

Northumbria Research Link

Citation: Singleton, Benedict (2014) On craft and being crafty. Doctoral thesis, Northumbria University.

This version was downloaded from Northumbria Research Link:
<https://nrl.northumbria.ac.uk/id/eprint/21414/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>



**Northumbria
University**
NEWCASTLE



UniversityLibrary

Northumbria Research Link

Citation: Singleton, Benedict (2014) On craft and being crafty. Doctoral thesis, Northumbria University.

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/21414/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>



**Northumbria
University**
NEWCASTLE



UniversityLibrary

On craft and being crafty

Human behaviour as the object of design

Benedict Singleton

A thesis submitted in partial fulfilment of the requirements of the award of Doctor of Philosophy of the University of Northumbria at Newcastle

February 2014

Abstract

This thesis explores how designers might approach human behaviour as a material to be worked on. Unlike politicians, economists, lawyers, philosophers, psychiatrists and many others, designers have few disciplinary resources to draw on in this space. Indeed, it is barely discussed at all. Contemporary designers are, we are told, supposed to treat people and things differently, and ensure that the latter are subservient to the agendas of the former - calls that become all the more insistent when designers are looking for ways to incorporate the design of services and organisations into their practice, a project that summons the prospect of breaking this taboo.

But what would a form of design that took human behaviour as its object actually be like? This thesis takes up this question as an issue in the philosophy of design, through investigating a long and rich history of suspicions about designers - namely, suspicions that they might extend their material palette from dead materials to living human beings. This exploration uncovers the emergence in the Industrial Revolution of today's fears that designers might 'treat people like things'; but it also uncovers an older, almost lost history of ideas about design, which understood its applicability to human beings in a way that, today, is strikingly unfamiliar. Here we find the almost forgotten but still-lingering link between *craft* and *being crafty*, encapsulated well by the lost ancient Greek concept of *mêtis*, 'cunning intelligence'. *Mêtis* isolates that aspect of design at work when extraordinary effects are elicited from unpromising materials, connecting design to political intrigues, daring military stratagems, the operations of impresarios and salesmen, and other instances wherein, through ingenious means, the weak prevail over the strong.

By uncovering and developing these ideas, the thesis provides a view of design that connects it to human behaviour not through domination but through clever manipulation, a morally complex but undoubtedly potent approach that informs an alternative conception of how human behaviour might be understood as the object of design. The principle contribution of this thesis is, therefore, to provide a novel examination of human behaviour as the object of design; its main achievement is to provide the design disciplines with, on the one hand, an exposition of the implicit associations this project has at present; and on the other, the disinterment of *mêtis* and related ideas as a promising counter-perspective.

Acknowledgements

The shape of this thesis was informed by conversations with many people over the years it took to bring the research programme to its conclusion. In that regard, I'd like to hat-tip Jon Ardern, Stuart Munro, Shaun Murray, Priti Rao, Mike Smart, Lauren Tan, Keith Tilford, Pete Wolfendale, and my friends at Engine Service Design - especially Louise Downe, Ross Dudley, Joe Heapy, Justin Kim, Olly King, James Samperi and Tom Wynne-Morgan - from whom I've learned a great deal, some of which was more or less about service design.

A few people deserve especial mention: Nick Srnicek, Alex Williams, Ilona Gaynor, Robin Mackay, and Reza Negarestani. Without their advice, support and enthusiasm, this thesis would have been a very different beast, and, I suspect, much the worse for it.

Thanks too go to my family, Jacquie, Anthony, and Lorna Tozer; my brothers Miles and Ollie; Jenna Singleton; and, most of all, for endless everything good, Kate Ivey-Williams.

Prior presentations of work

Versions of the ideas in this thesis have been presented in numerous forums over the course of the doctoral period. Below is a list of the key references.

Publications

2014

Singleton, B. (forthcoming 2014) *The Long Con*. Falmouth, UK: Urbanomic.

Singleton, B. & Gaynor, I. (2014) *What We Want Is In That Room*. *Architectural Design*, 84(1): 48-52.

2013

Singleton, B. (2013) *Maximum Jailbreak*. *E-Flux*, 46. Available from <http://www.e-flux.com/journal/maximum-jailbreak> [last accessed September 30th 2013].

2012

Singleton, B. (2012) *Anthropocene Nights*. *Architectural Design*, 82(4): 66-71.

2011

Singleton, B. & Ardern, J. (2011a) *ARK, Incorporated*. In Ericson, M. & Mazé, R. (2011) *DESIGN ACT: Socially and Politically Engaged Design Today - Critical Roles and Emerging Tactics*: 246-248.

Singleton, B. (2011b) *Subtle Empires: On Craft and Being Crafty*. *Design Ecologies*, 1(2): 249-266.

2010

Singleton, B. (2009a) *Service Design in New Territories*. Proceedings of IASDR 2009, Seoul, 18th-22nd October, 2009. Available from <http://www.ida.liu.se/~steho/iasdr/Singleton.pdf> [last accessed October 10th 2013].

Singleton, B. & Sangiorgi, D. (2009b) *Socio-Technical Assemblages*. *Service Design Research*. Available from <http://www.servicedesignresearch.com/benedict-singleton-interview> [last accessed September 4th 2013].

2008

Singleton, B. & Ardern, J. (2008) *ARK-INC: An Alternative View of What 'Designing for Sustainability' Might Mean*. Proceedings of *Changing the Change*, Torino, 10th-12th June 2008: 1391-1404.

2007

Singleton, B. (2007) *Edge Services: Designing for Inconspicuous Consumption*. Proceedings of DESFORM 2007, Newcastle-upon-Tyne, 12th-13th December 2007: 127-132.

