

# New Dimensions for Future Healthcare Facilities

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One of the ambitious goals of our “Academy” (Design and Health) is to enrich the debate on health policies with contributions which are the fruit of scientific and planning research, in order to support the development of new visions, through which, actions of health protection and promotion can be governed.

The questions most insistently asked nowadays are: what “space” will health treatment have, and what should we understand by “care” or “assistance”, in a future scenario characterised by a renewed dimension of the concept of health? As things stand, over 40% of the social/

health expenditure borne by governments is absorbed by hospital structures. The main factors cutting into this expenditure and determining the very nature of the hospital today are directly connected to phenomena such as the growing use of techno-medicines, biotechnologies and e-health, the unstoppable increase in health service consumerism, and the effects induced by longer life expectancy.

The progressive and necessary disappearance of the boundaries between the various medical/surgical specializations aimed at making treatment less fragmented, the growth of new “medical practices” connected to the introduction of gene therapies, selective chemotherapies, immunotherapy, stem cells, the most recent radiotherapy techniques, and the ever-growing weight of chronic pathologies and rehabilitation activities are all factors that make it essential to rethink not only the idea of “Hospital”, but also the idea of the whole infrastructural system within which said “Hospital” is situated.

If we are to ask ourselves what form the system of health-care will take in future and which criteria should direct future choices, we must also bear in mind the current, urgent demand for the improvement of the human condition. This requires deep, intrinsically philosophical and humanistic, reflection. In fact, medicine itself, more and more frequently, now feels the need to consult the disciplines of philosophy and social sciences in order to orientate its future development or to correct wrong directions already taken. Health care is becoming, more and more, the “taking care” of human beings according to the peculiarities of their nature and way of life.



**Figure 1** *What space for care and assistance?*

This interpretation of the “vision” which must inspire the future reformation of the health system poses two types of questions from the operational point of view: what can the future locus of treatment be, and what requirements must be considered in its (re)conception so that it can be the true expression of a renewed conception of treatment? The object of the research in the sector of health infrastructuring thus reaches further and further beyond traditional “health-care facilities,” and embraces all the living environments which generate or increase the risk factors threatening our state of health and well-being, and which have the potential to damage them to the point of provoking discomfort and disease. (The places of well-being are not only those of health treatment!)

“Care” means considering individuals and their life-environment. Since this environment is the

scenario of the variables which influence their health, it should be seen as the main operational area for the wide-ranging modernisation of health strategies. The life environment is so becoming the locus of care. “Caring” for people is increasingly taking-on the meaning of integrating good physical/physiological functioning with psychological, social, moral, and religious components. If we accept the importance of the close interdependence of psyche and body (a sort of “holy alliance”), greater emphasis must inevitably be placed on studies and research on “stress,” because this factor is posited to be at the origin of several of the most serious, widespread, and costly pathologies, and also because it is correlated to the environmental conditions in which it is generated (and which we plan!). Ippocrate (Hippocrates) wrote, “Iatros philosopho isotheos: the doctor who becomes a philosopher is equal to a God”.

Psycho-immunological studies have shown a link between the experience of stress and changes in the immune system, consisting of modification of the efficacy of said system and in some cases a reduction of its capacity for defence against both- outside infective agents, and tumour growth. The proven link between stress, mental disorders and diseases, whose huge increase over the last few years, is one of the most significant features of the new pattern of distribution of pathologies in the population of the developed countries, immediately makes us aware of how widespread the effects of this phenomenon are.

“Stress” is treated in scientific research as a psychological and medical concept. The studies concerned with the modelling of the phenomenon are in agreement that it derives from problematic interactions between a person and the environment in which he/she lives and operates. According to this concordant vision of the origin of the phenomenon, it is impossible not to consider the environment in its physical/spatial dimension as a fundamental locus in the generation of conditions and factors of risk which can stimulate “stress responses.”

Thus “stress” is authoritatively proposed in the literature as a heuristic tool for scientifically investigating the relationship between the physical environment and people’s condition of health or ill-health. Hence the concept and phenomenon of “stress” may also be considered as a possible criterion for the correct planning of the care locus, since this is a place of proven stress generation. In the words of Saegert, “Those responsible for conceiving the future built spaces of life must aim at minimising the stress-inducing qualities of the environment and maximising its stress-reducing qualities.”

Research has moreover revealed that some conditions and factors related to the architectural dimension of the built environment may influence human health, altering the “stress” levels of the people living or working in them.

The Hospital is certainly an emblematic type of built environment for an investigation of this kind. “Stress” and “hospital” are closely connected through the two fundamental events of illness and hospitalization, so much so that they can cause illness-induced distress plus hospital-induced distress.



**Figure 2** *The hospital building as an occupational stressor.*

Hospital buildings, as they are conceived today, on the basis of operational approaches which do not address the potential negative impact of its architectural features on health and well-being, have clearly shown that they possess certain stress-inducing qualities which are able to seriously threaten the psychophysical balance of its users.

