

Layers of Design: Understanding Design Practice

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Abstract: Most thinking about design, and indeed most research into design, has focussed on what happens *within* design projects. Yet when we study design and architectural firms/departments more carefully, we observe several layers of design activity – not just activities within projects, but also design activities that work *across* projects. Lead designers create the intellectual (and physical) context in which design takes place and can prosper, the 'Practice'. In this exploratory paper we will sketch the nature of this 'Design Practice'. This exploration leads to a research agenda, and to some first thoughts on how this level of design activities could be better addressed in design education.

Key Words: *Design Practice, Design Expertise, Discourse, Design Research*

1. Introduction

The Malaysian architect Ken Yeang was one of the outstanding practitioners interviewed by Bryan Lawson for our recent book on design expertise [1]. In the following quote Ken Yeang is reflecting on the role he plays in his own architectural office:

Any architect with a mind of his own, whether by design or default will produce an architecture which is identifiable to that architect. Sometimes that's more apparent or evident in the work and sometimes it is more internalised....I had to study ecology, I had to study biology; that was the basis for most of my design work. I'm trying to develop a new form of architecture. We have this climatically responsive tropical skyscraper agenda and each project we try to see whether we can push an idea a little bit further...I give every new member of staff the practice manual to read when they join. They can see not just past designs but study the principles upon which they are based. We work these out over time, over many projects.... But in a project I have to be very dependent on my architects and each one of them has their own personal way of doing things, and I try to respect that so they are constantly improving and making things better, there is growth and they get motivated. I do competitions more as an academic exercise. I treat competitions as research projects....it motivates the office - gets them excited - lets the mind develop new thoughts and themes. I put all the drawings together and publish a book...look in this book, these were our competition drawings for Kuala Lumpur and people said 'how can you spend so much time doing drawings and so on' and I say 'it's research, it develops ideas.'

It is interesting to note that Ken Yeang (and the other outstanding architects that were interviewed for this book, including Santiago Calatrava and Michael Wilford) reports that he refrains from directly working on (or

interfering with) the projects that his architectural firm is engaged in, but that he seems to rely on influencing these projects more subtly. He talks about that are some distance away from the design projects, as if they belong to a different level of design: he does mention the design projects that his partners and employees are working on, but skims over them to describe the kind of ‘architectural agenda’ that he has developed over the course of his career, and the mechanisms he has in place to bring new staff members in tune with that agenda (even including an explicit staff manual). Apparently this is part of a deliberate and thoughtful set of rather disparate but crucial set of activities that directly impact the quality of the designs produced in his firm. Yet they are quite separate from the design projects in which the design results are produced.

Most thinking about design, and indeed most research into design, has always focussed on what happens *within* design projects. That is a natural choice: projects are where the real design work takes place, and the projects are the main economic unit of any design enterprise. However, when we study design and architectural firms/departments more carefully, we observe this other arena of design activity – not just the design work within projects, but also design activity that works *across* projects. When we study this we learn how lead designers create the intellectual (and physical) environment in which their particular kind of design takes place, prospers and develops. In this sensitivising paper we explore the nature of this ‘Design Practice’ layer of design activities, and suggest a fledgling research agenda for its proper study. We also sketch out some preliminary educational repercussions, in an effort to foresee the issues design schools will have to come to grips with when embracing the teaching & learning of Design Practice as a natural part of its remit.

2. Describing Design Practice - beyond the project

Apparently there are sets of activities within a design firm that are not directly related to the work within projects, and that on reflection cannot be classed as ‘management’ either (this is often how people in the professions tend to talk about these activities). These activities are not part of any management curriculum - they are not addressed in Project Management literature, nor in the Organisational Science - in fact they firmly belong to design because their execution and creative content directly impacts the content quality of the design work in the projects. Apparently an eminent architect like Ken Yeang (and other eminent architects, see [2]) spends a part of his days working on these activities. Yet the knowledge we have of them within design research literature is largely anecdotal, based on remarks scattered through interviews. The activities these architects, engineers and designers report on include the preparation of offers to clients, doing research to support the development of the design agenda, developing the policies for selecting and hiring new staff.