Selected presentations

Forthcoming

- British Interplanetary Society, London, June 12th 2014
- School of Architecture, Royal College of Art, London, April 3rd 2014
- *Accelerationism*, University of Westminster, London, March 23rd 2014
- *Incredible Machines*, Access Gallery, Vancouver, March 8th 2014

2014

- *Transmediale* festival, Berlin, January 29th 2014
- *The Republic of the Moon*, Arts Catalyst, London, January 11th 2014

2013

- Miguel Abreu Gallery, NYC, September 26th 2013
- Parsons The New School for Design, NYC, September 25th 2013
- School of Art, Goldsmiths, London, Goldsmiths School of Art, London, May 7th 2013
- *Speculative Aesthetics*, London, March 4th 2013
- *The Matter of Contradiction 3: The War Against The Sun*, London, March 3rd 2013
- Umeå Institute for Design, Umeå, Sweden, January 26th 2013

2012

- *Alterfutures*, Sense Worldwide, London, November 22nd 2012
- Department of Service Design, Royal College of Art, London, November 6th 2012
- *Materialism and World Politics*, London School of Economics, London, October 22nd 2012
- Northumbria University School of Design, Newcastle-upon-Tyne, March 28th 2012

2011

- *Design Ecologies*, Architectural Association, London, 4th Feb 2011

2010

- *Alterfutures*, Sense Worldwide, London, May 12th 2010
- TU Berlin, Berlin, 22nd February 2010

2009

- *Design Act 3: Design at Stake*, IASPIS, Stockholm, October 24th 2009
- *Forms of Sustainability*, Konstfack, Stockholm, October 23rd 2009

2008

- Parsons The New School for Design, New York, 9th September 2008
- *Changing the Change*, Turin, 10th-12th June 2008
- *International Service Design Northumbria 3*, April 3rd 2008

Formal declaration

The work contained in this thesis has not been submitted for any other award. This work fully acknowledges opinions, ideas and contributions to others, and is free of plagiarism. All procedures for ethical approval have been satisfactorily followed.

Word count (body text): 79,628

Signed

Benedict Singleton

London

February 17th, 2014

Table of contents

11	01 Introduction
12	01.01 Introduction to the thesis
14	01.02 Research question and objectives
15	01.03 Outline of the argument
20	01.04 Contribution
22	02 Approach
23	02.01 Introduction
25	02.02 Philosophy and design
30	02.03 Philosophy and disciplinary foundations
36	02.04 Treatment of sources
42	02.05 Conclusion
43	03 Service design and the design of human behaviour
44	03.01 Introduction
49	03.02 Service design as theoretical practice
55	03.03 Service design as an evolution of interaction design
61	03.04 Service design as a collaborative practice
71	03.05 Service design is no longer design
76	03.06 Service design as design in the context of service development
80	03.07 Service design as the design of human behaviour
86	03.08 Conclusion
87	Notes

89 04 Craft and being crafty

- 90 04.01 Introduction
- 93 04.02 Dictionary traces
- 98 04.03 Plato's trap
- 102 04.04 Mêtis, the missing term
- 108 04.05 The cunning artificer
- 119 04.06 The trickster logic of production
- 127 04.07 The strange politics of efficacy
- 131 04.08 Conclusion
- 134 Notes

136 05 Seasons of suspicion

- 137 05.01 Introduction
- 141 05.02 Industrial precursors
- 151 05.03 The advent of the factory
- 158 05.04 Reduction to mere machines
- 164 05.05 The ideal programme of technological development
- 171 05.06 Craft without craftiness
- 176 05.07 Conclusion
- 178 Notes

179 06 Architectures of acumen

- 180 06.01 Introduction
- 182 06.02 The wrong story
- 188 06.03 Mêtis services

191	06.04 Practices of suasion
198	06.05 The impresario
207	06.06 Ingenious dissent
211	06.07 Mêtis and contemporary design
216	06.08 Conclusion
217	Notes

219 07 Anthropocene Nights

220	07.01 Introduction
224	07.02 The Anthropocene, ecology, and contemporary design
229	07.03 The challenge of the ecological thought
233	07.04 Designing human behaviour in the Anthropocene
242	07.05 Mêtis as recourse and resource
249	07.06 Mêtis and knowledge
253	07.07 Conclusion
255	Notes

256 08 Conclusion

257	08.01 A recap of the argument
261	08.02 Reflections on cunning
263	08.03 Future directions
269	Notes

271 References

01 Introduction

01.01 Introduction to the thesis

This thesis is a work in the philosophy of design that addresses the question of *how human behaviour might be taken as the object of design*. This is a line of enquiry that opens up some very basic questions about ‘what we think design is’, because the very *raison d’être* of design is widely presumed to be the production of the sorts of artefact that populate our everyday lives. Designers, as that term is usually understood, are thought to deal with wood, with metal, with cloth, brick, plastics, ink on paper, pixels on screens. They do not, it is widely thought, apply their skills to living things - to *us*.

Already, in posing the question, we are acknowledging that such a transfer is possible; and of course, in theory, it is. Nothing *conceptually* stands in the way of understanding our own behaviour as composed of the geometric movement of our bodies, a material structure that might be rearranged. But if it is plausible to think this, it is also *horrible*. It is a distressing prospect indeed to imagine our everyday activity configured in these terms; that, we think, would mean the *reduction* of us, as human beings, to the status of ‘things’ on which to ‘work’. Humans as ‘things’: this is the image most readily summoned when we think of the application of design of design to human behaviour: the human - individual, voluntarist, capable of much - treated as an object that is generic, anonymous, interchangeable, its operations entirely determined in advance by forces operating on it from the outside. Something imposed upon, something corralled, constrained and otherwise controlled by force; something *dominated*.

This is the prospect raised, at least in theory, by the recent emergence of a type of design that take services and organisations as its object - a set of practices that, in this thesis, we will collectively label ‘service design’. Service design, emerging as a distinct field only over the last

twenty years, raises the spectre of 'the design of human behaviour', for the simple reason that we can conceive of a service, or the organisational set-up that provides it, as incorporating the activity of human beings into its functional structure. In fact, strictly understood, a service might be 'designed' that involves two people, and no 'artefacts' of any kind. This is not to say that advocates of service design *themselves* assert this. Indeed, where this recognition is immanent, they show themselves very uncomfortable with it, holding precisely the kind of view of 'human behaviour as the object of design' outlined above: an awkward fit (as we will see in Chapter 3). Nonetheless, their work raises the question of how a contemporary practice of design that *is* based on application to human behaviour might work, and whether it is *necessarily* the kind of monstrous practice which designers, today, seem to assume.

The task of this thesis is to explore this line of enquiry. It shows that our intuitive understanding of what the application of design to human behaviour *implies* is a comparative newcomer, historically speaking, emerging in full force in the Industrial Revolution. But there is another way of viewing the relationship between design and human behaviour, which this work returns to contemporary design discourse. This is a conception of design that existed before the Industrial Revolution, and has prevailed, in only subtly different forms, in many cultures, and over a very long period of time - indeed, in the Western tradition it can be traced back some two and half thousand years, where in Homeric Greece it was labelled *mêtis* - 'cunning intelligence'.