Also, the Hospital building is highly significant in relation to the problem of occupational stress. The medical staff, and more importantly the paramedical staff are considered to be in occupational categories which are strongly exposed to the effects of stress on health. We should also mention the effect on patients' state of health through the increase in clinical errors and an impoverishment in clinical/nursing performances related to occupational stress.

The image of the "hospital environment" as an architectural expression, almost exclusively emphasising efficiency, has led to the common perception of the hospital as a stressful place. It is "incomprehensible," "alien," "intimidating." Familiarity with its physical arrangement, its scale, the symbolic meaning transferred are planning areas requiring application of a conception of the built environment which controls psycho-emotional stress conditions.

A recent research-report published in England, significantly entitled "The role of hospital design in the recruitment, retention and performance of NHS nurses in England (2004)" revealed that 86% of the nursing chiefs surveyed claimed that "...the design of the hospital building is a means for improving the performance and morale of the staff." From this derive the positive consequences in terms of more applications to work there, and greater ability to retain the labour force. On the basis of the results of this research, the CABA (Commission for Architecture and Built Environment), the body from whom it was commissioned, has formally urged the English government to "...place

the quality of the architecture at the top of the agenda for the implementation of the vast building programme of social/health structures now in progress."

In the more general context of Hospital structures, the specific context of the Children's Hospital is an exemplary case of the problem of health care as prevention at the onset of states of stress which can impair the patient's health outcomes (i.e. not only considering the clinical outcomes alone.) In the specific case of this type of hospital, the concept of "environmental vulnerability" finds a concrete expression in the stress-inducing potential of the physical/spatial environment. The paediatric hospital may thus become a "paradigmatic physical place" in order to focus the process of conception of spaces for health care.

Children are more exposed to the negative aspects of the built environment and more dependent on the features of the social/physical environment because of the role this plays in their correct, healthy development. At the same time because of this dependence, the positive impact in health-giving terms, which could be pursued by planning the built environment with this in mind, makes further, scientific research on this topic, especially interesting and important.

Taking care of children as patients, means taking care of their whole experience of hospitalisation, placing special emphasis on the emotional and psycho-social dimensions which form the particular character of their response. The control of emotional distress, in which the main manifestations are fear and anxiety, is the principal aim of the project through which interaction between children and hospital, is generated.

The importance of the physical environment in the overall economy of children's experience of hospitalisation is demonstrated by research and by the emphasis given to it in the declarations of the main organization and institutes.





**Figure 3** Children hospital as an exemplary case

The CFHI declares its aim of “developing a system of care that will focus on the physical, psychological and emotional well-being of children attending health-care facilities, particularly as inpatients.” The same document states in standard 2, which most directly addresses the physical dimension of the hospital, that “...the environment in the health-care facility should be secure, safe, scrupulously clean, and child- and family-centred, avoiding the inducement of fear and anxiety in the child...” The concept of “paediatric patient” cannot be confined within a unified description however wide and generalised this may be.

The extreme variability in the level of physical/psychological, psycho-emotional, cognitive and cultural maturity that is linked to the various stages of development within the paediatric age, requires that the physical environment be able to modulate and adapt itself to support the varying specific connotations of the environmental vulnerability of this evolving human being.

Let us consider the differing abilities of the baby/child to manipulate, and control the environment according to his/her level of physical development related to height, physical strength or motor coordination. The different levels of maturity of a child’s psycho-cognitive development correspond to different skills in understanding and using the physical context. For architects professionally addressing this particular planning who rationalise the many dimensions of the revised concept of care, the working-out of suitable architectural solutions is a unique opportunity for modernising the stress-reducing potential of the built environment. My personal experience of planning the new Meyer Children’s Hospital in Florence re-proposed modernisation of an operational vision for planning control of those psycho-sensorial, social and practical environmental conditions that greatly and significantly contribute to the formation of the hospitalisation experience, adding to or removing their negative effect on the children’s and also the parents’ lurking fears.



**Figure 4** New “Meyer” Children’s Hospital in Florence (Italy)

Essentially, the concept of a child-friendly environment may be expressed as the capacity of the hospital environment to represent, as far as possible, a logical continuity of the baby’s/child’s life experience.

The physical and social environment of the hospital must present traces of a “continuity,” despite the necessary “change” that the illness produces. It must speak to the child’s developing sensory perceptions, imagination, cognitive and cultural structures. Continuity of life experience also means continuity of the emotional, psychological, sensory and social stimuli which constitute the fundamental input for the child’s very growth, and prevention of involitional manifestations in the behaviour of the hospitalised child. The entrance to the hospital structure is a highly important symbolic and spatial locus. It is the psycho-emotional imprimatur through

the first impression it generates and it materially marks the event of passage into the hospital. Fears and anxieties can be confirmed by the first impact with the building. Nature, with its stress-reducing restorative value that lies at the root of our human evolutionary history, communicates familiarity, security, tranquillity, as well as cultural and aesthetic mediation.

