

Writing Design¹

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Abstract

The complexity of design is defined in terms of four classes of object - product, programme, process and philosophy - the four 'P's of design. A range of possibilities for writing about these objects is outlined with reference to their methodological implications. Six formats for research presentation are described, each of which relates directly to a common type of designerly enquiry and embraces a productive account of the four 'P's. In conclusion, some observations are made on the value of such research and the opportunities it presents for developing the design discipline.

Introduction

*Indeed, it is not easy to be accurate in
an account of anything, however simple.*

Ruskin, *Stones of Venice*

This paper offers some guidelines on writing as an outcome of designerly enquiry. It does not set out definitive rules and specifications. It explores the possible ingredients from which the researcher can select to suit the project in hand. The intention is to help the designer to produce less ambiguous and more persuasive presentations of research. These guidelines are an opening gambit. With that in mind, I welcome constructive feedback, which will be acknowledged in future versions of this text.

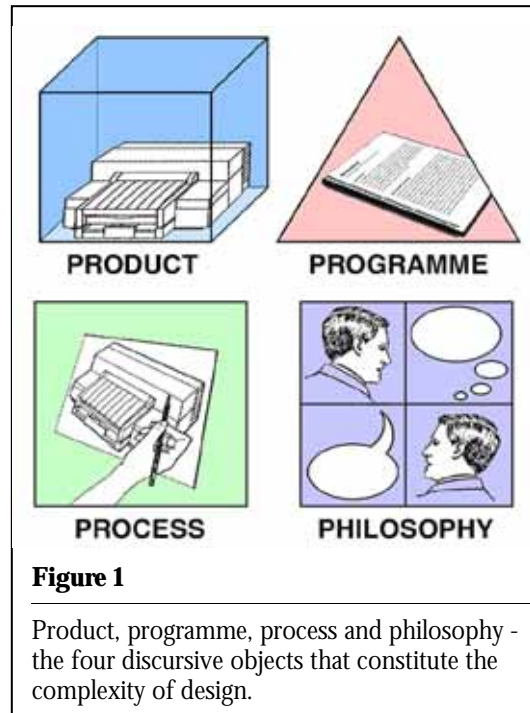
The Complexity of Design

*A book was writ of late, called Tetrachordon
And woven close, both matter form and style*

Milton, Sonnet X

Design discourse embraces four distinct classes of object, a) Product - the design as end product of the design process, a material object, a thing, place, message or system or some hybrid of these; b) Programme - the design as a system of documentary actions - the informational aura which is the design in the form of drawings, documents and computer files; c) Process - the design as process, a particular way of doing design or an ideal model of design as an activity - the design as a socially constructed and mediated activity, and d) Philosophy - the design as embodied values and beliefs, either as the rationale for a particular design or as an overarching set of principles or philosophy.

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(Figure 1) I refer to these as the 4 'P's of design.[1] And although in normal conversation one may speak of a 'design' in such a way as to invoke only one or two of these objects - typically, product and process - there is an important sense in which it is only together, as a complex of objects, that they fully constitute design. I use the word 'complex' advisedly: by it I mean that the component classes of object are irreducible in number: that they may not be collapsed into one another; that they represent, in Bernstein's terms, a 'constellation' of discourses.[2] And I mean that together they represent something more than merely complicated; through their incommensurability in epistemological terms and complementarity in providing an adequate account of design, they represent an instance of *complexity*. [3]

Writing the Complexity of Design

*I have some naked thoughts that rove about,
And loudly knock to have their passage out;
And, weary of their place, do only stay
Till thou hast deck'd them in thy best array*

Milton Miscellanies XIX

The four 'P's, as heterogeneous classes of epistemological object, present a range of challenges to the author of a design research project. Although it may not be immediately apparent that this is the case, the lack of necessary commensurability in the discourse between one object and another shifts the problem of achieving coherence and meaningfulness away from the question of research paradigms and methodological allegiance, and towards a more radical pragmatism.

To explain: in dealing with a complex practical situation, design represents a peculiarly discontinuous set of tactics designed to achieve effective results despite what would otherwise be regarded as an unrealistic time scale and an inadequate understanding of the problematic nature of the situation. It does

this by, in effect, breaking the rules of normal science, insofar as it deals with a natural and technical problematic, and breaking the rules of artistic practice, insofar as it explores a cultural and aesthetic problematic. The ideology of design is neither purely instrumental and mechanistic nor purely expressive and humanistic; it is 'pragmatic', but in a peculiarly radical sense – pragmatic at an epistemological and, therefore, metatheoretical level. If one takes into account the complexity, as conceptualized here, inherent in design, it becomes clear that it cannot be adequately represented or reconstructed through any discourse that engages in reductionism. What matters, therefore, is that one sets up, in the discourse, a complex of productive and performative tensions, a 'force field' of conceptual material - to use Bernstein's appropriation of Adorno once more.[4]

The following is a brief exploration of the 4 'P's highlighting their more obvious pragmatic possibilities.