“Architecture is a collaborative process, which isn’t to say that I am not ultimately in control because I am, but I respect ideas from wherever they come. Obviously they come from structural engineers, mechanical engineers, the clients themselves; they all act. In the early stage you know, I’ve always felt that you must sort of attract as much energy as you can out of people. I’ve evolved what I suppose is a design vocabulary like a design language, which you see can cope with all this diverse input because in the end it all gets translated into the Outram architecture. The longer they (his staff) stay the more adept they get, if they refuse to speak it at all then there is a mutual parting as it were. But, the staff that get on best are the ones who regard it like another aspect of the game that they are required to play you know. There is the district surveyor, there’s the quantity surveyor, there’s the structural engineer and there’s John Outram. And the

ones who are adept at negotiating with these are those who, as it were, sincerely believe and want to practise the system and there are those who regard it in a more detached professional way and just learn the system. And of course those people I like working with, you see I like people who can contribute but who don't destroy."

This particularly interesting quote on the central issue of staffing is from John Outram [1]. The architect Michael Wilford describes this as performing the role of Editor within his firm ([1], p 185), others have described the role they play in their design firms using different metaphors, as film producers or gurus.

Experienced designers will acquire attitudes, interests and possibly original principles that will start to govern their work (earlier described within design research as 'first principles' [3]) and that of the designers they employ to work with them. Along with this they might develop a particular set of high-level design abilities and specialist knowledge. When these are at work within their design projects, and clearly expressed in their communication to clients and the field, their development can turn into a self-reinforcing learning cycle: the particular experiences that are triggered by working in a certain manner will become the 'natural' environment for the designer to keep working in. The designers will become more familiar with certain kinds of problems and/or ranges of solutions, technologies, groups of users, etc and will seek these as a context for their next project. This development can be a conscious process, in which a designer challenges him/herself to develop in a chosen direction, or it can be an implicit evolutionary process of gravitating towards a certain way of working, a 'natural drift'.

2.1 Design Practice in design research

In a design practice, the projects represent income streams, resource needs, generate the timescale for design activities, etc. Therefore designers and design researchers alike tend to focus almost exclusively on optimising efficiency and effectiveness within the context of a design project. Prescriptive models and methods within the field of design studies take the optimisation of project performance as their challenge [4]. The very paradigms for describing design activities, Rational Problem Solving and Reflective Practice [5], unquestioningly take the design thinking *within* the design project as their object of analysis and the focus for methods and tools [6]. For instance: within Rational Problem Solving, the project goals and the criteria that can be derived from them for testing design concepts are the paramount drivers guiding the direction of design problem solving – in concentrating solely on the project goals, the Rational Problem Solving paradigm does not seem to allow any other influences on the quality of the design. The description of design giving within the Reflective Practice paradigm [7] focuses on the framing of design problems within a project, and reflection on the state of the design problem or solution (Reflection *in* Action) is the key driver to keep the design project on course. While the 'framing' (and reframing) of the design brief will surely be influenced by the personality and personal style of the designer (captured by Donald Schon in the elusive phrase 'underlying background theory'). The Reflective Practice paradigm doesn't associate any concrete activities with the development and maintaining of an original set of frames within a design practice.

Because of this overriding focus within design practice and design literature on the activities that happen within design projects, the training that design students receive is also very much project-oriented; the majority of

design schools, academies and university curricula place their core design subjects in ‘the studio’, an educational environment where learning is driven by the project-level challenges that students get. This studio work is presented to the students as an all-encompassing mini-version of the design profession. The design projects are seen to be ‘learning on the job’- implying that the most relevant factors of real-world design are mimicked in the educational environment. Thus students graduating from such a design school should be forgiven when they come out having the impression that working *within* projects is all there is to being a good designer.

