# LOOKING INTO ENDOSCOPY

## The limitations of evaluation in architectural design

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The means available to architects in their age-old task of creating (most usually, though not necessarily) buildings that do not yet exist (ie virtual realities), can be seen as falling into two groups. Those that help us develop architectural ideas (exploring), and those that help us evaluate or test them (illustrating).

In the former category, we have, for instance, the "drawing on the back of the envelope", the discursive brainstorm, and the design "conversation with ourselves via paper and pencil" (the drawing strikes back).

In the latter, we may include physical model building, careful (projective) drawing (including drawings that are instructions for making), mathematical and design science modelling and calculating, visualising techniques such as the rendered perspective, most CAD (computer aided design) work and architectural endoscopy. These techniques may be thought of in two ways, as Bosselman reported[2]: the explanation (eg the organisational plan) and the experience (eg the "photo-realistic" perspective). Attached to these we have rules for success, such as those of "style" (in the broad sense of the personal style that allows us to assume that we have answers to problems that have yet to appear).

It should be clear even from the list above that there are many more techniques and technologies for evaluation (illustration) than for exploration (design): such is the mystery of design.

It is the primary purpose of this paper to invite those involved in providing the enormous effort that has gone into making such techniques for illustration — evaluation — to consider how their efforts help with that other,

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[2] *At this conference.*

and crucial, area — that of exploring: and to redress some of the balance of that effort towards exploration.

For it occurs to me (as a teacher of architecture), that evaluation does not provide a course for action — it merely helps us determine what may be wrong (according to some criteria with which we choose not to argue). And, no matter how right or wrong a design may be, knowing that it is wrong doesn't help us either modify it, or find a better initial idea. It only tells us we are not right — always assuming the evaluative model is correct; perhaps.

## THE PROBLEM

The problem does not lie in evaluation. It lies in the imagination, in finding ways to act and ways to develop and enrich (architectural) ideas. And, behind this, is the notion, basic to my approach and experience and endeavour/hope/aspiration, that it is possible to improve the quality of the basic architectural idea/material, so that the worthy work we can do on tuning the stuff of architecture, through evaluation, may not only lead to better things, but may be being carried out on material that is, in the first place, of the highest standard.

For there is little point in evaluating that which is of little intrinsic merit. Models — physical, mathematical, visual — may be built of almost anything: but the fact that a model can be built does not give that which is to be modelled any special value: and, if it is without value in the first place, it cannot hope to upgrade the value all that much.

So that, behind the world of evaluation, and behind the suggestions that some project/proposal may not be of limited value and that it could and should be improved, and behind the problem of how to make improvements (how to turn need into an action that satisfies that need), there is the question of the value of that which is thus to be evaluated. It doesn't matter how excellent and accurate the means of assessment: they won't make a bad idea good (although they may help us see that a seemingly

good idea is, in fact, bad). And that is the crucial, the critical, the central area of concern.

So the essential problem lies, as has been stated, in the imagination, in finding ways to act and ways to develop and enrich (architectural) ideas.

## SOME PRAGMATIC LIMITATIONS

There are, however, other limitations — or, rather, consequences — that concern how we represent our architectural ideas and understandings (of space, of experience), even at the illustrative and evaluative level. These are mainly practical. It is worth considering them here (even if they may seem a little out of the direct line of argument in this paper), because they affect the relative usefulness of the different techniques: for the problems in principle can only be satisfactorily dissolved by the means that actually can overcome these practical problems. And it is also worth considering them because they are so often overlooked.

The first is that we lack honesty in our presentations. We wish, anyhow, to show at the very least the best side of our imaginings. There is nothing new in this: trees have been carefully positioned, shown in summer, the light manipulated, and the viewpoint and angle of view selected to be optimal (and, usually quite unrealistic and unviewable from) and amazingly prestigeous events depicted ever since we began constructing perspectives. How many of us have ever flown through our buildings at a speed faster than a bird, and with the elevation and type of freedom of movement of that bird? It is very hard for each of us to be honest even with ourselves: when we have to persuade, advocate and sell, we naturally doctor the best spin. We are selective — even economical — in the truths we allow to be seen, and we hide or direct attention away from flaws. Yet, as experts, we are assumed by the public to be right[3]: and educating an architect takes many years, so complex are the difficulties of representing, communicating and exploring spatial experiences.

