Opening Design to the Complexity of Complexity

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Design is just getting so complicated!

Functionality, aesthetics, standards, safety, ergonomics, energy efficiency, recyclability, manufacturing processes, price-points, brand identity, user-friendliness, long-life appeal, emotional appeal, creating meaningful experiences …. oh, and it has to come in a range of colours or better still a series of snap-on, snap-off, inter-changeable sleeves so the user can change its appearance according to mood …

They just keep on adding more and more factors!

No wonder designers might want to reach out for some tool that can handle all these variables.

But this is not really a problem of complexity. The problem here lies with the assumption that all of such things must be taken into account (on every project even) and that somehow, they are of equal importance. The problem rests with the assumption of the designer as a functionary, a service-provider – whether serving the customer, client or 'humanity' – the assumption is that the designer must respond to all these factors. The actual problem is one of choice – of deciding which factors are most important. That is, it's a problem of judgement and of what informs judgement. Thus we arrive at the point where 'the design problem' becomes an ethical problem, something that requires thinking, a thinking beyond instrumentalism. This also points to re-thinking what it is to be a designer, which, I will argue, is a matter of Redirective Practice (Fry 2009).

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My keynote paper will explore some of the dilemmas that arise when design and complexity are brought together, and, more specifically, when Design Research and Complexity Theory are brought together. Some of the dilemmas arrive from the agendas of the fuzzy disciplines of Design Research and Complexity Theory; others are more long-standing and deeply structural.

Design Research when informed by Complexity Theory strives to 'do justice' to complexity, whether seeking to understand a complex system or to design one. Complexity Theory emphasises wholeness, non-reductionism, not splitting something up into components, not destroying it by dissecting it. The claim is that it is an advance on atomistic or mechanistic science.

Why then is Design Research informed by Complexity Theory so reductive, even simplistic, often not able to see the very complexity it claims to address?

One answer, I will argue, is that the wrong questions are being asked, that many of the so-called problems of complexity faced by designers (and researchers) are not

really problems at all. There's some complexity that we needn't bother about. Then there's other complexity we should bother about.

I will argue that much Design Research, because it is locked into scientism, is attracted to "the simple and abstract" over "the concrete and complex" (Feyerabend 1987) and so is unable to deal with the complexity which needs to be confronted and understood.

Why has complexity become an issue for design researchers?

To speak of "design AND complexity" suggests design can be held outside complexity. From an instrumental perspective, it implies the designer's task is to overcome or manage complexity.

Of course, complexity is a key characteristic of the modern world and a great deal of this complexity has arrived (often unwittingly) by design. We (contemporary urban humanity) have become increasingly dependent upon complex, interconnected systems of energy, transport, power, communications, and so on. As the agenda of this conference has lain out, the context of designing and the activity of professional design have become more complex with increasing numbers of factors in play. However, to cast complexity pragmatically is to reduce it and thus negate the complex. From the point of view of enquiry, the binary relation (design-and-complexity) has to be refused and complexity recognised as the inescapable condition of design.

Zamenopoulos and Alexiou (2005) make the following useful distinctions:

1. Complexity as a problem in design (process or product);

2. Complexity as a characteristic of design (e.g. designed systems, design teams);

3. Complexity as a method (using complexity approaches, e.g. multi-agent systems, to solve design problems or to simulate processes and structures such as changes in urban form over time);

4. Complexity as a theory of design – as an epistemology to understand the nature of design and the designed.

What do we actually mean by complexity?

The common, everyday understanding of complexity goes precisely to the dilemma of NOT understanding. A situation designated as complex usually means one that's got many factors in play. It's complicated, it's difficult to understand. It's put in the too hard basket or colloquially, "it's something for the experts to figure out." This everyday understanding of complexity names it as a limit of understanding. Or, something you might have to deal with at work, but would rather be free of in your own time. So 'the complexity of modern life' engenders a desire for the simple: the simple explanation, 'commonsense' or the desire for simple principles to guide the living of life. Hence the appeal of 'voluntary simplicity', 'de-cluttering' and of new-age gurus with singular solutions to finding serenity and happiness in a complex world.

So let's turn to the experts. Here we find a different approach, though one driven by the some of the same desires as the everyday. For the expert – let's call them the scientist or the design researcher – complexity stands as a challenge. It's a puzzle to be solved, confusion and complication to be unravelled. The contradictory drive is to

confront the complex, to challenge and overcome it – in short, to make the complex simple. This desire is understandable enough, but as we'll see, it's very problematic.

More prosaically, for the 'experts', complexity has a more limited meaning. Often named as the study of 'complex systems', it is grounded in systems theory.

Some argue that the idea of complexity doesn't offer much that's not already there in systems thinking (Jonas 2005). Systems thinking emphasises relations, or rather, *relationality*, over parts and wholes. It breaks with the tradition of Western thought that sought to explain things (especially the physical world) in terms of irreducible elements in various combinations as the building blocks of everything (Feyerabend 1987, Hall & Ames 1995). Note: system*s* (plural). There can be any number of systems (rather than a single, unified cosmos or world). What's crucial is that systems have boundaries within which there are structured sets of relations between constituent parts, which (and this is important) are constituted as parts for and by that system. The most crucial distinction is that between *system* and *environment* – which sounds simple enough, but, of course, turns out to be complex, especially as characterised, as we shall see, by Niklas Luhmann (1995). And environment, as deployed by systems thinking and informing biological sciences as well as environmental politics, turns out to be a rather troubling concept, cast 'outside' at the moment of its Enlightenment birth.

What divides system from environment is the boundary. The boundary generates the system. It makes systems thinking possible. We need then to look closely at boundary-setting. Here is found both the strength and weakness of systems thinking.

I propose that one should become familiar with systems theory, but then forget it. Well, not absolutely. It's preferable to inhabit it or let it inhabit you (not to the exclusion of other modes of thinking), rather than to take it up as system (whether for researching or for designing). There's a need to de-systemise systems thinking. More significantly, systems theory (and, by implication, the idea of complex systems) needs to be engaged by seeking to understand in what ways it is a continuation of the Western tradition of rationalist thinking (with all its pitfalls) and in what ways it is a departure from it (Wolfe 1998, Luhmann1995). To take up systems thinking as a tool is to appropriate it into the logic of the same. Similarly, to approach complexity pragmatically is to reduce it and thus negate the complex.

What do we mean by design?

Clearly, there are competing understandings of design in circulation. Leaving aside populist, media versions of design as stylish products or elegant architecture, there is considerable difference between understanding design as a fundamental human capacity vs. understanding it as a professional activity (the sum – or the residue -   of all the specialisms – industrial, information, graphic, architectural, fashion and so on). Appearing to bridge these two poles is the notion of 'design thinking' now claimed as applicable across a wide range of activities (policy, etc) and the latest fad of management-speak. Then, of course, there's the longstanding research into design process, methods and so on.

However, all of these versions posit design as a human action. Opposed to this is the idea of 'design as a natural capacity of socio-cultural systems' (Zamenopoulos & Alexiou 2005). This is a provocative idea, but one that begs to be taken out of systems thinking and brought to other, more complex ways of understanding design, that go along with more complex understandings of 'world' and of human beings as designed and designing subjects. It will be against this background that I will address

ontological designing – as a way of understanding both design and what design engages as complexity (Fry 2009, Willis 2007).

The crux of my argument will be that the way to deal with the complexity that is travelling towards design is to think design as complexity, as part of this complexity. Moreover such thinking will bring the adequacy of reason into question (Sallis 1995, Stiegler 2009).

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