel Foucault, *Of Other Spaces, Heterotopias*, in Foucault.info, http://foucault.info/ documents/heteroTopia/foucault.heteroTopia.en.html (accesed June 28, 2012)

⁵ Kevin Lynch, *The Image of the City* (Cambridge, Massachusetts: MIT Press, 1960), 131-32

⁶ Yi-Fu Tuan, *Place and Space - The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977), 79, 91, 116-17

their language is very rich in words that describe bodies of water or the horizontal features of the landscape, but lacks variety when it comes to vertical features or heights¹.

Of course, there is always a possibility that the idea might be taken to the extremes and develop into a racist or imperialistic form - as the critics of the concept argued between the 1920s and the 1940s. But, as Clint Ballinger remarks, "geographic factors have been turned to once again because they are an indispensable part of the explanation, playing a special role that has not been properly understood, a role especially crucial for explanation of the inherently spatial questions that development studies seek to address."². Thus today the debate is not as black and white as it used to be in the first half of the 20th3 century, but it is rather discussed in hues of grey, or as Erhard Rostlund concludes: "Environmentalism was not disproved, only disapproved."³.

The physical form of the environment - actually we can narrow down the discussion to the built environment - is the background and represents just a fraction of what we call environment. Concentrating the previous chain of thoughts, the question becomes whether architecture can or cannot determine its users to adopt a certain behaviour. The discussion differs somehow from the previous one because certain parameters are quite different. First of all the geographic or climatic context does not change in time - or the rate with which change occurs is very slow. Then we, as human beings, cannot alter or willingly induce change in the geographical or climatic parameters of the environment. So, these attributes, in time, tend to require an adequate type of behaviour which makes people adapt, thus a change in behaviour does occur. These changes, merged with religious beliefs and social values, are the foundation of cultural identities and cultural differences between different groups of people. In the micro area of architecture, the discussion shifts radically because we design the buildings ourselves - architecture is not an unalterable feature of the landscape. We can design buildings however we choose to, besides the inhabitants themselves can alter quite easily the original design. So, when the question arose with the social program of Modernist architecture, architects wished to believe that they could determine social behaviour entirely through the features of the (built) environment. For example, Le Corbusier tried with the "Quartiers Modernes Frugès" Assembly in Pessac, France to prove just that.⁴ Unfortunately, in time, his authoritarian determinism proved to be too unidimensional. Maurice Broady, in his paper Social theory in Architectural Design⁵, was the first to use the term architectural determinism, criticising the belief that design can control behaviour. In his view, the physical form is only a potential environment, meaning that the environment, as a whole, has many other variables - such as a social

¹Lynch, *The Image of the City*, 131-32

² Clint Ballinger, "Why Geographic Factors are", *Munich Personal RePEc Archive* (MPRA) paper no. 29750, March 28, 2011, accessed March 16, 2013, http://mpra.ub.uni-muenchen.de/29750/1/MPRA_paper_29750.pdf

³ Erhard Rostlund, "Twentieth-century magic" in *Readings in Cultural Geography*, ed. Phillip L. Wagner and Marvin M. Mikesell (Chicago: University of Chicago press, 1962): 48-53

⁴ Rapoport, *The Meaning of the Built Environment*, 24-25; Chia-Chang Hsu, Chih-Ming Shih "Typological Housing Design: The Case Study of Quartier Fruges in Pessac by Le Corbusier", *Journal of Asian Architecture and Building Engineering* 5 (2006), 75-82

⁵ Maurice Broady, "Social Theory In Architectural Design", Arena (Architectural Association Journal) 898, (1966), 149-54

structure and cultural attributes - therefore the opinion that architecture is solely responsible for behavioural changes, is rather reductionistic.