*[3] In an ideal world, as we know, architects are not always held in high public esteem nowadays.*

The second is that almost all means are conservative: the effort put in to building the model, and its accuracy, reduce our wish to change our proposals. Add to this the actual difficulty of changing arising from the effort and/or the time that would be involved (a complete re-draw, making a large part of a physical model anew, CAD file structures and the time taken to compute changes — the ponderousness is awful), and it is easy to see that practical considerations limit how much we can change our proposals so that they might improve. And, although some of these can be changed for the better (especially in computing, where, for instance, the recent advent of the SpreadSheet, with its structures and conditional calculating, has revolutionised the possibility of "what-if" questions in evaluation), they still constitute difficulties, some of which (the sense of reality caused by reflected rather than luminescent light, for instance) it may not really be possible to change at all — a matter of the "in principle".

The third is a matter of authority. It is not simply — or even only — the authority of the professional (as indicated above). It is the authority of the medium itself. Tell a "client" that a precise model was made and photographed according to the principles of visual perception; that it was calculated using scientific principles; (most powerful of all) that it was drawn by a computer: and the client is impressed — and meant, of course, to be so. The medium of presentation carries authority, in itself. We all know the awe that is assumed to be the appropriate response when something is done by a computer: it is a fraud, yet we exploit it. And, eventually, we do sometimes revert, having accepted infallibility, to denying any value or truth: if it is done by a computer it must be wrong is as inappropriate as the claim that it must be right.

Finally, there are all those things that are not modelled (for instance, sound, heat, smell, the seasons, ageing, even movement). Some of our means of presentation do cover some of these omissions, of course. Endoscopy, which has several advantages over CAD, for instance, at least at the moment (see Siitonen's evaluation[4]) gives unparalleled realism in its modelling of movement and

*4 At this conference.*

our control over it (our ability to seem to turn our heads at will, to look up and down, to change our focus of attention and our path and to move at will and in "real-time"), for instance, as it also necessarily involves texture (material) and loss of saturation. But, by and large, such qualities are missing, and their omission is not pointed out or dwelt upon.

The overall result is that, all too often, we use our presentations to assert their correctness, rather than to really ask deep-seated questions or checking out our proposals thoroughly. (This is, of course, how Popper's notion of the scientist's "Conjectures and Refutations" proves hopelessly idealistic.[5]) We look in order to prove, not to doubt. Hence the choice of the word "illustrate" for this nominally evaluative process.

## DESIGN

A major contributory factor in the prominence of illustrative techniques and technologies in architectural representation may be the way in which we define "design". There are many possible definitions, but the ones that we perhaps most use are precisely those that (attempt to) remove the magic of creating from the process. That is, they re-define design so that it becomes problem solving.

There is no doubt that a major aspect of architectural design involves the solving of problems. To deny so would indeed be foolish! Yet, when all is said and done, architecture can exist where there are no problems to solve (eg in the creation of a place of wonder and mystery), and its presence is not guaranteed — or even promised — by the solution of problems. Just as building is not necessarily a part of architecture (and vice versa), neither is function: although it may be and often is. In this day and age, when the role of the architect and of the builder is (again) changing, when many of the functional problems can be solved by the "style" rules of the computer, when — in the era of the deregulation of architecture as a profession — the builder (at least in the UK) will be able to call himself an architect and when

*5 See Karl Popper "Conjectures and Refutations", London, Routledge and Kegan Paul, 1963.*

there is no more profession left for the architect to claim as his own, the need to reflect on what is at the heart of architecture, and the means (design) by which we make it, can no longer be left to the theorists and philosophers: it affects everyone, today, who wishes to make architecture in any meaningful and significant way.

Thus, there is a need to depict design as a creative act, outside of (separate from) function and problem, as an act that involves magic and mystery and can lead to the heart of architecture.

To this end, I quote a depiction of design that I recently made for social scientists[6]:

> "I like to depict design (as I understand and intend it) through three metaphors.
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> *Wandering*: design is like going walking in the countryside, delighting in the wandering, and, at some instant, realising that you've arrived. This arriving gives purpose to the wandering, the journey. It depends on the ability to recognise that instant — the time and the place.
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> *Conversation*: design is (like) a conversation — it IS a conversation — in the simplest case, held with oneself through the means of paper and pencil. The marks left on the paper (the drawings) talk back to you — giving you ideas — if you'll let them. (This is an act of listening.)
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> *Reverse Time:* design is as if we could reverse the flow of time — that is, it is an act that distorts the flow of time by reversing it. It is in the recognition that the "solution" has been reached that the "problem" becomes apparent. Design does not solve "problems", it creates them through its "solutions".
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> Thus, design takes the following form. There is an action, which leads to the becoming apparent of a solution that makes apparent a problem to which the action has produced the solution[7].
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> This is in sharp contradistinction to the conventional view, which (in its simplest and most direct account) lacks the circularity of design and substi-

[6] *This description was part of an outline presented at the Symposium on Models of Human Action at the Sixth International Congress on Cybernetics, Systems Research and Informatics, Baden Baden, August 1993: to appear in extended form, in preparation.*

[7] *The chain, here, essentially circular, is NOT a causal chain. Although it is interesting and necessary to look at cause and causality in the light of the position outlined here, it is not my central purpose in this position paper. (Footnote is in the quote.)*

tutes a simple causality: the chain is that the problem is acted on to produce the solution.