Green spaces can speak to children’s imagination, taking-on animal shapes which draw their attention away from the contingent experience and attenuate their fears and anxiety. Green spaces are the favourite places for play, freedom, and contact with animals. If children can maintain a continuity of relationship with this type of space, they have a bridge to their own healthy life which can continue its course despite its momentary restriction to the perimeter of the hospital building.

The hospital must be permeable to the child's network of relations, offering spaces and facilities which support the continuity of his/her social life and of the development of his/her sociality. The parents, for whom for the smallest children constitute the whole "social universe," must be able to stay beside the child during the day and even more during the night when fears and anxieties are amplified by fear of the dark. The child's building-up of the fundamental relationship of trust and reassurance with his parents, in parallel the development of the parental role, must not be interrupted by the design of the hospital.

From birth, tactile perception is the vehicle of the social relationship between the newborn baby and the mother, and it is through the latter that the level of attachment between them is established. Creating spaces inside the hospital

for breast-feeding means creating the principal locus where this primitive vital bond is formed. Whereas for an adult a chair is for sitting on, for the child's imagination not yet tamed by too many cultural rules a chair may be an object for climbing on or a horse for riding. Sitting and waiting is for a child, at the very least, a boring activity, and certainly an occasion for keeping his/her mind fixed on the fact of being in hospital. Thus the seating design may influence the waiting experience, adapting to children's cognitive/behavioural particularities and offering them an opportunity for positive distraction.

Since the hospital is a place of many prohibitions ("don't touch that", "don't go near this") and limitations, it in itself supports a context which inhibits and suspends children's experiential autonomy, mainly expressed through tactile and motor interaction with the environment.



**Figure 5** Emotional and psycho-social dimensions



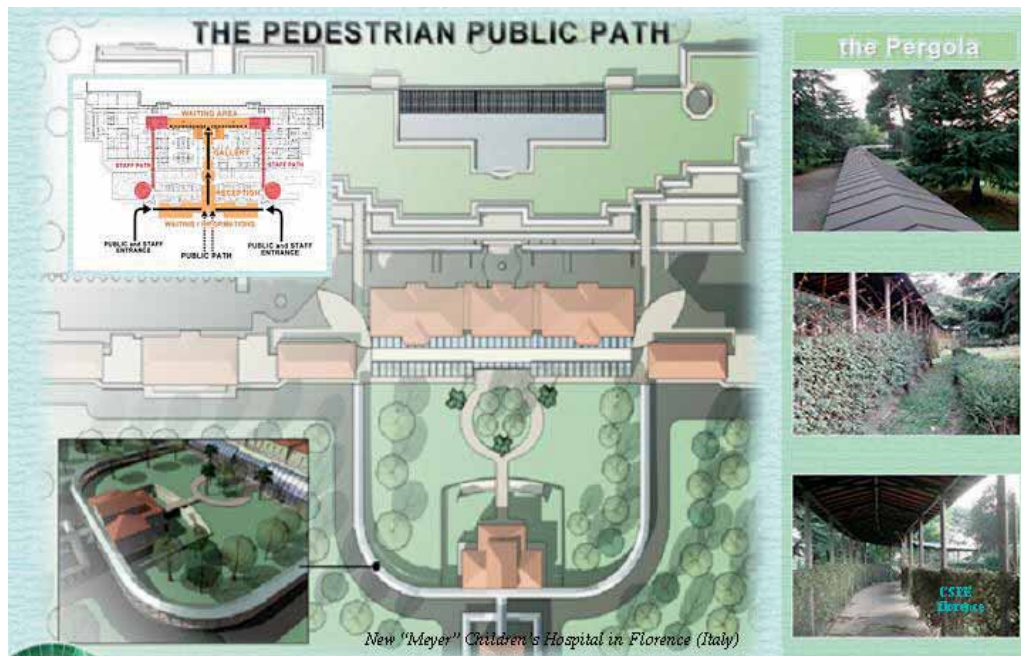


Figure 6 The access to the building

Guaranteeing children the continuity of this type of environmental experience means offering them fundamental opportunities of normal activity and perception.

The control of children's psycho-emotional perception of the environment and the fear and stress linked to illness also depends on what children see and what is hidden from them or masked in some way. The perception of objects is not neutral but linked to the emotional conditions in which it occurs. As such it may give rise to phenomena of perceptive deformation which further increase the stressed response towards what is seen. Several planning strategies might

be pursued in order to interrupt this perceptive short circuit. They include strategies explaining to the child what the strange machines he has seen or are about to be used actually are and are actually used for; hiding the machines which are not useful or are no longer useful; occupying his line of vision with pleasurable objects which speak to and encourage his healthy side

It seems to me appropriate, now, to conclude in this sense by recalling the words of Frank Lloyd Wright in an interview: "Hospital patients should never be imbued with any idea that they are sick.... health should be constantly before their eyes."