Several studies conducted by behaviourist psychologists as well as post occupancy evaluations (POE) prove that Broady's view is rather reductionistic, too. Out of these two quite different points of view, a third path could emerge. This could be the idea of perceiving the architectural background of the social and cultural environment as a mnemonic device. This idea is supported by Rapoport's theory of meanings embedded into the environment. Neither architecture, nor design in general have the power to influence the way each individual behaves. On the other hand, it is just as true that we adapt our behaviour according to the context. For example we behave differently at a concert than we do in a church. So maybe the thin line we can set in between the above mentioned extremes, is the fact that architecture can provide certain cues which act as mnemonic devices reminding us which is the appropriate type of behaviour in a certain category of space.

Of course, if we were to deconstruct this concept, we could say that even the fact that we, as human beings, associate a certain space to a certain type of behaviour is an artificial connection, a fiction in fact. But this argument could be applied to any or every culturally based norm. In fact we can view cultures as a strict set of rules sprung from a specific social, geographical, linguistic and historical context. Growing up in a culture presupposes that the individual assimilates and respects these rules. But, if we were to change just one of the variables which shaped that specific culture, the rules would change as well, so we could view them as possessing a certain degree of subjectivity, fragility or even fiction! Consequently, the same could be argued with architecture. We, as a group or culture,¹ decide to associate a type of behaviour to a certain context, thus all the members belonging to the same group will comply and learn to connect the behaviour with the context.

When comparing traditional contexts to contemporary, multicultural ones, the mechanism through which architecture acts as a mnemonic device becomes even more obvious. A traditional environment means first of all having a routine behaviour, meaning that the behaviour is almost automatic, consistent and uniform. Therefore the necessity of processing the information is much reduced, precisely because the reactions, the responses are already automatic. This feature, combined with the fact that traditional environments are based on very specific and strict rules, lets us conclude that the freedom of choice is much reduced. The encoding system of the mechanism of the mnemonic device is much more diffuse and abstract in these traditional contexts, than, for example, in the multicultural ones. When the range of possibilities is reduced and the freedom of choice is restricted, the cues embedded in the environment can reach a higher degree of abstraction, without any danger regarding misinterpretations or confusions. If these cues were missing or altogether absent, it would be rather difficult to judge which type of behaviour would or would not be acceptable to the group or culture in a certain situation. It should be noted that, in a traditional context, the option of refusing to act in the manner pointed by the physical environment is much diminished compared to today's cosmopolitan context. On the other hand, in the contemporary

¹ Burrhus Frederic Skinner, *Science and Human Behavior* (New York: The Free Press, 1965), 415-25, 416, 419, 430-31

context, we are frequently facing different cultures, moreover our own context is turning into a multicultural one - an unusual situation in which different coding systems alternate or even overlap - and, as a consequence, even the manner in which this coding-decoding duo is operating, suffers alterations. Thus, the message needs a higher redundancy rate in order to make itself "heard". The same message needs to be transmitted in alternative ways so that the desired behaviour can be obtained. And we, as users, have to learn to understand every coding and decoding system of every culture we come across. There are even situations in which we have to give the proper response according to more coding systems, within the same context, depending on who are the people that we interact with or which are the circumstances we are involved in.¹ "Knowing to give the appropriate answer in a certain situation is just like learning a language; knowing how to properly respond in different cultural contexts is just like speaking more languages."².

If we were to zoom in, at an even smaller scale, these differences become yet more obvious. There are several social parameters we could gather under the term of microcultures. Each social class has its own -very specific, acceptable or desirable set of conduct norms, its own manifestations of representativity - namely its own set of meanings. As a consequence - even though these micro-cultures belong to a single cultural system - we can observe different manifestations of the way in which space is structured. For example, in the suburbs the necessity of displaying, of representativity, is much more obvious than in the traditional dwelling environments. Thus, even if they belong to the same culture, the members of the two social groups understand and live differently the dwelling process, precisely because they have different value systems. Moreover, sociologists observed that there are certain environments - like hospitals, prisons, airports, coffee shops - which produce very particular social microclimates, with their own specific meanings, behaviour and even language. In these cases, even if the behaviour is learned as a sort of initialisation ritual, which is motivated by the desire of social acceptance, the background, the physical form of the environment, acts as a training wheel for the newcomers, and, then - as Rapoport points out - as a mnemonic device constantly reminding each member of the group when, where and how he or she has to act.