A view of design as an embodiment of *mêtis* suggests that it does not involve subjecting a weak material to the plans of a more powerful force, but in a sense *quite the reverse*: design works by oblique strategies to use the strength of the strong *against themselves*; design is the means by which the weak prevail over the strong through ingenious action, eliciting extraordinary effects from unpromising materials. A sophisticated but (today, and as well as historically) almost

unstudied concept that tightly couples thought and action into a kind of creative pragmatism, it is through *mêtis* that the design of human behaviour can be understood not as a scheme of domination but in the shape of manipulative gamble, morally complex but also extremely potent in its effects. As we will see, the concept of *mêtis* allows us to grasp all kinds of situations 'as design' that we could not previously; these situations are not, politically, philosophically or otherwise, trivial ones; and from its lineaments we can discern another view of design practice, problematic in some ways but worth, I argue, pursuing.

01.02 Research question and objectives

The research question this thesis addresses, stated formally, is: *how might human behaviour be understood as the object of contemporary design?*

This question can be decomposed into a series of objectives, which convert the question into a programme of research, and can be listed thus:

1. To explore how human behaviour as the object of design emerges in contemporary discussion of design practice, namely in the field of service design, in which it emerges as one possible way of understanding what the practice involves;
2. To investigate and articulate the main philosophical ideas encoded in historical 'suspicions about designers' - specifically, suspicions that they will add human behaviour to their palette of materials;

3. To explore the potential relevance and value of these ideas to how 'human behaviour as the object of design' might be understood today.

01.03 Outline of the argument

In order to orient the reader, a brief description of the overall shape of the thesis may be helpful. The rest of the thesis is divided into six main chapters, and a conclusion. The next chapter, Chapter 02, outlines the philosophical and methodological commitments of the research. The following five chapters address the above-stated objectives in turn. The first of these (Chapter 03) sketches out how the idea of human behaviour as the object of design emerges in a subfield of contemporary design, service design, a discussion which provides a contemporary reference point in design practice to serve as background to the broader project (Objective 1). The next two chapters (04 and 05) each discern a particular, distinct set of ideas about how a form of design that applies to human behaviour might be conceived (Objective 2). The last two main chapters (05, 06) further develop these ideas, asking what kinds of situation an understanding of design as predicated on *mêtis*, or 'cunning intelligence', might help us to apprehend today (Objective 3). This describes the general trajectory of the argument; more detail on the substance of the argument is given below.

Chapter 03, *Service Design and Human Behaviour as the Object of Design*, sketches out the contemporary background to this research. It explores the emerging field of service design and how human behaviour as the object of design becomes a project visible within it. The chapter explores different ways in which the relationship between design and services can be articulated in the field, including the question of whether service design is, as its critics have

insinuated, 'really' a viable form of design at all - a question that, I show, contains within itself the deeper question of whether human behaviour can be seen as an object of design. Where service design's proponents have acknowledged that this is a possible interpretation of the field, they have been quite explicit (to put it but mildly) that they do *not* want the practice to be understood as such. This betrays a certain perspective on how 'designing human behaviour' is understood, by default as it were, in negative terms. Yet it remains unclear that this is not a viable way to understand what it is they are doing, especially as they freely speak of 'facilitating' and 'encouraging' certain kinds of behaviour - which it can of course be understood as *designing* it.

It is possible to resolve service design's problematic stance on human behaviour by reorienting the field in ways that downplay or sidestep this difficult situation - as some proponents of service design are, I show, presently engaged in doing. But the question remains about how we see human behaviour as the object of design: what *counts* as 'designing human behaviour', and how this is conceived. Perhaps, I suggest, a means to explore this is to take develop our understanding of the ideas traceable in *suspensions* that designers might do this in their practice - the project of examining these suspicions serving as a philosophical vehicle with which to traverse a broad historical, geographical and disciplinary landscape of ideas about the relationship between design and human behaviour.

The following two chapters, accordingly, are devoted to pursuing this project. Each delineates a very different view of how applying design to human behaviour might be understood. The first, *On Craft and Being Crafty* (Chapter 04), describes how, in the Western tradition of thought that has emerged over the last two and a half millennia as well as in trickster legends, non-European philosophical texts, and other sources usually unexamined by Western theorists and historians of design, there is a strangely consistent view of design as a something furtive,

conspiratorial, and seditious - a 'weapon of the weak'. The lost Greek term *mêtis* particularly recommends itself for our closer scrutiny - a conceptual construct that connects the production of designed artefacts to political intrigues, daring military stratagems, the clever tricks of the salesman: a mode of thinking and style of action by means of which extraordinary effects are elicited from unpromising materials and - thereby - the weaker prevail over the stronger. Put compactly, *mêtis* is the link between *craft* and *being crafty* that gives this thesis its title. Morally complex and powerfully charged, *mêtis* offers an unfamiliar, but philosophically potent, epistemological frame for understanding what occurs when a human being engages in design, and how a transfer of the practices involved in designing nonliving artefacts to human behaviour can be understood.

In the following chapter, *Seasons of Suspicion* (Chapter 05), we investigate a different set of ideas - which occluded those formerly in place - about how human behaviour might be seen as the object of design during the period in Euro-American history usually called 'the Industrial Revolution'. During the period when the factory and its assembly-line structure began to proliferate in the early 1800s, to apply design to human beings became synonymous with 'treating someone like a machine'. At the time, complex machines themselves came to have a particular range of associations: objects that were interchangeable, exhaustively predetermined in their functional operation, repetitive, and so on. As we will see, a great fear seized many commentators of the time that by forcing people to comply to the demands of machine operation, those people themselves were rendered machinelike. This supposition informs an epistemological framework that insists humans and things should be seen as substantially different, and furthermore places a moral demand on designers that they should make designed artefacts subservient to the agendas of human beings who would use them. This extremely widespread idea - embedded in almost the entire history of modern discourse on design - precludes the application of design to human behaviour *toute suite*. But at the

same time, amongst other effects detailed in the chapter, this position creates a perception that, by inviting the ‘participation’ of people who will use designed artefacts in the process of their production, design effectively disentangles itself from political problems (the subtext of contemporary ideas advocated within service design, as discussed in Chapter 03). This comes at the expense of understanding how power might be exerted not by *excluding* people from the designation of their behaviour, but by *including* them - manipulation, rather than domination; precisely the kind of territory which the concept of *mêtis* helps us to understand.