Would there be a deeper reason why the ‘Design Practice’ is not seen by design research? Partly this could be because design professionals often describe any activity that transcends the project as ‘management’, and have led design researchers astray in this respect. But there could also be more fundamental reasons: design researchers look for patterns, trying to discover regularities and structures within series of design activities. Yet the activities that take place within the layer of Design Practice we are identifying here are very scattered throughout the working days of the lead designers, often hidden between straight management tasks, and certainly not labelled with a project number. Where and how they occur is partly content-dependent, so there might be very little or no discernable patterns of activity there. To start describing Design Practice we would need to first list a collection of the elements, tools, mini-processes that together make up this ‘Design Practice’, bearing in mind that they are possibly even distributed among different players within a design firm or design department. An added challenge for design researchers must be that to study Design Practice, one can’t use design students as subjects of study – they will have very little clue of this level of design activity. These factors combine to make the empirical basis for the study of Design Practice much harder to construct. Yet we hold that Design Practices can be observed and described, and in some cases they might be quite explicit and well-articulated framework of thoughts, strategies and actions.

2.2 Why study Design Practice?

There are several reasons to now take on the challenge of researching this ‘Design Practice’ level of design activities, and to bring them into the domain of design studies.

A major reason to plead for the study of Design Practice now is that the implicit self-reinforcing mechanism in which a Design Practice might be established (see above) comes with some uncharted risks, that students and practicing designers should be aware of. The ‘natural drift’ into a certain way of working can be sufficient in an era where the environment in which design projects take place only changes slowly. But when the design environment changes dramatically, the designers that have been explicit in creating their ‘fit’ with the old environment will be better placed to reconceive of themselves as designers that fit in the new situation. Many recent developments in the world have impacted upon design to such an extent that they can only be dealt with by explicit reasoning and discussion on this Design Practice level. We will here name two examples from the field of Product Design.

(1) The increasing complexity of design problems and the growing number of parties involved have led to the development of what is called ‘participatory design’ or ‘co-design’ [8]. In these new ways of dealing with design practice, there is a much more active engagement by the designer with the prospective user. In participatory design the user is asked to help evaluate developing design ideas during the design project, in co-design the user

is actually part of the design team, actively co-creating the design with the professionals. Each of these new ways of embodying the design profession requires the designer to leave the ivory tower of the studio and to engage with the design situation in a new way. These are not 'normal' design projects – they require a recasting of the designer's role, and thus of the Design Practice.

(2) Another mayor force that currently influences the way designers construe of their profession and revolutionize the way they can practice their profession is connected to the changing nature of business structures in many Western design firms, brought about by the forces of globalisation. Product design firms in particular seem to suffer from a loss of the profitable embodiment (engineering) part of their design projects. That tends to move closer to the countries where the production takes place, leaving the design agencies in the West with a much reduced economic base that just consists of the comparatively few hours of conceptual design; hours that tend to be rather high-risk, and that require the more experienced and expensive staff members. The old ways of running a design practice, in which the engineering part of the design process, comprising many hours of comparatively low-risk design work by the lower paid staff members of the firm, was the real money-maker keeping the firm afloat, just doesn't work anymore. The speed of this change has taken many designers by surprise, and their firms have gone down with the old way of working. But other design firms have thrived in the same years. Most of them have followed a strategy of self-initiating projects, and selling their design concepts (with or without intellectual property) to companies. This does require a different, much more entrepreneurial stance from these designers - perhaps a new business model for design practices is emerging. The designers that have concentrated on providing good-quality services within the bounds of the conventional design projects have seen their firms erode around them, no matter how good they are. They have missed the boat because their implicit Design Practice precluded them from seeing the innovations needed to capture the possibilities of creating a new kind of design firm within the global context.

These examples show that the Design Practices around the world are changing quite rapidly, and that designers might find themselves in the position that they have to re-invent the very core of their professional life. Creating an explicit description of Design Practice can help make it easier to change that Practice when needed.