The essential circularity of the design activity is what lies at the root of its conversationality: in the wandering metaphor, we enjoy the wander, we notice things on the way, we develop our delight through, as it were, questioning and answering for ourselves, sometimes without any apparent relevance, but along a developing and a continuing path (which we make). It is also where the novelty lies: in looking at the marks made on the paper as separate from their making, we see them in a new light — as other than merely what we intend or just doodle — existing in their own right. They "talk" to us, giving us new ideas.

That the appearance of the solution and what often becomes, in later discussion and account, the "causing" problem happens at a social level is a matter of common experience. Whatever it is, it can be recognised, often by many people[8]. In evidence, I would cite my experience in teaching: although I teach with colleagues of very different background, interest and persuasion, it is very rare that, having held our own conversations with our students (and eachother), we do not agree with eachother about that student's level of achievement and our valuations of their work. Ie, we find what we accept, at this social level, to be the same place and value it equally (in the terms of the metaphor), no matter who we are or whence and how we arrive.

It is worth pointing out that the recognition of the design solution is a wholistic activity (I would argue that all recognition is): that is to say, there can be no check-list until the solution has been found. Making the check-list is (in part) how we generate the problem from the solution and, in this later account, cause causality (and, hence, sensible time) to appear. Designers make wholes. They are thus always involved in novelty, even when the novel production of their action seems to same as the productions of other designers in other situations on other occasions: the

*[8] I do not wish to debate constructivism, objectivism, etc here. By symphathy, I am a consructivist. But, by consideration, I am not. Constructivism is too complicated to work, too solipsistic to permit my everyday experience. I am working on a resolution of the contradiction. In this text, I use a number of shortcuts, to avoid having to write endless apologia such as this, without which I would get nowhere. (Footnote is in the quote.)*

similarity is not apparent until after the creation (action plus recognition in an environment) of the solution.

Thus, in design (in my meaning), we make wholes (always new: oldness comes from a later relating of this particular new to others and is a social product of our wish to explain the action). It is an experience… but our explanation of it isn't, explanation is different and is a problem, and we don't often manage to make experience from explanation (nor do other accounts for life as we live it give us much feeling of being alive)."

## IN CONCLUSION: WHAT WE NEED

We have now returned to the main body — to the central question — of our argument. We have seen that we have techniques that allow us to illustrate (and evaluate) our designs, although they do not help us act to improve them. We have seen that, regardless of how good these techniques are, they will not make a basically bad idea good. We have seen that these techniques anyhow have problems — generally of a practical nature — associated with them: problems that mean that they are generally used conservatively, to support rather than to question or test the validity of a design. We have seen that design should not be considered as problem solving, and that architecture can exist without function. And we have seen what design (the verb, that is, in my sense) is: the wandering, the recognition, the conversational form and the strange reversal of time that allows us to talk of the planned as if executed, and to find the "problem" from the "solution".

Thus, design is exploratory, concerned with the creative development of creative ideas, almost playful. And what we are left with, therefore, is another, quite different need: the need to explore, and the need to find ways that might make it easier (or quicker) to have and develop (architectural) ideas, that is, to increase the chance of a good outcome in the sense that there is more wonder, more magic, more mystery, more beauty not only in what

we do and how we do it (the act of designing), but also in what we produce (the outcome — the object — of designing).

And the question is whether any of our techniques can be adapted or developed to this end? Isn't this what we should try for: to improve the quality, the value, the significance of what we design in the first place[9]? And not just to address our attentions to the evaluation (and, perhaps, the consequent improvement) of what we end up with? And isn't it amazing that so little of our effort, relatively speaking, seems to have gone into this most crucial area — in Architectural Endoscopy as well as all the other fields? That we prefer to invest our effort in evaluation, rather than in creativity and in the quality of invention of ideas?

[9] *I am attempting to develop a way of doing this (using computers), but this paper is not a place to report on this work. See Ranulph Glanville "CAD Abusing Computing" in Proceedings of ECAADE conference, November 1992, Escola Tecnico Superior Barcelona for a summary of the background thinking, including the argument for considering computing as a medium rather than a tool.*