In the two chapters that follow, *Architectures of Acumen* (Chapter 06) and *Anthropocene Nights* (Chapter 07), the thesis explores the contemporary relevance of *mêtis* and related ideas. They serve to outline what kinds of situation a *mêtis* might help us understand as designers today. Chapter 05 continues the parting observations of chapter 04 - i.e., that there are certain forms of power, the nuance of which is resistant to most mainstream political analyses, that are predicated on *involving* people in decisions in structured ways, rather than by *excluding* them. The chapter brings together a series of examples of *mêtic* practices from the twentieth and twenty-first centuries, including the operations of alibi agencies, groups of political dissidents, marketers, salesmen and impresarios of various kinds.

The chapter explores these different cases in order to draw out ideas about the features a contemporary *mêtic* design might have - not in the sense of ‘being a part of the operations of a commercial business’, or ‘being an activity that political groups might engage in’, but at the deeper, structural level of the qualities that such a practice might evince: the utilisation of human beings as ‘participants’ in its operations in ambiguous ways, but also the foregrounding of *ingenuity*, and the use of *subterfuge* and *subversion* to carve out a space of free action. These are qualities that distinguish it from contemporary service design, or mainstream treatments of human behaviour as the object of design directly. The chapter also develops the point that

these kinds of practices are extremely potent forces in the world, and weighs the acknowledgement that they are 'difficult' in terms of the political, moral and ethical scripts we are accustomed to deploying against the importance of understanding *mêtis* to be a practical focus and conceptual resource.

In the last of the thesis's main chapters, *Anthropocene Nights* (Chapter 07), we develop our view of the potential relevance of *mêtis* further. The chapter begins with the observation that the present we inhabit is grading rapidly into an unknown future: we are now firmly inhabitants of the Anthropocene. The technoscientific prowess that has both instigated this era, and has allowed it to be identified as a distinct period, has also precipitated situations in which there is an imperative to act - but it is not clear *how* we might act. They are instances in which much of our political, moral and ethical inheritance is called into question, detailed through examples such as the attempt to conceive of and design for cultures in the very distant future who will contend with our nuclear waste, and the entirely novel relationships that are beginning to build up around artificial reproduction technologies like gestational surrogacy. 'Designing human behaviour' is, I suggest, something that is changing as our view of 'human behaviour' and indeed 'the human' itself is changing. If there are no easy answers to the questions that our contemporary situation poses, of course, *mêtis* nonetheless offers itself as both practical guide and intellectual resource.

Finally, in Chapter 08, the argument of the thesis is recapitulated; some reflections on it, as whole, are entertained, especially the importance of (re-)incorporating cunning into our understanding of design; and the thesis concludes with some remarks about future directions of the work that have become apparent.

01.04 Contribution

It is of course the case that many ideas have been advanced, by many people in different places and times, about what it means to take human behaviour as the object of design. This research not only accepts this state of affairs but indeed *relies on it*. The trajectory of the argument, as outlined above, draws on precisely these ideas. Its contribution comes at the level of collating, examining, and developing them: drawing out their ramifying implications or setting them in opposition to adjudicate the different directions in which they might steer design practice. Also, and equally, its contribution is to take this question as the principle object of a sustained enquiry. If the research question is, as noted, one to which many have spoken, they have done so almost exclusively as part of a larger project of their own - a history of technology, for instance, or a political philosophy of industrial culture. It thus provides something that does not, at present, exist: a prolonged analytical and synthetic approach to its subject matter.

Put compactly, this thesis provides a novel examination of human behaviour as the object of design; its main accomplishment is to provide the design disciplines with, on the one hand, a critique of contemporary associations born by the prospect of taking human behaviour as the object of design, and on the other, the disinterment of *mêtis* and related ideas as a promising counter-perspective.

In terms of the *disciplinary focus* of this work, and thus the *audience* to which it is addressed, this thesis is conceived as a work in the *philosophy of design*. But this does not mean its primary audience is necessarily one composed of philosophers of a professional or amateur sort. It is principally aimed at those in the design disciplines who are interested in the intellectual questions posed in and by design's field of operation. Prior to it being addressed to

a specific group marked out by their occupational practices - for instance, 'commercial designers in industry' or 'academic theoreticians of design' - it is intended for those who are occupied by two interlinked interests - the relationship between acts of design and the various materials that designers can, might and have taken up, and the general direction of the discipline as it evolves.

This perspective is inherent to the approach this research has taken to its subject matter, in that it understands the philosophical as a tendency displayed in many disciplinary fields as they reflexively examine the basic tenets and embedded assumptions of their practice (as opposed to a view of philosophy that sees it as an entirely autonomous discipline circumscribed by its attention to specifically 'philosophical' questions, like those of Being, essence, substance, quality, and so on). This warrants further explanation; therefore, before moving on to the substance of the argument proper, it is incumbent on us to directly examine the philosophical and methodological commitments made by this work. This the task of the next chapter, *Approach*, to which we now directly proceed.

02 Approach

02.01 Introduction

This chapter describes methodological aspects of the thesis, respecting the academic norm of making explicit one's intellectual commitments and advancing various instances of precedent. This is done in order to not only make clear the reasoning behind the construction of the argument, but also circumscribe its limits - that is, what the thesis attempts to *do*, and how it proceeds to go about it.

In the first section of the chapter, 02.02, I detail the thesis's basic theoretical orientation as a work in the *philosophy of design*, and the commitments it does and does not make thereby. This section begins with an introduction to different ways in which connection between design and philosophy can be configured. These have tended to exhibit two different, but related, perspectives. On the one hand, design (conceived as a process or in terms of the technological artefacts it gives rise to) can comprise 'case material' within a philosophical project, i.e. one that is judged by the range of interests, standards of argument, and history of philosophy. On the other, ideas can be borrowed from philosophy to inform design, when - for example - an effort is made to produce a Deleuzian, Latourian, etc. 'perspective' on design in general or a specific problem in the field.