3 Design Practice in action

If what we call Design Practice is in fact a motley array of activities, are there then moments in the normal life of a design firm (moments associated with the projects, that look very stable by comparison) that would allow us to get a glimpse of the diverse activities within a Design Practice? Where does this Design Practice come to the fore? It seems there is one set of activities in particular in which Design Practice most clearly comes into view: in the pre-project stage of Creative Exploration - and one set of decisions that clearly illustrates the nature of a Design Practice: those that together lead to the context for design projects.

3.1 Creative Exploration

The elements of design practice come into play in the phase of Creative Exploration that precedes the design project proper. Within the Creative Exploration the design briefing is eventually formulated and the design project is scoped. This is a possibly messy process – often a Creative Exploration starts with very little more than a vague idea, and the motivation to start doing something. There is no set problem, no context for the

project, no overview of the partners and expertise needed to pin down the initiative and shape it into a valid and realistic design brief. In a Creative Exploration all of these elements (that are highly interdependent) are gathered together and structured. The manner in which this is done is highly content-dependent: it might be that for a certain initiative it would be wise to start by contacting a crucial partner for the future project, without whom the initiative would not be possible, and find out what the range of design briefs and value propositions is that they would agree with. But in other cases, it might be much more important to first look at a technology roadmap for the technologies involved, and take some strategic decisions on that basis... The range of approaches that are potentially useful in this very early stage of starting to develop a design initiative clearly defy any attempt to modelling them into a single phase-model of Design Practice activities. Moreover, the fledgling design brief and ideas for possible solutions might co-evolve [9] for quite some time before they are tied down into a 'final' briefing document that informs the design project. There is no design brief or plannable design project yet, no described or set process to support these activities. The various elements of Design Practice come into play here, giving form to actions, eventually creating a design brief and a new design project. And in doing so, the lead designer also creates the context for the ensuing design project.

3.2 The Project Context

The 'context' [10] in which design projects take place has mostly been considered in design research to be a kind of 'natural environment' that doesn't warrant study, but of course it actually is a man-made thing. The intellectual and physical environment in which the design projects take place is a core outcome of the kind of activities that Ken Yeang described as part of his Design Practice. The working environment not only reflects but also gives its true shape to the projects that can happen in a firm: you could take the 'classic' product design firm as an example (with an extensive studio for embodiment design, etc) – and imagine all that would need to change for it to be suited to the execution of conceptual codesign projects (in the attitude of designers, their knowledge and abilities, as well as in the physical space).

The Design Practice and design environment has been very little described explicitly, although there are exceptions: Sutton and Hargardon describe some of the creative design practices within the product design firm IDEO [11], and Hirshberg [12] describes how the Californian branch of Toyota Design was laid out by him to foster creativity. The kinds of knowledge and abilities that have to be brought together, the physical spaces in which the designers are working, the methods and tool they are expected to use and the Human Resources policy (in general, and on a team-composition level) are all part of their descriptions of Design Practice. These cases are slightly one-sided as they tend to focus on the formidable task of organising and stimulating of creativity in an organisational context, but glimpses of a wider Design Practice can be caught.

3.3 Qualities of Design Practice

If we want to study Design Practices, and in the end move beyond description to explanation and prescription, we also need to develop a framework for discussing their quality. This is a classic chicken-and-egg problem: to know what is good Practice we should study them, but to study them we want to know which are the good ones to study... And the vexed question what is a 'good' design practice can't be answered in general terms: any design practice will have to fit with the character of its proponents and fit within the broader environment in

which it operates. Even the most outstanding designers are limited in the influence they have on their external environment (mostly through the selection of clients that, in their words, ‘get it’). But this ability to influence the environment itself is important, and could be seen as a sign of stability and fit – the question what is a ‘good’ design practice could perhaps best be approached through asking: what is a STRONG Design Practice? We can assume that a strong Design Practice would be consistent in its intellectual core (in its meaning-giving and value statements), pervasive, and all-encompassing in its expression. This expression, in phases like Creative Exploration and in the assimilation of a coherent Design Context, has to be multi-faceted and actionable. It is the culture [13] of a design organisation as expressed through its actions. To prop up these internal actions the Design Practice might be expressed externally through written works (articles, books) and public lectures. It seems that the strongest design practices of the likes of Eames [14], Loewy [15] can find application areas for their ideas in many fields. Design Practices only survive in a dynamic relationship with the design environment, they are temporary constructions, that should be able to go through great changes over time.

