

Implications of Personal Delusions in Design and the 2-Feedback Loop Limitation

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Introduction

Design theory and design research, particularly in the 'Art and Design' arenas, have used personal reflection as a privileged primary source of information. In other words, designers and design researchers trial design ideas, design theories and design methods by thinking about them. The test is whether the individual feels they are correct or feels that is what they do. These approaches are entrenched in design theory to the point that they have become explicit methods such as protocol analysis, thinking aloud analysis, self-reporting of users etc.

This paper takes the position that this self-reflective basis for assessing the validity of design ideas, theories and methods is deeply flawed because of intrinsic illusions and delusions of designers, design researchers and users. The paper takes this position as given rather than proving it and moves instead to exploring the implications of personal illusions and delusions of design professionals for remaking the fields of design research and, by implication, design practices and design education.

For those interested in the underpinning research that demonstrates the scale and depth of illusion and delusion problems in self reflection in Design Research, Design Theory, Design Practice and Design Education, areas of study that relate to these issues include illusion and delusion in Psychology, false memories, witness statements, military intelligence, sales persuasion, advertising, limitations of memory, self delusion, self-deception, biological limitations of cognition, sex differences in cognition, cognitive limitations of understanding systems, depression and introspective illusions.

There are in fact, two very distinct issues implicit in the problem of illusion and delusion. The first is straightforward, when thinking about design outcomes, design theories, design methods etc, designers and design researchers' introspection and self-reflection is flawed. In terms of research, this is common and straightforward. It is characteristic of the generic problem of the data collection apparatus giving unreliable results

The second issue is much more interesting as it deeply affects judgment, sense of self and sanity. It occurs at one or more removes from the focus of the reflection, when the illusion or delusion gives the individual the impression that what they feel, think or intuit is correct. I have discussed this issue in some detail in regard to the idea of 'closure' in Love (2001). In essence, the decision to conclude the process about making a judgment about something is in the internal biologically affective cognition processes rather than the thing that is the focus of attention. It is this internal process that is unreliable, deluded and compromised.

To put simply the problem is that,

‘When an individual carefully thinks through a situation until they are sure their thinking is correct, confirms their feelings about their internal truth about the validity of their thinking, applies their intuition and this aligns with their thinking and their feelings, discusses the matter with others and they agree with the individual’s conclusions, then the problem is that the individual assumes it is valid to assume their thoughts about the situation are correct.’

For many issues, our judgments are near enough, or the outcome does not matter significantly to our lives, or unexpected outcomes are blamed/attributed to ‘life’/ God or something unexpected.

The challenge, and it is a deeply personal one, is to assume that one’s personal sense of self and one’s judgment is deluded. In parallel there is a further challenge to personal competence. Implicit in most of the design literature is an assumption that no design situation is beyond what a designer can think about, or use their feelings, intuition and creativity to produce a viable design solution. This paper takes as given that designers are very limited in their abilities. That this sense that it is possible to design in any design situation using feelings and intuition is a delusion, and that many or most design situations are beyond designers’ unaided abilities. Further, the paper challenges the convenient (to designers) concept of wicked problems and suggests that this is used as an illusion to others to pretend that designers can design anything yet are exempt from blame because failures are the fault of the ‘wickedness’ of the problem rather than designers’ personal limitations.

This paper takes these problems of illusion and delusion in Design as given and focuses pragmatically on three issues:

- At what point do design situations become too complex for designers to think about, or use intuition, feelings and creativity to produce valid solutions. That is, what are the limits of current design approaches and theories.
- What are the implications of the illusion and delusion problem for understanding human design and judgment issues at this boundary
- What implications do the above two points, and the illusion/delusion problem have for the futures of design practice, design research and design education

One of the reasons for exploring the second issue is that there is already in train in the design industry a groundswell of change in design practice arguing that the established tools of design apply much more widely than the areas for which they were developed. More specifically, the visual design ideas from graphic design (with theory mainly accrued from textual analysis) and extended to industrial design are currently being strongly promoted as ‘design thinking’ or ‘designerly ways of thinking’. These are claimed to be appropriate to solving complex problem situations outside the realms of their practices, such as developing business strategies, creating health information systems, and designing complex infrastructure systems in areas such as transportation, food supply, social services, security and military systems. This paper will suggest that this is overclaiming by the design industry and false across a wide and easily definable swath of design situations, mostly those claimed as ‘new territories of design’.