Both of these are valid approaches, and have produced some ideas that have certainly informed this work. They are, however, not the only way of seeing the relationship between philosophy and design, and for reasons I will describe are not entirely suitable to the current project. More promising is a perspective emerging very recently in philosophy, described in section 02.03, and found in work like that of William Bechtel, Giuseppe Longo and Fernando Zalamea. In these cases, philosophy is understood as a kind of *tendency* in all fields of intellectual endeavour, from mathematics to the natural sciences to (as in our case) design. It is

in evidence when a field becomes, as it were, self-reflexive, and begins to interrogate the basic assumptions of their practice, unpicking their intellectual commitments - no longer considering them as axiomatic but contingent, and thus the potential object of intervention. Work that pursues thus is not to be judged entirely against the history of philosophy; nor is it a case of 'applying' philosophy to another field to understand or reinvigorate it. This is an approach suitable to bring to a question like that of 'human behaviour as the object of design', because the very question itself challenges the predominant assumption that design is *not* engaged in the direct shaping of human behaviour, but rather limits its attention to the production of nonliving artefacts; and the task of this thesis is to make headway in examining and reconfiguring this idea.

In the next part of the chapter (02.04), I describe how this approach informed the construction of this thesis, with particular attention to the sources of the ideas that are discussed in it, and how they are treated. Many of these sources are from other disciplines, others are from sources remote in (geographical) space and (historical) time from the site of this research (a design school in 21st century Northern Europe) - and sometimes both, as when ideas come to us not from original texts but mediated by the intellectual work of anthropologists, Hellenists, sinologists, and other specialists. The philosophical approach taken here benefits considerably from adopting this broad perspective - indeed, it requires it; but if this expansiveness is largely understood as a virtue, it also has certain limitations, which are clarified here.

To wit, the approach to these sources is strongly *etic* in flavour. By this I mean that the selection of sources, and how they are treated, is conditioned by a form of intellectual enquiry that to some extent dislocates them from the context in which they were originally expressed. The concern is less with the empirical verification that an expressed idea is typical within a culture, or to emplace it within a genealogical analysis of discourse (to give but two examples), but the

treatment of ideas *qua* ideas that might inform contemporary design. The chapter concludes by way of a brief conclusion in section 02.05.

02.02 Philosophy and design

As described above, this research understands itself as a project within the *philosophy of design*. This means, at the simplest level, that it is concerned with *ideas*; more specifically, it takes on certain questions emerging in, and pertaining to, the practice of design, and interrogates them in terms of the ideas that underlie (but do not necessarily determine) this practice, and are in some sense confirmed by and reproduced through it. But if this is a *philosophical* approach, a few words need to be said about the specific *kind* of philosophical commitment made by this work.

Firstly, we will profit from an excursion into ways that philosophy and design might be thought of as linked. There are many potential candidates, in the shape of bodies of work associated with a given philosopher or a school of thought. The field of 'philosophy of design' itself, i.e. work explicitly described as such, is a relatively small subdiscipline of philosophy in general. It tends to be understood as one aspect of the broader field of the *philosophy of technology*, which incorporates not just ideas about *making* technological artefacts (the general remit of a philosophy of design) but also 'technology in general' - especially in terms of understanding the philosophical dimensions of existence in a landscape that, since the Industrial Revolution, has become ever more densely textured with artifice. Indeed, it was at the height of the Industrial Revolution that Ernst Kapp's *Grundlinien einer Philosophie der Technik* appeared, the first

volume to specifically position itself as primarily concerned with ‘the philosophy of technology’ (Kapp, 1877).

Given the predominance of this landscape on twentieth-century thought, the philosophy of technology *itself* tends to blur almost seamlessly into more general philosophical accounts of the world. There are, of course, figures who, if they do not disregard broader issues of a moral, ethical, political, or otherwise philosophical scope in their work, nonetheless approach them through the study of technology in the first instance; people who deal, that is, with technological questions first and foremost, and are as such self-consciously philosophers of technology (Gilbert Simondon’s account of the genesis of technological objects being perhaps the best known, and certainly one of the more influential, in the twentieth century; see de Boever, et al. 2013). But the philosophy of technology remains relatively niche as a school of interest, lacking the number of adherents claimed by, say, ethical or moral philosophy, and still less than broad categories like the giant fields - largely and infamously opposed in terms of content and style - of ‘Continental’ and ‘analytic’ philosophy as they emerged in the late twentieth century.

Our search for reference points is, then, potentially a very wide one. Very many philosophers have had, in the course of the broader programme of their work, reason to dwell - sometimes at length - on designed artefacts. That is, they address ‘the question concerning technology’; Heidegger’s famous essay of that name (1958) is an influential example. In this context, we are not constrained by the limits of a tightly defined subfield in order to sketch our reference points, but quite open to modern and contemporary philosophy *in general*.

And certainly, surveying the landscape of contemporary philosophy, there are many philosophers who have engaged in is no problem *per se* with this endeavour. One might even

call it the height of fashion in contemporary philosophy, given that so many works in the field embrace nonliving artefacts as an object around which to wrap their thoughts. A brief survey of dominant currents in recent philosophy might take in, for example, the work of Gilles Deleuze and Felix Guattari (e.g. 2004) and its revision in the work of Manuel Delanda (e.g. 2000), or in the form of 'new materialism' (e.g. Coole & Frost, 2010). Likewise, although with more emphasis on objects and networks than the dynamic processes or flows that are discussed in the previous references at length, anyone glancing through the programmes of contemporary philosophy conferences will be struck by the prevalence of actor-network theory - originally something more of a sociological enterprise, latterly making claims to philosophical relevance, and has made considerable philosophical impact in the last two decades (cf. Latour, 2007), especially in the form of the more recent 'object-oriented philosophy' that has developed its essential ideas into something more resembling a traditional philosophy (e.g. Harman, 2010).

These philosophies - notwithstanding their differences - suggest themselves to any venture in the philosophy of design; and, especially in the form of the work of Bruno Latour and related actor-network theorists, have proven influential in academic design circles. They are attractive for two key reasons. Firstly, the emphasis they place on the importance of accounting for nonhuman actors in producing accounts of the world provides a way to talk about the role of designed objects in helping to produce situations. They are profoundly monist, rejecting dualisms like 'mind' and 'matter' or 'artificial' and 'nature', and they denounce any attempt to privilege human beings, or indeed 'life' itself as being in any way *ontologically different* than anything else in the world - humans exist on a plane of equivalence with cats, and cats and humans do not have any philosophical priority over tarmac, pencils or Class III stars. This is an emphasis not shared by much 20th century and earlier philosophy, which has tended, as Latour has rightly argued, to relegate technological and other nonliving artefacts to the status of props on the stage of everyday life, not of especial interest or importance. The familiar argument that,

for instance, 'guns don't kill people, people kill people' simply sidesteps the fact that it is rather easier to kill someone else if you have a gun in your hand, and that the presence of a gun thus *changes the situation* in a way that should not be trivialised.