Product

Material objects have a physicality, which is describable in rational terms - measurable attributes, properties and functionality. This makes technical-scientific accounts possible.

Material objects also have psychological and social impacts, which are open to aesthetic, ethical, cultural, economic, etc. interpretation. A wealth of precedent and systematized knowledge inevitably surrounds the object of design. This facilitates contextualization, analysis and evaluations characteristic of sociocultural / technical enquiry.

Programme

The programmatic aspects of design provide the bulk of research evidence. However, one must distinguish between the utility of programmatic information in the analysis and evaluation of Product and Process, and the design Programme itself as the object of enquiry. An account of Product treats programmatic material as a proleptic hypothesis, a future possibility described as if already realized.[5] A Process account treats it as a field of traces from which activity can be reconstructed.[6] One studies the Programme itself, however, as 'text', 'document', and 'image', and analysis of linguistic performance, iconography and graphology takes precedence.

Process

There are three methods of studying Process: participation, observation and reconstruction. They have different strengths and weaknesses, and the interplay between methods can enable more robust theory to emerge.

Participation in the design process involves reflexive practice. This changes 'normal' designing activity by introducing an existential or phenomenological attitude. The participant is a self-conscious subject not an objective observer.[7]

To observe the design process, the researcher steps outside the flow of activity. Attempts at rational description adopt a functionalist attitude whereas post-rationalization adopts an interpretative or culturalist - i.e. anthropological or ethnographic - stance.[8]

Reconstruction: involves post-rationalization of Process through analysis and evaluation of programmatic material. Formative intervention may make protocols more methodical and conservative, assure better quality documentation, and facilitate radical standardized analyses. Cumulative results aim at a 'scientific' understanding of design.

Philosophy

Whether as the limited idea of 'project rationale' or a broader reflection on the nature of reality, society or the human, design philosophy is parasitic on Product, Programme and Process. Therefore, it confronts a contest of knowledges, which the 4 'P's invoke.

Adopting the tenets of a philosophical tradition may serve a heuristic purpose. However, in the post-postmodern present, researchers work in the gift of an ironic and conversational past [9] and need to adopt a knowing attitude to theory-laden discourse through, for example, deconstruction, neo-pragmatism, discourse analysis, or social construction theory. Such non-foundational discourses are necessarily reflexive and may combine 'facts and metaphors, logic and stories' and be innovative in literary form.[10]

Methodology and Presentation

Why is my verse so barren of new pride?

So far from variation or quick change?

Why, with the time, do I not glance aside

To new-found methods and to compounds strange?

Shakespeare, Sonnet LXXVI

There are many ways to combine discursive elements to make a comprehensible and accessible presentation. Those outlined here directly relate to common forms of designerly enquiry, i.e.: experiment, exemplary design, exploration of new concepts, development of alternative proposals, improvement of practice, and theoretical justification of a design. The preliminaries in any presentation cover essential contextual material.

Preliminaries

1. Abstract

Summarize the central theme of the paper, the question(s) it addresses and the type of conclusion(s) it draws.

2. Introduction

Raise the appropriate expectations in the reader's mind. Introduce the key words and the style of writing. Explain the purpose and structure of the paper.

3. **Research Question(s)**
Set out the primary focus of the research - what understanding or knowledge does the project seek to produce? Formulate explicit research questions and structure them - general first. Explain the relationships between the questions.
4. **Conceptual Context [11]**
Outline existing knowledge and ideas underpinning the study. Include: prior studies and related projects, published and exhibited work of others, experiential knowledge, and published theory and criticism. Explain the relevance of each source and the relationships between key concepts to be explored and applied.
5. **Methodology**
Describe the type of study to be undertaken - what values it applies, what assumptions it makes about the nature of reality, society and the human, and what counts as knowledge. Outline methods to be used, how they are consistent with the type of study, and how they relate to each other.

Experimental Study

Experimental design projects are essentially of two types - pragmatic and hypothetical. The former tests a practical idea by measuring success against technical criteria and performance specifications. The report should also account for non-rational aspects of the design. Explain the influence of aesthetic, ethical and cultural aspects on the results, and critique the research question and the post-rationalized process embodied in the presentation. Alternatively explain why the study may legitimately defer their consideration.

The latter is an extended 'thought experiment'. Presentation elucidates a sequence of 'events' or 'exhibits' as a 'game of consequences'. The 4 'P's are best dealt with as interacting elements as each 'moment' in the project unfolds.

Case Study

A project intended to exemplify a particular design approach, can provide a model design solution (Product), a type of contextual analysis (Programme), a procedural notion (Process), or a theoretical premise (Philosophy). It should be substantially 'self-contained' and illustrate circumscribed applications. Therefore, contextualization is important and the focal element should be considered in the light of the other contingent 'P's. The format suits smaller scale research projects.