Case Studies

Spaces for the Perceptually Impaired

Out of the many building types which are susceptible of developing their own, particular social and behavioural microclimates, there are two which are of distinct interest: psychiatric wards – this building type is of interest because its dwellers, as a result of different impairments, develop unique ways of dealing and interacting with the other members of the social group forming under its roof and with the space itself – and office buildings – a building type which inclines to reinforce a routine and uniform behaviour, an environment which is neglecting the need of displaying the self.

¹ Rapoport, The Meaning of the Built Environment, 55-87

² Dana Pop, "Space Perception and its Implication in Architectural Design", in *Proceedings of the First International Conference for PhD Students in Civil Engineering*, ed. Cosmin G. Chiorean (Cluj-Napoca: Eikon, 2012), 705-11

Humphry Osmond has done extensive research on the long-term effects of institutionalisation, and is known for having come up with the terms of sociofugal and sociopedal space - to put it briefly spaces that do not encourage social interactions and spaces that do encourage them. In his article Function as the Basis of Psychiatric Ward Design¹, Osmond argues that the patients of psychiatric wards have one common feature: "a rupture in interpersonal relationships resulting in alienation from the community, culminating in expulsion or flight."² Thus, when designing psychiatric wards, one has to take into account that the people for whom they design have a severely impaired ability of relating to others. For example schizophrenic patients have distorted perceptions which may vary from minor misinterpretations to hallucinations. Maxine Wolfe and Harold Proshansky³ observed that schizophrenic children have a hard time distinguishing the limits of their own body from those of the environment surrounding them. Therefore they manifest a desire for uniformity regarding the objects surrounding them and towards the environment as a whole. It is not unusual for these children to have unpredictable reactions towards visual stimuli - a certain texture or the intensity of a light can produce an intense fear or, on the contrary, an extreme joy. Osmond points out several features: since these people perceive the environment in a distorted manner, certain aspects which are implicit for most of us, become very difficult to cope with for them, disseminating fear, frustrations and grief. For example, ambiguous structures, such as long and winding corridors, are particularly difficult to deal with. They induce a certain state of uncertainty and do not resemble any space one could experience in a domestic environment. Such spaces emphasise the sense of perceptual distortion between the limits of the self and the environment in schizophrenic patients.⁴ This happens especially when the effect is strengthened by auditive distortions, such as echoes. Seen as a whole, these environments impose changes on social norms as well, changes which would seem unnatural even for a healthy person: the daily routine, essential to schizophrenic patients, does not resemble any regular living arrangement because it does not preserve the possibility to have choices. The patients have limited choices for the way they cloth, the way they can spend their free time and the food they eat. At the same time, as far as social interactions are concerned, one can choose from a limited group of strangers which are rather heterogeneous - the only thing they have in common, being their illness.⁵ Extensive studies have been done⁶ regarding the way in

¹ Humphry Osmond, "Function as the Basis of Psychiatric Ward Design", in *Environmental Psychology - Man ans his Physical Setting*, ed. Harold Proshansky, William H. Ittelson, Leanne G. Rivlin (New York: Holt, Rinehart and Winston, Inc., 1970), 560-69

² Humphry Osmond, "Function as the Basis of Psychiatric Ward Design", 561

³ Maxine Wolfe and Harold Proshansky, "The Physical Setting as a Factor in Group Function and Process", in *Designing for Human Behavior: Architecture and the Behavioral Sciences*, ed. Jon Lang, Charles Burnette, Walter Moleskin, David Vachon (Stroudsburg: Dowen, Hutchinson & Ross, Inc., 1974), 195-98