Secondly, these philosophers have a deeply *constructivist* point of view of the world, in that - opposed to any form of essentialism - they see objects not as fixed, immutable things, but as produced by past concurrences of matter and force, and with a future history. What we know as designed artefacts are, for instance, rendered as actors produced by networks of other actors that perturb and transform each other, and perturb and transform other actors in turn (e.g. Latour, 2007), or are the results of processes of individuation through processes of territorialisation and deterritorialisation (e.g. Deleuze, 2006; Delanda, 1991, 2000). These processes of construction, however configured, also serve to link artefacts into broader circuits of activity, such that one might describe how the process of designing an object is the product of and reinforces or degrades a particular political project, for example.

Clearly, therefore, any philosophy of design might therefore find philosophies like actor-network theory or Deleuzianism enticing: they dignify nonliving artefacts with philosophical and political salience, while also emphasising the constructive process that results in their arrival in the world. But if these philosophies recommend themselves to a project that understands itself as a *philosophy of design*, the latter might, we can discern, work in two possible ways. In the first case, such a venture might continue much in the vein of work like that listed above. That is, it would draw on design and technology to inform an essentially philosophical project. This means it would understand itself as having a place in a tradition of other philosophical texts, and respond to the intellectual concerns and standards of good argument found therein. Design, or designed artefacts, would be 'case material' either used to illustrate a philosophical point or as the impetus for a philosophical exploration (or both). An

example might be a project like Delanda's own recent *Philosophy and Simulation* (2011), which draws on all kinds of designed machines, from cellular automata to neural networks to examine how these systems force a new conceptualisations of intelligence and reason.

Alternately, we can easily imagine a project that draws on philosophy as an interpretive resource to understand design itself. For example, it might look to understand design through the lens under of actor-network theory: the production of an 'actor-network theory of design' (cf. Yaneva & Latour, 2008). Or, more precisely, it might similarly draw on philosophical resources to help us understand design in a particular context - more commonly the case when philosophy is levelled by designers at an issue that emerges within design practice as a problem. An example would be Otto von Busch's appropriation of Deleuzian ideas in order to understand how design might engage with highly political, participatory processes of production (von Busch, 2008). Here, conceptualising design under the terms of a given philosophy gives traction on a 'design problem'.

This thesis certainly draws on ideas from this philosophical school of thought. They provide it with a means of elegantly conceptualising, for instance, the relationship between the craftsman, their tools, and the materials they use those tools to work upon (see Chapter 04). Yet while this research, as a work in the philosophy of design, could be approached as a work in design that draws on a named philosophy, or as a work of philosophy inspired by design, neither of these approaches appears quite appropriate if its general project is to be satisfactorily pursued. To begin with, it is not the case that any of the above figures have, specifically, dedicated their intellectual resources to the question of human beings vs. designed artefacts as the object of design in particular. This is not a problem in and of itself. But these these kinds of accounts tend, as a rule, to function by simply voiding the distinction between human beings and other kinds of 'object' (which is key to the projects of Latour, Deleuze, and Delanda in the

texts previously cited). While an admirable gesture of anti-anthropocentrism, flattening one's ontological commitments such that humans are just one kind of thing amongst others produces a deeply impoverished framework for our purposes. By acknowledging - quite correctly, from a scientific point of view - that human beings are to be counted as simply a 'kind of thing' amongst other 'kinds of thing', we do not explain why it is that, for instance, certain people find it abhorrent to 'treat people as things'. This relates to a deeper problem with the aforementioned philosophical enterprises, as presented in succinct form by Ray Brassier (2010): proponents of these philosophies are strikingly over-eager to embrace the *ontological* (i.e., the study of the kinds of thing that can be asserted to exist in the world) at the expense of the *epistemological* (the study of how human beings can know about the world; see also Brassier, 2007b). While this has strictly philosophical shortcomings in its own right (I refer the reader to Brassier's commentary for details, which need not detain us here), its principle disadvantage for our purposes is that we are trying to develop a mode of interpreting the world - developing ways of relating design, a set of practices, to human behaviour, to which they might be addressed; and to think of how this works, and what are the implications of adopting different positions. This is an epistemological task, and this observation leads us to consider a different way of relating design and philosophy that will more profitably inform this project.

02.03 Philosophy and disciplinary foundations

A recent turn in philosophy has recognised its definition not in its address to a set of questions - like the nature of Being, essence, the separability of substance and quality, the relation of parts to wholes and the independence or otherwise of terms from their relations, etc. - over which, as a discipline, it presides, but rather as a style or vector of thought. Philosophy is here a

project to, in Wilfred Sellars' famous formulation, 'understand how things in the broadest possible sense of the term hang together in the broadest possible sense of the term' (Sellars, 1963: 1). This should not be taken as implying that philosophy is simply a label for any kind of *generalist project*, nor to see philosophy as opposed to specialisation *tout courte*, but rather that it is "an eye on the whole' which distinguishes the philosophical enterprise' (*ibid.* 3). In this sense, philosophising is a synthetic project at least as much as an analytical one. It looks to forge correlations across a wide domain: the creation of the whole on which the philosopher keeps an eye is itself, as Sellars was always keen to note, an active task of construction. Rather than, however, simply providing an overview (the task of an encyclopedist) or synopsis a domain, philosophy looks to conceptualise deeper patterns that govern the wider map it draws.

