Architects of Duarte Aznar Arquitectos SCP and Partners,
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Creating optimum spaces for individuals

Space within the built environment can create a stimulus that affects human behaviour and can produce different responses. Important are the dimensions and proportions of an area, whether it is open or closed, its temperature, and its lighting, materials, colours, textures, scents and even its acoustic resonance. All these factors can produce stimuli but what is felt by the individual depends on his or her culture and sensitivity.

In general terms, an individual is happier to stay in an environment that has been carefully designed to be appropriate. The environment may be appropriate in the way it offers comfort or ease of use.

If we consider that architecture is concerned with the relationship that exists between an individual and a site in order to facilitate the development of human activities, we start all architectural design work knowing the profile of the individual to shelter, the inherent planned activities' needs and the site characteristics.

In this vein, architecture for health should be considered firstly as architecture for sick people where all spaces are designed to form sensitive environments in which functional requirements are fully met. Conditions of vulnerability and heightened sensitivity must be recognised, and it must be taken into account that, in most cases, the individual is accommodated in the healthcare because of necessity not wish.

It is highly likely that most of us, at some time, have been ill, and if we have been in a healthcare environment it will have felt somewhat different to what we are normally used to. We will have been limited in our movements and found ourselves in confined spaces – sometimes alien and impersonal. Furthermore, we may have been bombarded by adverse stimuli in the form of smells, sounds, and lights, and "attacked" by invasive, uncomfortable, and even painful, procedures. In this situation, how would we like our accommodation to be? What type of furniture would we like? Could medical instruments for our examination be better designed?

Positive responses

Dr Roger S. Ulrich reported in his research on this subject how a "comprehensive design" environment generates positive responses in individuals. Many studies have shown that well-designed environments can, for example, reduce anxiety, lower blood pressure and reduce pain. Conversely, research has linked poor design or insensitive psychosocial environments to negative effects such as higher occurrence of delusions, hypertension, increased need for analgesics and, in certain situations, to longer stays in hospitals. (Ulrich 1991 and 1992).

This leads us to consider the importance of recognising the patient as an active subject susceptible to stimuli. The patient is far from being a passive object but is seen as such in many facilities which are designed to have emphasis on the medical function rather than on the perceptual demands of those being treated.

In practice, the time "available" for the design of hospital units has drastically reduced opportunities for ensuring the biological, psychological, sociological and temporal requirements of the patient are met.

> 'In general terms, an individual is happier to stay in an environment that has been carefully designed to be appropriate.'

While sometimes, by the nature of an event, patients are unable to make some decisions, the incidence of such cases does not justify a widespread licence to design healthcare spaces, contents and instruments that ignore the perceptual needs of the individuals in therapy.

Using Abraham Maslow's studies about human needs as a reference, we observe that

Notes on the architects

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Hospital de la Amistad Corea-Mexico.

Entrance for emergency cases at the Hospital de la Amistad Corea-Mexico.

in general circumstances individuals do not seek to satisfy a higher level need without first having covered the previous level. In this vein we can infer that an individual who is stimulated in some adverse manner in a particular environment is less likely to be able to perform required tasks – even those which are directed by doctors and other staff.

Patients usually are accompanied to hospital by their relatives who provide support and affection. If we want to provide effective therapy, we must encourage relatives to stay in the healthcare environment – and they are more likely to stay if the facilities for them are suitable.

The reality is that, often, health architecture favours the mechanical performance of staff and the use of minimal space. The interests of economy are to the fore. Disregarded is the fact that healthcare environments should assist with the recovery and maintenance of health. Money saved by building facilities that are not patient focused can go into providing more of the same, but what is the point of this?

Accommodating more beds or building more operating rooms does not necessarily mean a healthier population if the perceptual needs of patients, and those who work in the healthcare facilities, are not taken into account.

If a patient can see and enter outside spaces adjoining the healthcare facility, the time he or she spends in hospital is likely to be reduced. Shorter stays in hospital mean each inpatient bed can be used more efficiently – more people can receive treatment.

> 'The patient is far from being a passive object but is seen as such in many facilities which are designed to have emphasis on the medical function rather than on the perceptual demands of those being treated.'

Connecting workers with a view of nature reduces stress, achieves better results and facilitates a lower staff turnover (Ulrich).

All this means larger circulation areas which could involve a higher initial investment in a facility. However, emphasised must be the greater efficiency obtained and the favourable cost-benefit ratio.

"Crisis", "resource shortages" and "austerity policies" are terms we have heard over the last decades, and these terms have set standards for many tasks. In the area in question, they have led to, for example, the provision of insufficient consulting and operating rooms. Hospitals may not be able to meet demands for treatment, and more may be spent on costly remedial treatment than on preventive care.

Goal

Our goal in designing hospitals involves ensuring the perceptual needs of patients and healthcare staff are met.

Through an overall design concept in which are developed spaces that meet functional and perceptual requirements, buildings are created in which:

- Patients' pain and anxiety are reduced.
- Patients' sleeping is improved.
- Cases of infection are decreased.
- The working environment for staff is improved.
- Costs are reduced.