⁴Osmond, "Function as the Basis of Psychiatric Ward Design", 562, 564

⁵ Ibid., 565

⁶ Aristide H. Esser, Amparo S. Chamberlain, Eliot D. Chapple and Nathan S. Kline, "Territoriality of Patients on a Research Ward", in *Environmental Psychology - Man and his Physical Setting*, ed. Harold M. Proshansky, William H. Ittelson, Leanne G. Rivlin (New York, Chicago, London: Holt, Reinhart and Sons, Inc., 1970): 208-14; Harold M. Proshansky, William

which patients behave and the way in which they express their territoriality, which is in fact a buffer-type of behaviour met in conditions of anxiety and / or overcrowding: "In a large overcrowded and rather neglected ward of Saint Elizabeth's Hospital in Washington, space had become a genuine value because of its scarcity. The dominant patient, the alpha, had full control of the hall, while those who came after him in the hierarchical order had access only to limited space. Nobody could intrude on the territory of a person more powerful than himself. At the bottom of the ladder, the omega had the use of nothing more than the bench on which he slept. He could not even go to spit in the drain located in the middle of the hall, and had no right to use the toilets."¹. The account portrays a very powerful image of the extent to which our behavioural limits can be distorted - an image which was very vividly pictured in the film One Flew Over the Cuckoo's Nest directed by Milos Forman in 1975.

Hence the question arises how does design fit in this equation? If we think about architecture not as much as determining behaviour - because architecture does not actually possess any forceful means - and more in terms of mnemonic devices, we can understand that architecture can actually help or that it can create an appropriate setting which reinforces a certain type of behaviour. Neuroscience researches strengthen this view. John Zeisel, in his book Inquiry by Design, states: "People with amnesia who cannot remember their pasts say that they do not know who they are, that they have lost their 'selves'. [...] Stimulating memories of our past through personalised environments reinforces a sense of who we are."² People with impaired perception, whether we are talking about schizophrenic patients or people suffering from Alzheimer's, have an extreme need for support when it comes to interacting with the environment. Zeisel³ presents an Alzheimer's Assisted Living Treatment Residence - Hearthstone Alzheimer Care - from Woburn, Massachusetts, a facility designed by Marc Maxwell specifically to support and ease the daily routine. First of all, all spaces are scaled to feel residential meaning that although the building was designed to host up to twenty-six people, the rooms were restricted to the dimensions one would meet in a common dwelling. Moreover the finishings used were also chosen so that they would exhibit a more domestic overall feeling, thus replacing the cold and anxious feeling of most long-term care institutions. The residents are encouraged to furnish the rooms with their own furniture and mementos, consequently consolidating their need for privacy and personalisation. The same treatment is applied for the common spaces: their decoration "is varied to stimulate different moods in residents' minds. [...] While residents may not remember the precise attributes of each room, their functioning amygdalae enable them

H Ittelson and Leanne G. Rivlin "The Environmental Psychology of the Psychiatric Ward", in *Environmental Psychology - Man and his Physical Setting*, ed. Harold M. Proshansky, William H. Ittelson, Leanne G. Rivlin (New York, Chicago, London: Holt, Reinhart and Sons, Inc., 1970): 419-39; Paul Sivadon, "Space as Experienced: Therapeutic Implications", in *Environmental Psychology - Man and his Physical Setting*, ed. Harold M. Proshansky, William H. Ittelson, Leanne G. Rivlin (New York, Chicago, London: Holt, Reinhart and Sons, Inc., 1970): 409-19. ¹ Paul Sivadon, "Space as Experienced: Therapeutic Implications", 414.

² John Zeisel, *Inquiry by Design - Environment / Behavior / Neuroscience in Architecture, Interiors, Landscape, and Planning* (New York, London: W.W. Norton&Company, 2006), 357 3 Zeisel, *Inquiry by Design*, 375-80.

to remember the 'feel' of each. [...] In sum, the design and layout of this residence for people living with Alzheimer's disease - its architecture, landscape, and interiors - are planned to augment residents' memories and ability to function on their own. By taxing the parts of residents' brains that are still working well and relieving the parts that are damaged, the whole person is supported. Residents feel at home, as much in control as their age allows, and competent."¹ What Zeisel was able to achieve in this case, was to transfer scientifically proved facts into the designing process, and, thus, successfully obtaining an architectural crutch or prothesis that can enhance the living conditions of the perceptually impaired - just as an artificial hip does.