At its purest and most self-referential, this leads philosophy to address *knowledge itself* as an object of enquiry, dealing with issues of the kind listed above - essence, the relation of wholes to parts and parts to wholes, and so forth. But more precisely focussed philosophies are possible, relating to some particular slice drawn through human conduct and thought about doing so, such as philosophies of ethics, politics, science or (as in our case) design. Here, philosophy is discerned not as the actions of a visiting philosopher or the import of 'pure' philosophical ideas, but in moments where the most basic assumptions that undergird the practice of that field are investigated. This makes philosophising a *tendency* that might be the work of someone who understands themselves to be 'a philosopher', but also might take place amongst (at least some) practitioners in any given field, marked by a point where they suspend active operations in the interest of identifying, questioning and reassessing the basic tenets of their practice. This includes the relation discussed in the previous section, where a philosophy of biology, for instance, might involve a philosopher drawing on a series of empirical biological observations with respect to their philosophical implications, or conversely (if rarely, at least from the early years of the twentieth century; cf. Bailly & Longo, 2010), a biologist importing a

philosophical concept - perhaps an understanding of 'life' - into their work. But the *third* way is to see biology (to continue with the same example) as throwing up its own tensions and difficulties over time, and the philosophical moment the investigation of the assumptions that produce these inconsistencies. This may certainly be informed by 'pure' philosophy, but it also is a specific disciplinary project.

Some of the most exciting recent philosophy has taken up the challenge of fully incorporating this idea. This work has attended in particular to the development of new conceptual tools that allow disparate phenomena to be drawn together and understood in more powerful ways - that is to say, generate new epistemological frameworks with which to gain traction on the world as addressed by the discipline. Much of this work has been devoted to exploring disciplinary foundations, such as the work of William Bechtel on the concept of mechanism in psychology and neuroscience (Bechtel & Richardson, 2010), Fernando Zalamea (2012) on mathematical creativity, and that of the polymath Giuseppe Longo (Bailly & Longo, 2010; Longo & Montevil, 2013), whose work is self-consciously 'philosophy', but seeks directly to provide new concepts in mathematics, physics, and biology. As Longo describes, the philosophical project at hand is the production of new concepts that allow new kinds of sense to be made of detectable phenomena in the natural sciences. In physics, for instance, one of the key projects of the twentieth century (and to date, the twenty-first) is to address the discrepancies between quantum and classical mechanics, described by physicists as a project of 'unification' that will require, in order to work, radically *new* concepts that allow observations of natural phenomena at different scales to be reconciled (Bailly & Longo, 2010). Elsewhere, in more recent work, Longo has attempted to actively produce entirely new concepts in biology; although the specifics are not pertinent to the current project, they include ideas like that of anti-entropic systems (physical mechanisms that allow entropy to be exported, and an organism persist), 'extended criticality' (systems that oscillate between two contradictory states, far from

equilibrium) 'two-dimensional time' (that characterises the blend of repetition and progression in, for example, respiration or the cardiovascular system) and other means to give the operation of biological systems a new kind of clarity (Longo & Montevil, 2013).

This thesis deals with matters of disciplinary foundations in an analogous fashion, even if, concerned as it is with design's application to human behaviour, it is rather more restricted than a project like Longo's. Like one of the few explicitly similar projects in the philosophy of design (Flusser, 1999 - a strong influence on this thesis, as we will see in Chapter 04), we are interested in taking a philosophical approach to design in the sense of examining design's foundations from, as it were, within. We are interested in the detail of what this means - how an epistemological frame can be constructed in which sense might be made of an effort to 'apply design to human behaviour', aware all the while that if we survey a sufficiently broad selection of ideas about how this works, we may be able to discern multiple such frameworks, each relatively distinct. (As indeed we will see in Chapters 04 and 05.) To elaborate, what we are addressing might be called 'ideas in design'. This phrase leans on Deleuze's understanding that an idea is always already *committed* to some kind of practice. 'No-one has an idea in general', he writes:

An idea - like the one who has the idea - is already dedicated to a particular field. Sometimes it is an idea in painting, or an idea in a novel, or an idea in philosophy or an idea in science... Ideas have to be treated like potentials, already engaged in one mode of expression or another and inseparable from the mode of expression... Depending on the techniques I am familiar with, I can have an idea in a certain domain, an idea in cinema or an idea in philosophy.

Deleuze, 2006: 312

In Deleuze's own example of cinema, it is clear that 'ideas in cinema' might draw on the practices of script-writing, directing, acting, gaffing, designing sets, cinematography, production, and so on; and in our case, the various tools and concepts that are weaved together in practices of design. This general direction of thought is elegantly articulated when, speaking of the capacity of 'new situations' (for example new materials) to challenge and renew a form of design (architecture), Borden writes that this process involves:

a simple yet profound questioning as to what architecture might be, not what architecture is already understood to be, or how it is created or practised, but what it could be, along with the attendant pursuit of what we might do in order to understand, engage with and ultimately create that potential architecture.

Borden, 2009: 8

As Borden indicates, this a process of re-evaluating the associations of architecture, the *way it is understood*, an epistemological task rather than an ontological one - and one which can be used to enrich the discipline by furnishing it with new sets of associations, new concepts, and new modes of practice they inspire. The value of identifying and formulating these frameworks and exploring their ramifications is the capacity of this process to effect alterations in practice - to question the reasoning around how things are currently understood to be done, and suggest other ways of approaching them. A verbally expressed idea participates 'in organising the practices and processes that surround it, while at the same time being organised and maintained by them' (Gibson-Graham, 2006: xi). I do not mean to imply that how we talk about doing something transparently reveals how we do it, nor does it 'make us do it that way' - indeed, there might, and often is an inaccuracy, a kind of inadvertent hypocrisy founded on the

limits of eloquence and indeed the capacity of words themselves to represent objects and actions, a gap between how people speak about doing things and actually do them. Indeed, it is precisely this gap - the possibility of multiple perspectives, each of which is reasoned differently and has different consequences when adopted - that constitutes the conditions of possibility of this project, just as a set of biological observations might give rise to different explanations or theorisations.

The relationships between ideas, expressed verbally (as in this thesis), and design, as a largely visuospatial set of practices are, needless to say, very complex. In general, however, we might follow Jonathan Hill, as he observes, speaking of the function of the discursive in architecture:

Sometimes a building is not the best way to explore an architectural idea. Consequently, architects, especially influential ones, tend to talk, write and draw a lot as well as build. The relations between drawing, text and building are multi-directional. Drawing may lead to a building. But writing may also lead to a drawing, or building to writing and drawing...

