COVER SHEET

The Role of Architectural Science in Interior Design®

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I Hear and I Forget
I See and I Remember
I Do and I Understand
– Confucius

Architectural Science in the Design Studio

Historically, Interior Design is one of the youngest professions, although its roots can be traced back as far as the origins of architecture itself. Architecture has always had two faces, the exterior expression of a building and its complementary interior treatment. Until comparatively recent times interior 'decoration' was commonly the prerogative of the architect, either by direct involvement or through supervision of a sub-commission.

Although the formal, spatial, and theoretical aspects of design have dominated design education, the early decades of the twentieth century saw some radical changes in approaches to architecture, with the architect requiring a much greater knowledge of technical and technological matters. Influences such as the Bauhaus consolidated approaches to the integration of design, art, and science in the built environment, with the result that while a designer's knowledge and applied skills base had to be considerably extended, there was also a move towards specialization.

Although many architects continued to maintain their role of the 'complete designer', the special skills required to manipulate building interiors also saw the emergence of a new professional with particular expertise in this field. The integration of aesthetics with technology meant that interior treatment was no longer just applied decoration—it required the services of a competent professional.

There is at times a strong overlap between the work of interior designers and architects; indeed the profession is sometimes referred to as 'interior architecture'. But whether the interior designer is working alone or as part of an overall design team, which may include architects and engineers, an understanding of building technology and an appreciation of its importance in a building's ultimate performance is mandatory in this day and age. With an ever growing emphasis on designing for climate, energy conservation, sustainability, and healthy buildings, responsibility for achieving an optimum result for any project lies with each and every member of the design group.

Integration of Architectural Science to the curricula of design education to bring the benefits of technology can be traced back to 1950s, when the Science Committee, which was set up by RIBA, recommended an increase in research and science teaching (Cowan, 2004; Hawkes, 1996). The most common way has been introducing it through lectures or seminars. However, past experience shows that most of the students have a tendency to overlook integrating this knowledge into design unless specifically requested in the design brief. They are far too busy dealing with the formal, spatial, and theoretical aspects of design. Another way, though not widely used throughout the world, has been technology oriented design studios in which other design issues clearly suffer.

In one of the Interior Technology units in Interior Design at QUT, a combination of these two approaches has been applied for quite sometime: experts giving lectures supported by visual material and attending the studio and providing group and individual desk critiques. The students are expected to apply these principles to their projects, and do hands on simple calculations from models and/or through computer modelling. In this way these design projects can embrace the usual mix of design issues without creating a heavily technical bias. This approach tends to result in value-creating rather than solely problem-solving. However, we have observed that it is essential to introduce technology into the design education in the early years of a design curriculum to create the awareness at a fundamental level.

Critical Issues for Designers

Architectural Science embraces a number of issues. Climate studies introduce an awareness of the impact of local conditions on building design, including the use of materials, design, construction, and planning techniques that will make internal spaces as livable as possible even when external conditions are harsh.

Achieving a comfortable environment by utilizing the thermal characteristics of various materials forms a significant part of the architectural science programme. Thermal design and thermal control need to be understood and appreciated by all designers. The uses of appropriate floor, wall and ceiling construction and finishes, including colour as applicable, form part of these studies.

Another aspect of climatic influences is air movement. This may be investigated with respect to providing good natural ventilation, admitting and controlling useful air flow and blocking unwanted winds. The importance of window types and locations and the analyses of internal room layouts, as well as factors external to the rooms, are covered. The assignment set in Semester 3 for second year students usually requires an analysis of a building in terms of its natural ventilation performance. Students are expected to apply the principles to their design and present a comprehensive analysis of the design on the plans and sections of their project for this exercise.

The intelligent use of solar power in making interiors more energy-efficient also ties in with this series of lectures, with applications for heating and lighting as appropriate. Sunlight control, the design and application of sun-shading devices to keep out unwanted sunlight and heat and to minimise glare, is another aspect that requires consideration, particularly in sub-tropical and tropical latitudes. This can have relevance when considering alternative types of window treatments, both internally and external to a room. An example of student's work with a working model tested on the heliodon is given is Figure 1.

Commensurate with this is the ability to design for natural light (daylighting), the successful application of which relies in part on room colours and finishes. Efficient utilisation of daylight can be significant in reducing energy consumption for artificial lighting. Second year students are required to construct working models of interior spaces, and then test these under a variety of lighting conditions in the school's artificial sky. Results are obtained not only for the measurement of daylight penetration, but it is also required to make assessments of the quality of lighting. Photography through peepholes is a useful tool in making such assessments. In addition groups of students undertake a series of tasks to record, with the aid of light meters, day-lighting levels within a number of rooms at QUT, in order to plot relevant daylight factor curves, and to comment on their findings.

Factors affecting sound and noise control within a space also need to be understood by the interior designer; the physical and aesthetic elements of proposed projects may not always be in harmony with desired acoustic results. In semester 4 students are required to analyse the current design project with respect to potential noise problems, considering not only the noise potential relating to the site (because of external factors) but also steps that may be taken to minimise internal noise transmission by considering construction and the utilisation of structural and finishing materials.

Summary

The introduction of Architectural Science into the Interior Designer's curriculum is valid in two ways. Firstly it promotes an awareness of the fact that contemporary building requirements involve a number of design decisions that relate to the form, function and functioning of the project. While aesthetic treatments are very important both internally and externally, there are other equally significant constraints with structure and planning that also need to be taken into account. Often the outcome has to be a compromise!

Secondly, with at least a fundamental knowledge of architectural science the interior designer blends easily with a design team that incorporates a number of different professions. Having a basic vocabulary relating to the various issues arising around the design table is also useful.

Designing within the contemporary built environment is a complex process requiring technological as well as aesthetic skills from all professions.

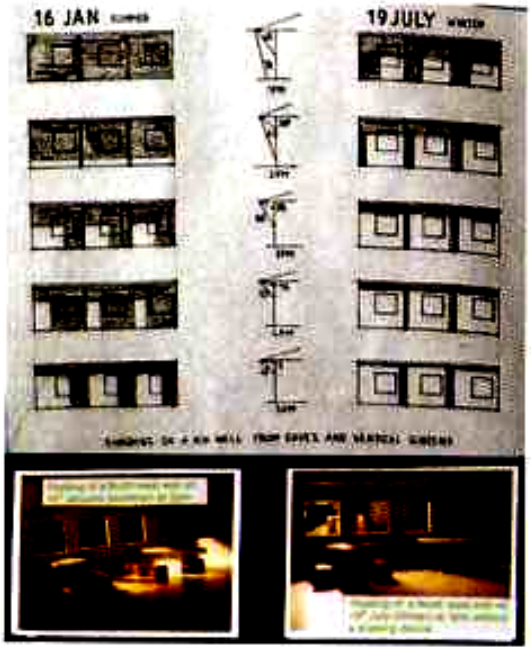

Figure 1. A student work with a model tested on the heliodon (by Jannika Hernelius)

References

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