The Need of Displaying the Self

Rapoport² recounts the story of an architect who did a little experiment each time he met a new customer: in his office he placed a couple of empty chairs next to a wall at a fair distance from his desk, leaving no sitting alternatives close to his own desk - and he kept repositioning them in the same spot, each time before a discussion was to take place. Therefore, when entering the office, the visitor had one of the following options: they could sit down, keeping the chair in the position they found it in; they could move it half way across the room, attempting to reduce the conversation distance; or they could move the chair all they way to the desk; and then, of course, there are some unconventional persons who decided to simply sit or lean against the desk. The architect felt that by watching the behaviour displayed by his visitors, he could read their social status and the level of self-confidence, thus adapting his own behaviour according to each situation. This little anecdote proves that the setting of a room is part of the non-verbal communication process and it has a major impact upon the process of transmitting and receiving messages. David Canter³ also relates a well know story which supports this idea. Namely the endless discussions regarding the shape of the table - whether it should be round or square - around which the peace debates were to be conducted between the Americans and the Vietnamese, and the implications regarding nonverbal communication of the status.

Based on these two encounters, the space of the office, seen in general as an environment that does not try to take into account the need of displaying the self, must be viewed from a new angle. The space of the office has changed a lot ranging from small, overcrowded rooms to large, open office spaces where people work in cubicles - the only constant being the stressful conditions under which the employees have to work. So is there a correlation to be found between the way in which we design these spaces and the productivity of the people working there? It is not a question of architectural determinism, but rather of designing an environment in such a way that it can bring out the best in people. Canter⁴ observed that we cannot say that open plan offices are better or worse than enclosed offices, it is rather a problem of personality. The studies have shown that a natural segregation occurs when the employees can choose their own working space. Thus, the ones who have extroverted personalities and

¹ Ibid., 377-78

² Rapoport, *The Meaning of the Built Environment*, 69

³ David Canter, *Psychology for Architects* (New York, Toronto: John Wiley & Sons, 1974), 117 ⁴ Ibid., 15

focus more on the relationships with their colleagues, choose open space offices, while the ones that are task oriented, prefer closed workspaces.

There are different studies researching different aspects of the office environment such as the personal space one requires to feel comfortable¹; relating types of furniture and furnishing design to status²; or simply comparing the working environment of open office spaces to enclosed offices.³ Either way it is obvious that trying to oppress the expression or externalisation of the workers' individuality, leads to frustration, anxiety and low productivity.

In this very particular environment we can see another way in which the physical form of the environment can act as a mnemonic device, namely the space of the office can be seen as a sequence of personal space bubbles. Bubbles which mark in a physical way each person's territory, reflecting their individuality and establishing a unique environment - a place in Christian Norberg-Schulz's⁴ terms - that reminds the individual who they are, what their values are and becomes a sort of a psychological mould, thus reflecting their personality and bringing out the best of everyone.⁵

Zeisel⁶ discusses the project he worked on alongside Jenny Anderson-Eisenmann, an interior designer, in the mid 1990s. The goal of the project was to redesign the Newsroom of the Star Tribune Headquarters in Minneapolis, Minnesota. The first problem was the fact that the restructuring of the work groups needed to be organic, while the ergonomic layout presupposed a linear type of workstations. Therefor, Zeisel and Anderson-Eisenmann employed an interesting method in order to analyse the existing situation, namely by observing physical traces: "The newsroom environment is a visually exciting one with each reporter, photographer, editor, and graphic artist assembling material and mementos in their workspace that reflect their unique skills, their interests, and the story they cover. Because so few outsiders come to the newsroom it is more a backstage than front-stage environment. [...] Observation of physical traces also determine storage needs, specifically the large amount of books, papers and photographs assembled in piles on each employ's desk."⁷. The designing team concluded that such a large space needed a main guiding principle which should provide a naturally mapped environment. Thus they decided to design the whole space as a city and organize it based on Kevin Lynch's five urban elements: landmarks, pathways, nodes, districts, and edges. The landmarks - such as The Star Tribune forum, the coffee