In such buildings, a sense of control, privacy and emotional support is evident.

Hospital de la Amistad Corea-Mexico case study

The Hospital de la Amistad Corea-Mexico fills a gap in the health facilities in the south of the city of Mérida, Yucatán, Mexico. Its location allows pedestrian access from the peripheral settlements and also from two different routes of public transport.

Promoting sustainable architecture that reflects demands stemming from society, the economy and the environment, our proposal was to provide a building enabling a harmonious relationship between its users and the site location.

In response to users and considering the age of the target population, our conceptual proposal was to include a playground.

In response to the site, we conserved the trees in the area and took advantage of

Open yet protected corridor at the Hospital Regional de Alta Especialidad.

prevailing winds, and generated shadows to enhance the comfort of outdoor spaces to make them useful for recreational and therapeutic purposes.

We zoned the areas, reconciling internal functional needs with the external physical, environmental and urban conditions. Particular attention was given to ensure all patient accommodation was appropriately lit and to provide natural ventilation.

Access to the facility was provided a short distance from a bus stop and a parking area.

We chose a clearly defined architectural scheme, creating south-facing portals to shade north areas, and alternating garden courtyards with views from adjacent spaces. We eased free circulation linked to playgrounds and gardens.

We selected regional materials to benefit the local economy and to minimise CO_2 generation from transportation.

Windows were protected with concrete slabs, and the inside space was insulated with a specific roof system. Opted for was cross-ventilation, which, together with the use of natural lighting, reduced the need for electrical power.

Hospital Regional de Alta Especialidad case study

The Hospital Regional de Alta Especialidad (Regional Hospital of High Specialty) in Mérida, Yucatán, Mexico, with its 250 beds at full capacity, requires 1,700 workers in five shifts and is designed to serve a population of 1,300,000 inhabitants.

Despite the scale and size of the complex, the facility is arranged so that pedestrian routes are as short as possible. Cross traffic is avoided, not only to prevent contamination of food, instruments and equipment, but also to prevent patients sharing spaces with outsiders who may be insensitive to the situations of those having diagnosis or treatment.

Promoting sustainable architecture that is based on balance between society, the economy and the environment, our proposal was to provide a building that faciltates a harmonious relationship between its users and the site location.

In response to users and their culture, our conceptual proposal was to recreate a contemporary ceremonial centre around a cenote or water well – a triangular courtyard formed by a series of stony prisms that arise from the land surrounded by vegetation.

In response to the existing site characteristics, we retained the only trees in the area and took advantage of prevailing winds and generated shadows to enhance the comfort of outdoor spaces, making them useful for therapeutic purposes.

We zoned the project reconciling internal functional needs with the external physical, environmental and urban conditions. Important was the provision of natural illumination and natural ventilation. We agreed to locate the access according to the characteristics of the roads, seeking the minimum distances for paths from bus stops and parking lots to entrances. Convenience for users was considered to be a greater priority than a centralised approach which would be less costly to build and which would have a lower security payroll.

> 'If a patient can see and enter outside spaces adjoining the healthcare facility, the time he or she spends in hospital is likely to be reduced.'

Construction materials were selected from the region to benefit the local economy and to minimise CO_2 generation from transportation.

All inpatient single and double rooms are orientated optimally and are to the same standard – accommodation for patients with or without strong financial resources is the same.

Treatment and diagnosis spaces benefit from the light of small, planted courtyards.

It is common in outpatient departments to have "public" areas in which doctors can meet – this can violate the privacy of patients. To maintain communication between doctors, we set corridor consultation to the front of the offices but away from patients who remain in the waiting room. This allows privacy to be maintained and enables patients to enjoy a view of gardens.

The waiting room is located in an annexed

Waiting space at the Hospital Regional de Alta Especialidad.

Waiting room in the emergency department at the Hospital Regional de Alta Especialidad.

and perpendicular building that has has good views of landscaped spaces on both sides, and that is protected from the setting sun by vertical concrete elements and from morning sun and eastern rains by moving aluminum blinds.

The route to the medical offices is through an open yet protected corridor – a stone lattice allows sunlight and breeze to enter but provides shelter from the sun's rays and rain.

We chose a clear wayfinding scheme with signs having an integral picture and formal characteristics.

Conclusion

Our area of opportunity was just to link facilities to their sites and to create bioclimatic buildings.

Addressed have been the needs of patients, carers, medical personnel, administrative staff and others, and special attention was given to the appropriate sizing of all spaces, the provision of views to the outside, and the use of natural light and natural ventilation.

The height of the eyes of the people using the facility was a factor in the placement and sizing of windows. Ergonomics governed the design and placement of light switches, door knobs, handrails, window sills, furniture, and so on.

From the general approach to the architectural finish, the design proposals met not only functional service requirements, but also the personal, perceptual needs of the patient for a truly therapeutic environment.

Footnote

We must recognise that not all the designs were put into practice for reasons unrelated to this dissertation. However, we consider that what was achieved in these case studies provides sufficient material for analysis to confirm or rule out our approach to comprehensive healthcare facility design.

We are currently studying findings and our future work will take into account what is discovered.