CAD – Enabled by the organisation of science and the poetics of a visual language

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Abstract

CADET, CAD education and training, a research unit with the Department of Architecture and Building Science (Faculty of Engineering, University of Strathclyde) promotes an integrated approach to the built environment, seeking to bring together the rational and expressive modes of thought by teaching design through IT and CAD. In recent years this has been introduced as a pilot project within the primary and secondary school sector as well as Year 1 and Year 2 of the Building Design Engineering (BDE). The presentations discussed in this paper demonstrate recent projects in a social context – modelling possible spaces via virtual reality on behalf of clients in education and social work environments. The motivation for such a creative and participatory dialogue in a community context acknowledges that, in the wake of post industrialisation, the reconstruction of our urban environments demands that we develop the tools required for a meaningful participation in the design process. The nature of a participatory process demands a demystification of the design process, which is a reality made possible by CAD.

Background

"Do not thinkers, scholars and artists, in their best moments, dream of living in that land, among … a people … able to develop a culture that had harmony and continuity, in contrast to our own which seems so fragmented and transitory"1 (Goethe 1789)

The Design Studio is informed by a number of precedents of which the period of the Bauhaus is central. The vision of the Werkbund and the Weimar Republic, too easily dismissed as utopian, was in fact a critical approach to a present reality, with the *promise* in a future reality. What would have been the case, had the creative tools, now at hand, been available to designers then? As it happens, the space between the promise and reality was more than political, it was a failure to overcome the negative influence of Romanticism that allowed artists to retreat into the subjective world of individualism – a practice that has yet to be demystified, a rupture yet to be healed.

Design is ultimately about communication, and the creation and production of a state of affairs

acknowledged, by others, as being of value – economic, aesthetic and cultural. CADET, therefore, is concerned with the development of the creative imagination, the focus of which is on the organisation of the built environment. In this the central task must be the pre-selection of the effective learning experience and delivering that through the media of IT.

Poetics in a visual language.

To develop a sound and informed design process, the student should be aware of, and understand, the power of 'tradition'. The Design Course (in BDE) attempts to integrate the historical, theoretical and design discourse by placing the students' choice of design precedents in context. But for them the past must become *"the subject of a construction whose locus is not empty time, but a particular epoch, the particular life, the particular work."*[2]

While mathematics and science are course prerequisites, and language communication is a general requirement, there is no prescription in the visual arts, which is, in the context of design, a necessary skill. With the increasing possibilities in IT, the inquiring and analytical mind will be further enabled by a medium that breaches the restrictive norms of our 18th century tradition. The challenge is to achieve an expressive visual language that withstands a rigorous application of the design criteria without any loss of the aesthetic - a challenge that will be met by a medium of computation and visualisation in time and virtual space.

The language of design is ultimately a concern with form, as is also the case in science and mathematics. Building on the student's capacity for computation, the Design Course must encourage the realisation that axioms *"are not pictures but patterns in the sense that they do not describe any given thing but are designs or plans for future completion."*[3] Now the medium best suited to this *future completion* is digital. Had the spirit, and the promise, of the Bauhaus both the creative tools and economic environment that we have at our disposal, what kind of world would have emerged, another reality no doubt?

Included in the design studio course are a number of projects that address issues within the built environment, which call for an integration of approaches common to engineering, architecture and the visual arts. As with the Bauhaus, these projects engage the learning experience directly with clients in the local community. Through them the necessity for developing and presenting concepts to a non-specialist audience is part of the design criteria. Communication in general, and visual communication in particular, play a crucial role in the design practice. The student is therefore encouraged to place their personal choice of design precedent within the context of the history of design. The Bauhaus, which faced constant pressure from the external community, provides such a context. As a significant development in the history of modern design, as well as design education, the Bauhaus provides an opportunity to review the crucial link between education, design practice and the dynamics of the social and cultural environment.

The organisation of the built environment, ultimately the visible representation of our cultural values, requires a balance between the intuitive imagination, the poetic, and the rational. But in the 'age' of Weimar Republic, the rational was not an arid plane, reason was *"capable of more than one interpretation……. Reason works by trial and error (and) are seen to be the free creations of our minds, the result of an almost poetic intuition, of an attempt to understand intuitively the laws of nature."*[4] The promise of the early 20th century was clearly the possibility of harnessing the power of both the arts and science, working in concert towards a better social and built environment. A

promise posponed by self interest, personal and political, not by any rational or logical thought. For Popper logic recognises that empirical tests are *attempted refutations.* The design process is a visualisation of that form of creative dialogue in which the concept confronts the demands of both reality and a collective cultural perspective – an ongoing conversation, and potentially a creative dialogue.

A dialogue made now possible through a shared visual language capable of investigating the production of the social space. Space must be perceived as a language which conveys social signification and operates by *"exclusion, by spatially contrasting itself with what is not …Space as form is therefore a construction."*[5]. Such a sense of space is no longer bound in by geographical location, but remains a construction nevertheless, be it in digital form. A place wherein *common interests and goals* remain, for many, the fragmentation in the built and social space of the modern urban environment. By coming to a basic agreement, representing common interests and not merely a basic solution, the promise is potentially a more rewarding, life enhancing design outcome. Solutions such as these are no longer the product of the Romantic individual but a collective enterprise tempered by *'our critical methods of testing, that scientific rigour and logic'* that can add to the creative art of architecture and engineering.

Conclusion

But information technology of course is also enmeshed in a commodity culture to an extent that recalls Benjamin's seminal *Arcades Project.* Those Parisian arcades that were *"conceived as the threshold to a primal world of fantasy, illusion and phantasmagorias that expressed the dream world of capitalism."*[6] Design media will of course, as it always has, live off the 'primal world of fantasy. A balance will be acheived by keeping a firm focus on the *con*fusion of logic and poetics. Such a *confusion* will underpin the necessity for an integrated approach to the organisation of the built space, which is qualitatively different from the urban environment of classical times. The theories that emerged from the Weimar era are exemplified by the writings of Simmel, Kracauer and Benjamin. According to Frisby, their central concern, *"was the discontinuous experience of time, space and causality as transitory, fleeting and fortuitous or arbitrary – an experience located in the immediacy of social relations, including our relations with the social and physical environment of the metropolis and our relations with the past."*[7] These place the Bauhaus Project in context. As relevant today as ever, when the vital distinction must be located between the promise and reality.

References

1 Von Goethe, J.W. **The Collected Works, Art and Literature**, Princeton Paperbacks 1994 ISBN 0-691-03657-8
2 Benjamin, W. **One Way Street**, pp 352
3 Cassirer, E. **The Problem of Knowledge**, Yale University Press 1978 ISBN 0-300-01098-2
4 Popper, K. **Conjectures and Refutations**, Routledge 1991 ISBN 0-415-04318-2
5 Greimas, A.J. **Social Sciences,a Semiotic View**, University of Minnesota Press 1990 ISBN 0-8166-1819-4
6 Frisby, D. **Fragments of Modernity**, Polity Press 1985 ISBN 0-7456-0189-8
7 Frisby, D. **Fragments of Modernity**, Polity Press 1985 ISBN 0-7456-0189-8

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