¹ Edward T. Hall, "Meeting Man's Basic Spatial Needs in Artificial Environments", in *Designing for Human Behavior: Architecture and the Behavioral Sciences*, ed. Jon LANG, Charles Burnette, Walter Moleski, David Vachon, (Stroudsburg: Dowen, Hutchinson & Ross, Inc., 1974), 147-56

² David Canter and Kyung Hoi Lee, "A Non-Reactive Study of Room Usage in Modern Japanese Apartments", in *Psychology and the Built Environment*, ed. David Canter and Terence Lee (Kent: Architectural Press Ltd., 1974), 48-55

³ Peter Manning, "Office design: A Study of Environment", in *Environmental Psychology - Man and his Physical Setting*, ed. Harold M. Proshansky, William H. Ittelson, Leanne G. Rivlin (New York, Chicago, London: Holt, Reinhart and Sons, Inc., 1970): 463-83

⁴Norberg Schulz, *Genius Loci*, 5

⁵ Alain de Botton, *The Architecture of Happiness* (New York: Pantheon Books, 2006), 94

⁶Zeisel, *Inquiry by Design*, 107-18

⁷ Ibid., 111-12

shop, the Library - help employees orient themselves in space. Then, the whole office area was divided into "neighbourhoods" defined by paths, which intersect and create nodes - marked by specific design elements which further help users to orient themselves. The size of the "neighbourhoods" or districts was actually defined by the size of the work teams. The "neighbourhoods" are demarcated by edges - the place where shared files are stored in cabinets: hard edges for complete separation of the "neighbourhoods" or soft edges which welcome interaction. In this case, the mnemonic quality of the built environment does not need to remind its users of how to use a space, but instead it needs to reflect their personality, their demand of displaying the self, thus helping them to be at ease and perform at their best parameters.

Conclusions

There has been an ongoing dispute whether architecture can or cannot determine behaviour, whether it is fact or fiction. As a conclusion, we can assert that the environment has a method of interacting with its inhabitants, which we called an encoding-decoding system and through which meaning is embedded into the environment and then, later, it is read by its users who thus know how to act or respond in that specific situation. This system has a major cultural component, depending on the social, geographical, climatic, economical and ethnic structure of the group. The physical form of the environment is therefore very intimately linked to the culture (or subculture or even micro-culture) it serves. In this context architecture is the silent character which reinforces certain features, but can never determine them. We can associate architecture with having more of a subliminal character which - as we know from the advertising industry - can make you feel thirsty, but could never determine you to drink a specific brand of beverage.¹ Following the same logic, architecture can act as a mnemonic device supporting a certain type of behaviour, but it cannot make you act or respond in a specific way. This feature is essential especially in the contemporary multicultural context, when one needs to always check their own behaviour against a matrix of juxtaposed meanings belonging to multiple cultural settings, all overlaid within the same physical enclosure.

In order to validate this theory, two types of building types have been studied: psychiatric wards and office buildings. These two case studies are of particular interest, among other building types, because they are susceptible of developing their own, particular social and behavioural microclimates, namely because they deal with extreme or limit situations. In the case of psychiatric wards we confront ourselves with individuals with impaired perception. The goal of the design process is to produce spaces that are sensible to the specific needs of this particular group such as: the lack of ambiguity; strong, personalised features which are aiming to remind their inhabitants of who they are and, more importantly, where they are; thus the mnemonic quality of the space acts as an exterior aiding system compensating the dysfunction of the brain. In the case of office buildings, the situation is rather different, namely the mnemonic feature of the space does not act as a reminder of how one should act, but as a reminder of one's individuality, of their uniqueness; helping them to connect with the environment and feel at ease so that they can reach their maximum potential.

¹Skinner, Science and Human Behavior, 32