Centrality of behaviour prediction in design

In design (theory, research and philosophy), the ability to predict the BEHAVIOUR of designed outcomes is central. Without the ability to predict the behaviour of design outcomes, it is unclear that any design can be regarded as fulfillment of a legal contract between designer and sponsor. In professional terms, the ability to predict the behaviour of a designed outcome is also the central characteristic of competency of any design professional. If designers are unable to predict the behaviour of design outcomes then this opens designers to legal challenges to their professional competence. In turn, it opens the door to potential legal litigation and financial claims against the designer for incompetence.

There are some strong indications that it is possible to identify a large range of design situations that designers CANNOT predict the behaviour of design outcomes using thought, intuition, feelings, creativity and insight. Research analyses suggest that such a bound can be easily identified and that it is located towards the middle of the spectrum of design situations that designers typically address. There are significant implications for design practice, design theory and design philosophy: it challenges the validity of many of them.

Research background

The research analyses that draw attention to the biological limitations to the types of design situations people can think about unaided. These biological limitations apply to everyone; and are not circumvented by intuition, feelings, insights, creativity or any other method of human functioning. The hypothesis and related theory came out of analyses by me and Dr Trudi Cooper exploring how best to design interventions to shape the dynamics of power and decision making in complex socio-technical systems. It draws on evidence from the systems dynamic field relating to urban planning, business management, quality management and environmental design. This project is currently the focus of development of a large-scale study involving the Australian Army.

Before outlining the details of the presentation, I would like to thank and acknowledge the discussion on topics that have contributed to this work. In particular I would like to thank and acknowledge Prof Brynjulf Tellefsen at BI in Oslo, Dr Judith Gregory from ID in Chicago, members of the ANZSYS systems group, Dr Chuck Burnette of www.idesignthinking.com and the many contributors to the phd-design list on Jiscmail.

Spectrum and structure of design situations

Feelings, intuition and emotion are often regarded as the heart of design practice and creativity. Designers' feelings, intuition and emotion are seen as the main basis of addressing 'wicked' or complex design problems.

The research described in this presentation takes as a starting point a spectrum of, at the left end, very simple design situations and at the right end, very complex dynamic socio-technical design situations. It locates 'wicked problems', as viewed by most design professionals, as well into the left-hand half of the spectrum, towards the simpler end. In other words, it takes the position of asking how we deal with and theorize about designing interventions that are much more complex and difficult than what people have for the last 3 decades been calling 'wicked' design problems.

Design situations can be construed as having sub-parts (sometimes called dimensions, variables, aspects, entities, concepts or 'chunks') connected together by a small or large number of connections. If there are only a few sub-parts to the design situation and these are only sparsely connected we might call the design situation 'simple'. Sometimes these are called "sparse" design situations.

Conversely, if there are lots of parts of a design situation and /or they are connected with lots of connections then the design situation can be regarded as 'complicated'. When sub-parts of the 'complicated' design situation are relatively unconnected or do not affect other parts, the design situation is sometimes referred to as 'orthogonal' or 'decomposable'.

When the *complication* of a design situation is high it can become difficult to address, especially if the relationships between design elements are non-linear. When it exceeds that which can easily be handled mentally, or when some parts of the design situation are unknown, at that moment, the design situation is typically called a 'wicked problem'.

One property that gives a measure of the relative order of complexity of design situations (as distinct from their 'complicatedness') is to look at the number of feedback (or feed forward) loops in the situation. One can categorize design situations in terms of complexity where a measure of complexity is the number of feedback loops – a different dimension from that of 'simple' vs. 'complicated'. This differentiation between complicated and complex is conventional in systems design and cybernetics (and engineering design in, for example, the area of design on non-linear control systems).

