

## The Relevance of Environmental and Psycho-physical Condition in Hospital Design

a report by

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Among the various kinds of buildings that have received attention from contemporary architectural culture, that of the hospital structure undoubtedly merits special critical reflection and to the debatable quality of the results achieved, due to the absence of innovative suggestions coherent with the accelerated evolutionary dynamics of the therapeutic procedures and medical technologies that it hosts.

The reasons for said discrepancy differ in nature: in part, they are attributable to the anachronistic – but widespread – conviction that a hospital building must be conceived of only as a ‘healing machine’, thus giving the ‘functional’ component priority in the planning criteria for the project and the manner in which architectural solutions are determined. Only recently, due partly to the results of predominantly interdisciplinary scientific studies and research, has there been awareness that not only do components of a pharmacological, therapeutic and techno-medical nature contribute to the healing process, but also those related to the ‘environmental conditions’ in which medical care is provided.

An additional reason can be found in the scarce consideration given to cognitive contributions originating from other disciplines, which have increasingly studied in greater depth the overall phenomenology of man/environment relationships, providing valid contributions for the reinterpretation of the hospital space as a place for psycho-physical and sensory interaction. In this sense, the contributions of environmental psychology, sociology, ergonomics and proxemics can concur in determining the project input required.

There is increasingly common awareness that in treatment environments where the psychological and physical states of users are particularly subject to demands, an interaction is generated which often becomes the cause of stress, whose effects have been shown to be increasingly damaging to health and, in general, to health economy.

In view of these considerations, and bearing in mind the most advanced concepts resulting from a cultural

comparison of the parties involved in hospital programming and design, TESIS (the inter-university research centre dealing with the healthcare research programmes of The Faculty of Architecture, University of Florence), under the author’s supervision, has developed an important research programme of national interest completed this year. The main aim of the research programme has been to define strategies and guidelines in order to design innovative children’s hospitals.

The research started from the assumption according to which the stress that is generated by dynamics regarding the interaction between people and their environment constitutes a pathogen, having a significant impact on hospitalisation, both with regard to illnesses of a physical nature as well as those of a psychological nature. It was therefore of great interest to focus on new design guidelines for socio-medical environments capable of producing therapeutic effects on users, reducing – if not actually eliminating – stressors, increasing quality of life and improving working conditions as well as the conditions of hospitalisation.

Numerous studies – both theoretical as well as applied studies – have already dealt with the multiple and complex factors that concur in determining the relationship between the hospital environment and stress. According to the most accepted approach, stress is the result of a dynamic relationship between the individual and the environment that is verified when there is a lack of balance between the individual’s perception of the demands made on him by the physical environmental and interpersonal conditions and his perception of his ability to meet such demands.

The planned environment can therefore become a powerful instrument to promote, improve and support health. Said action, however, on the one hand must involve the limitation – or elimination – of environmental factors that are stressors, while on the other facilitate users in implementing the processes that they activate spontaneously to deal with highly critical environmental situations.

The more complex problem for planners and designers is regarding the means for translating this conviction into practice, i.e. 'how to' create environments that reduce stress and promote health. Design and the effectiveness of treatment are clearly interrelated. A high-level qualitative medical design can help those who offer assistance to provide more efficient services.

On the other hand, design that does not consider the health objective is reflected in an elevated cost in terms of stress, compromising the possibility of creating efficient environments from a functional viewpoint that are effective in supporting the individual's psycho-social state.

The observation that the hospitalisation of children provokes strong psycho-physiological stress has led to the belief that it is particularly urgent to review the logic and design means by which paediatric hospital environments are conceived and designed (also – and perhaps above all – in consideration of the fact that currently most paediatric hospitals differ only slightly from hospitals designed for adult patients).

Children have limited experience and lack psychological and emotional instruments to face an extraordinarily stressful event such as hospitalisation. The fact that children – in perceiving environmental quality – apply logic and evaluation criteria that are different to those utilised by adults is extremely important, due to its operative implications. Hospital environments judged to be beautiful and welcoming by adults can instead be perceived of as being cold or not very reassuring by children.

The child's caregivers and family members, in particular, also perceive of hospitalisation as a highly stressful experience having a strong emotional impact, and doctors and nurses, who are fully entitled users of the hospital structure, must also be considered. Their needs must be kept in mind in the design process because they perform a fundamental role in the child's treatment process, not only in terms of daily care-giving activities but above all due to their role of social support, unanimously acknowledged in medical literature as being a fundamental mechanism of mediation based on the radical reduction of stress-induced effects.

In order to integrate and translate the theoretical component into planning-operative indications, much is being done by means of field investigations that review and monitor the functioning of the most interesting paediatric hospitals built worldwide during the past ten years. These studies therefore X-ray the condition of the paediatric

hospital in the international and national context in order to make critical considerations useful for enhancing design choices.

As an architect, I have had the opportunity to implement these theories in the design of Meyer Pediatric Hospital in Florence, Italy, which, due to its quality and the role performed at a national level, is undoubtedly a case of emblematic significance. An international design competition for transferring the 'Meyer Children's Hospital' from the city centre into an old monumental building (Villa Ognissanti) offered the opportunity to develop a design strategy based on a cost benefit evaluation and on a rigorous assessment of the solution with specific emphasis on the environmental performance of interior and exterior spaces.

The architectural solution was designed by an interdisciplinary team, under the leadership of CSPE (Florence) and Ashen and Allen (San Francisco), composed of professionals in environmental psychology, sociology, ergonomics, historical building restoration, landscape design and healthcare management.

The project addresses many complex issues but the one the design team has focused on is the aim to create a hospital in which a child should feel at home. The concept of a child-friendly environment which synthesises the will to create a context in support of the child's physical, psychological and emotional wellbeing may be expressed as the capacity of the hospital environment to represent as far as possible a logical continuity of a baby or child's life experience and not to contrast with this as if it were an obstacle to overcome. The physical and social environment of the hospital presents traces of 'continuity', despite the necessary 'change' that the illness produces. It speaks to the child's developing sensory perceptions, imagination, cognitive and cultural structures. This continuity is, for instance, underlined by the presence of classrooms and playrooms for guests near the wards. Continuity of life experience also means continuity of the emotional, psychological, sensory, social stimuli which constitute the fundamental input for the child's very growth and prevention of unwanted manifestations in the behaviour of the hospitalised child.

This approach has been our design framework for identifying planning guidelines, and above all it has been an opportunity we would like to share in order to create a design culture that makes knowledge, information and data available, without which, hospital projects will continue to be designed only in terms of purely technical medical functionalism. ■