4. Conclusions

Through the general fixation on design projects there are many activities that are an integral part of ‘being a designer’ that have been neglected by designers - especially by young designers, fresh out of design school and just starting out on the path to develop their own design firms. These higher-level design activities are then under-funded and unorganised in design agencies. Yet they involve vital activities like the gathering of inspiration, the building up of a stock of useful or admired precedents, and the self-education that is needed to stay abreast of an ever developing field. This self-education can take the form of more or less formal research, or be driven by the artificial challenge of taking part in a design competition, as Ken Yeang mentioned in the quote at the beginning of this paper. And most importantly perhaps, it includes the critical reflection across projects, through which a designer develops expertise [1]. We hope to have made the point that the notion of Design Practice should be high on the research agenda as well as the educational agenda. Through its crucial role in the pre-project Creative Exploration and its role in defining the context for the design project, the Design Practice is potentially much more influential on the nature and quality of the designs produced than the activities in the ‘conceptual’ phase of design projects that seems to be the overwhelming focus of design research.

4.1 Design Practice research

Yet the above sketch of Design Practice is just that – a sketch. To create a workable notion of Design Practice we would need to reach a broader agreement in the design research community what a Design Practice entails – what its (working) definition would be, and what are the elements that constitute a design practice. Then we can start considering which would be the research methods that could help us describing Design Practice, modelling it and to start creating prescriptive statements (advice, methods and tools) that will help designers and design students in their quest for achieving real strength on this level of design activity.

This is where interviews and bottom-up empirical sense-making research methodologies like Grounded Theory will have to be used in the initial stages of this research. Then we might move on towards more structured observations (case studies) and perhaps design experiments like the ones used by Bucciarelli to explore his related notion of “object world”. Parts of the multi-faceted Design Practice, like the role that is implicit in the

way a designer communicates, could even be elicited through lab-based games like the role playing games [17]. For a deeper theoretical grounding of Design Practice we might need to turn to theories on Rhetoric [18] or discourses [6], as originally introduced by the philosopher Michel Foucault [19]. He uses this term to describe the complete structure of terms and relationships that lie at the basis of the thinking and discussions within an area of human activity. Because the terms and relationships within a discourse make up the very elements of human thought, the discourse in a field spans the *complete* breadth of someone's thinking within that domain. For the purpose of understanding Design Practice, we can perhaps borrow some of the tools that Foucault developed for these 'public' discourses to describe the 'private' discourse that a leading designer develops, and that guides his/her actions on the Design Practice level.

4.2 Design Practice education

It stands to reason that the research sketched above would have to be based on the observation of leading professional designers: studying students is of limited use because they would still be in the process of developing their design ideas, and ironing out their own fledgling design discourses. This leads us to the great challenge of incorporating the development of Design Practice into the educational agenda. If design students can generally be seen to progress from a convention-based design approach to a situation-based approach, with only the best achieving the third level of strategy-based designing in their design school years [1], we have a huge problem in advocating the addressing of Design Practice in a design school environment. The possibility to really develop an own Design Practice kicks in at the moment the students becomes more pro-active in creating their own design situations, that is, on the strategy-based level. For many students that would be in a stage of their professional development that lies beyond their formal design education.

Yet students should at least be made aware of the activities involved in the level of Design Practice, and might be trained in some of them in an artificial setting. Perhaps the real challenge for design education in (elements of) Design Practice lies in developing a curriculum for practicing designers that want to develop their own practice in a more explicit manner. This would give design schools an opportunity to develop a life-long-learning relationship with their graduates.

But that presupposes a knowledge base that design researchers will first have to start gathering. With this paper, we hope to have put the issue of Design Practice on the design research agenda, and we hope to have inspired design researchers to take on the formidable challenge of understanding Design Practice.

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