The 2 Feedback loop limitation

Evidence from the system dynamics field relating to complex systems design, urban planning, social systems design, management, business process design, manufacturing systems, quality management, security design and user-related design provides substantial indication that professional designers across a wide variety of design fields are unable to predict the behaviours of design outcomes and understand design situations with 2 or more feedback loops.

The significance of this is that many design situations have substantially more than 2 feedback loops. This is particularly evident in the case of the new areas that the Art and Design design fields have claimed that Art and Design design methods apply. It suggests that these claims are false.

Outcomes of research analyses and hypotheses

- Humans are not capable of understanding, 'thinking through' or predicting the design behaviour of complex design situations, i.e. those involving 2 or more linked feedback loops.
- Intuition, creativity and feelings do not help and do not under any circumstances provide correct answers to predict the behaviour of complex design situations
- Designers, design researchers and design philosophers, when testing the trueness of the feelings, intuition or creative insights, have 'feelings' that falsely give them the beliefs that their intuition, feelings, creativity or insight is allowing them to understand and predict the behaviours of complex design situations. These are delusions.
- Typically, where people intuit, feel or apply creativity to identifying strategies or interventions to improve complex design situations, they choose interventions that move the behaviour of the designed outcome in the opposite direction to that intended.

- Designers typically address complex design situations by attempting to ignore the complexity and address them as complicated design situations – this approach results in faulty design solutions.
- When designers create designs for complex design situations, the outcomes typically after a short time become faulty due to the effects over time of the feedback loop. Designers usually blame the error on issues beyond their control or call it the result of the design situation being a ‘wicked problem’. This is implicitly a way of trying to avoid legal responsibility for lack of competence.
- Collaborative, participatory, crowd design or other multi-participant approaches do not work for complex design situations. All that happens is there are multiple people who do not understand the situation and are incapable of predicting the behaviour of the designed system. The main benefit is that the group self supports themselves psychologically that they are all going to make the same design mistake and will all be blamed equally.

Solution: a design approach for complex design situations

The solution as a design approach is straightforward, has six parts. It applies to ‘wicked problems’ AND to design situations that are much more complex:

1. Undertake background research to identify the main aspects of the complex design situation and the causal feedback loops (collaborative design approaches are useful here)
2. Create a predictive behavioural model of the design situation taking into account all significant factors
3. Identify the preferred outcomes and the factors that can be most easily changed (collaborative design approaches can be of use here)
4. Make the changes to the predictive model and observe the outcomes
5. Identify the characteristics of the configuration of the design situation that will give the preferred outcome
6. Use these characteristics to define the framework for the design and its implementation.

Implications of the above research analysis

- Challenges the validity of all design theory and design literature as it applies to complex design situations (and wicked design problems)
- Challenges the validity of participatory design, collaborative design crowd design and all other similar group-based design practices as they apply to complex design situations (which is where they are mostly applied)
- Challenges the belief that humans can intuit, feel or have correct insights into complex design situations
- Challenges core elements of existing design theory, design research and design philosophy.
- Challenges personal individual assumptions about our own abilities and competences.
- Draws attention to a major self-delusion the assumption about the absence of which has been a core presumption of substantial amount of design theory making about design skills, practices and cognition.

- Challenges the validity of recent claims by Art and Design fields that their methods apply also to complex design situations.
- Challenges claims by the Design and Emotion sub-field, that complex design situations can be addressed via research into user's emotional responses.
- Challenges claims by user-based design approaches that user-based analysis is sufficient to define design solutions.
- Provides justification for an alternative design method that resolves all the problems raised by the above challenges.

Love, T. (2001). Concepts and Affects in Computational and Cognitive Models of Designing. In J. S. Gero & M. L. Maher (Eds.), *Computational and Cognitive Models of Creative Design* (pp. 3-23). Sydney: University of Sydney.