Conceptual Study

The development and exploration of new concepts tends to proceed in less predictable ways. The relationship between intentional acts and their outcomes may not be straightforward. Therefore, the issue of 'creativity' must be addressed. What matters is not which comes first, idea or act, but rather, how

one steps up to an 'evolutionary' or metatheoretical level of discourse. Presentation formats can be innovative.[12]

Comparative Study

A feasibility study develops and evaluates alternative proposals and recommends an implementation strategy. The format is well defined in practice. Any suggestion that evaluation criteria naturally follow on from the 'given' conditions and constraints of the project needs to be thoroughly questioned. The grounding of the study in this way is a form of legitimization.

Reflexive Practice

Critical reflection on the progress of a design to improve performance follows the model of reflexive practice in education, clinical studies, or social work. The main difference is that in education and welfare the primary focus is on social interactions, whereas in design practice it is on aesthetic experience and creative intelligence, which operates on a more abstract level.

The notion of 'effectiveness', therefore, is not straightforward. Because Programme and Process may interact in non-rational ways a metatheoretical level of discourse is useful insofar as it facilitates engaged study.

Reflexive studies are fundamentally pragmatic and tend to concentrate on contingent issues to which there is some prospect of improving the designer's responses. Presentation focusses on describing events and disclosing their purposeful reflexivity.

Project Rationale

Projects that focus on the development of grounded theory are best structured either around the designing activity or around the features and characteristics of the designed object.

Process-oriented presentations abandon strict chronology in favour of a rationalized reconstruction. The purpose is to recover the relations between materials that would otherwise be masked by the fragmented nature of design activity.

A product-orientated account deconstructs the thing-place-message-system to produce an evolutionary, genealogical or physiological narrative. Such post-rationalization attenuates the complexity of the design to make it comprehensible.

Conclusion: The Case for Designerly Enquiry as Research

I have said elsewhere that 'most design knowledge dies with the designer'. [13] This is the tragedy of a practice which has an underdeveloped research culture. In the last half-decade we have taken significant steps forward.

Designing makes use of scientific and sociocultural knowledge but does not normally set out to produce it. It is not like scientific research: its primary purpose is not to model and explain how the world is and to provide universal predictive tools that help us to cope with material reality. Neither is designing like research in the humanities and social sciences: in designing interpreting the meaning of human (inter)actions and providing narratives that help us to cope with ourselves and each other is secondary.

The knowledge that designing uniquely produces is of a different kind. By bridging the gap between what we can imagine and what we can make, it produces knowledge about the realizable possibilities for change in the material culture. By providing contingent plans and specifications it helps us to cope with the complex dynamic relations between human interests and material conditions.

Because of the power of the knowledge it produces, designerly enquiry is a research methodology worth fighting for. Design knowledge is about how the material culture can be changed, what the consequences and costs of changes might be, and what actions and material investments will be necessary to realize change. Writing design, therefore, becomes a crucial strategy if designers are to achieve and sustain some measure of power and influence.

References

1. Matthews, G M. *Museum-Design-Organization*, unpublished PhD Thesis, University of Hull, 1997.
2. Bernstein, R J. *The New Constellation*, Polity Press, 1991. Bernstein adopts Adorno's concept, see: Jay, M. *Adorno*, Fontana, 1984, 14-15.
3. Matthews, G M. 'The Naked Truth: Metaphors of Space, Complexity and Communication', Sustainability Conference, University of Lincolnshire and Humberside, 1996.
4. Bernstein, 1991.
5. Programmatic design materials, particularly drawings, represent things in a timeless present, which is the equivalent of the Simple Present tense used in certain technical texts. Czarniawska cites the example of economics texts in which, so she was advised, the use of the Simple Present tense indicates the activity of enterprises '...in a mental model into which they have been designed - thus it is a tense which indicates their "unreal" state as it were.' Czarniawska, B. 'A Four Times Told Tale', *Organization*, 4:1 (1997), 7-30.
6. Trace is used here in an archaeological sense - a particular formation which, when registered against a mass of other traces, renders the possibility of meaning.
7. Different modes of consciousness and perceiving may be correlated. See: Harrison, A. *Making & Thinking: A Study of Intelligent Activities*, Harvester Press, 1978; and Matthews, 1997, 265-9.
8. 'Functionalist' and 'Interpretive' refer here to sociological paradigms. See: Burrell, G. & Morgan, G. *Sociological Paradigms and Organisational Analysis*, Heinemann Educational Books, 1979.
9. Richard Rorty explicates the conversational and ironic nature of the postmodern present in *Contingency, Irony, and Solidarity*, Cambridge University Press, 1989.
10. Czarniawska, 1997.
11. 'Conceptual context' implies that exploring existing knowledge must involve more than a 'literature survey' - a particularly misleading term in the design context. See: Maxwell, J A. *Qualitative Research Design: An Interactive Approach*, Sage, 1996.
12. See, for example, PhDs by practice carried out at CRiAD (The Robert Gordon University), Sunderland University, and the University of Central England.
13. Matthews, G M. 'Doctorates in Design? Why we need a Research Culture in Design.' *Doctorates in Design and Architecture*, EAEE Conference, Delft University of Technology, February 1996.