Hill, 2006: 166

As Hill suggests, the value of the discursive here is that it might reinvigorate, refine, and otherwise alter practices of design by promulgating a different *understanding* of this practice. In regards the current project - the application of design to human behaviour - the philosophical task, in conclusion, is to consider the question of human behaviour as the object of design as a philosophical moment within the discipline. The hope is that in doing so, the discipline is intellectually enriched and new modes or styles of designing become visible; and that, in turn, rather than relegating design to the 'application' of politics, law, economics, psychology or other fields that take interpersonal conduct as their historical domain, we may

be able to offer new concepts: perhaps a design approach might render 'vivid evidence of another set of mechanisms, perhaps as telling as financial and political indicators' in the playing-out of social events (Easterling, 2005: 1-2). It is in this sense that the thesis is understood to be a labour in the philosophy of design - the production of a *new* philosophy of design, organised around and animated by the specific question of how we might apprehend human behaviour as the object of design. The output of the process, therefore, does not relay itself back to the long history of Western (or global) philosophy, so much as it seeks to articulate a set of 'ideas in design' that enable us to develop design as a field.

02.03 Treatment of sources

In order to mount this philosophical enquiry, it is, as per Sellars, advisable to draw on a wide range of sources if we are to develop a sense of the philosophical ideas that can be drawn from them. The texts that are cited, interrogated, and otherwise woven into the argument of this thesis are therefore relatively diverse. The main way in which this search has been guided is by, as mentioned in the previous chapter and explained at greater length in the one that follows, tracing *suspicious about designers* - more specifically, suspicions voiced about people who usually make nonhuman artefacts, like tables, spears or cars, and the possibility that their practices might be applicable to human behaviour. This allows us a very particular purchase on the problems at hand. These *suspicious* are ways in which the construction of artefacts and the manipulation of human activity are conceptually and practically linked. That these *suspicious connect* the design of objects and working on human behaviour in different ways, as we will see, offers up new ways of understanding how human behaviour can be understood as the object of design.

As recent philosophical essays concerned with disciplinary foundations, like those of Longo, Bechtel and Zalamea that were noted in the preceding section, have observed, this means casting the net widely in terms of sources of ideas. These sources, themselves, vary from recent texts on design, especially (and predominantly in the next chapter) the field of service design, to a very wide range of writings that in all or in part take up the idea of human behaviour as design's object: they are drawn from philosophy, anthropology, political science, and often constitute sources of sometimes historical, sometimes geographically non-Western sources ideas. On occasion, these ideas are made available to us within the texts that originally presented them (for example, in many sources originating around the time of the Industrial Revolution in Chapter 05). At other points, they reach us in the shape of specialist work that has already internalised any number of primary sources. For example, we will address the work of eminent Hellenists Marcel Detienne and Jean-Pierre Vernant on the classical Greek concept of *mêtis* (1993), and the sinologist François Jullien's book *A Treatise on Efficacy* (2004), on the status of that concept in the philosophy of Warring States-era China, in Chapter 04.

This breadth is a virtue to the philosophical status of the project, but at the same time treating the enquiry as a philosophical venture means that we should be very clear how they are put to use in this thesis - namely, that the selection of sources and how they are treated (as sources of ideas with which to inform the present) is conditioned by an intellectual enquiry that dislocates them to a degree from their context. What does this mean? Many of the ideas that can be located in these sources have their origin in other contexts, and in their original form are articulated as such - they are cross-hatched with the concerns of other fields that do not concern us here, and may additionally bear the mark of disciplinary concerns that we do not share. To pick one example, Detienne and Vernant's elaboration of *mêtis*, the just-mentioned concept that plays an extremely important role in the development of this thesis, is, by these

authors, originally described in reference to a zone of enquiry labelled in the title of their book on the subject: *Cunning Intelligence in Greek Culture and Society* (1993). The attention they pay to the concept is shaped by their concerns as professional Hellenists. In turn, the form of these concerns relate to the emplacement of that concept within a wider portrayal of the Greek society of the time - indeed, it is a standard practice in the contemporary social sciences, especially anthropology or those that are more broadly ethnographic, would strongly focus on contextualising these ideas within the cultures in which they are or were expressed.

This, the effort to represent a 'local' worldview on its own terms, is a *emic* approach; this thesis, being a philosophical work, is inclined more towards the *etic*. To explain, while the project necessarily addressed 'what people local to a time and a place think or thought' (an *emic* approach) - i.e. it recognises that the ideas it investigates bear the stamp of the circumstances of their origin - its concern with those ideas is how they can inform the project to hand (the application of design to human behaviour, viewed as an endeavour in the philosophy of design). This is a characteristically *etic* approach. It would, in the first case, be a tremendously difficult to empirically verify whether each and all the ideas explored in this thesis are represented in ways that closely identify what they were 'supposed to mean' in their original context. On a practical level, explicitly contextualising these ideas would constitute an enormous project, requiring something like a multi-volume global history of design, technology, and human manipulation, which would not seem feasible here. In the second case, sometimes this knowledge is redundant for our purposes. For instance, when we investigate service design in the next chapter, we would not expect the service designers we quote to be able to situate the ideas they express in the context of a philosophical enquiry into design's applicability to human behaviour; they are designers, not philosophers of design.

This thesis, therefore, necessarily acknowledges that the ideas in which it traffics have a geographical, temporal and disciplinary origin that shapes their expression. It does so, however, in very general terms - to the point that, for example, it recognises the emergence of certain currents of thought in the Industrial Revolution, and that these are different from the way of thinking about design's applicability to human behaviour before said Revolution. But as a work in the philosophy of design, we are ultimately concerned less with the details of ideas' origins than identifying, abstracting and utilising these ideas within our own project. As this is a philosophical rather than historical enterprise, we are more concerned with *the ideas themselves*, and *the value they might have for design today*, than we are with the empirically verifying how these ideas were understood by the people who first advanced them, or with situating them within the broader sociopolitical circumstances in which they were first expressed. (This includes, of course, detaching *disciplinary* influences from the formulation of ideas, as disciplines are themselves cultures. Where Detienne and Vernant, to reprise the example, address themselves to audience of fellow Hellenists in their description of *mêtis*, we are simply interested in what it means 'for design'.)

Many of the ideas we will come into contact with in the following pages are ideas about design that are explicitly presented by their authors as 'ideas about design', to be received as such. This is the case, for example, with various writings on the Industrial Revolution in Chapter 05, or anthropological work on the intellectual history of design in Chapter 04. In this case, we find that the original passages drawn on *are*, self-consciously, conceptualisations of the practice of design. In this case, they are already 'formatted' in a way more or less compatible with a philosophical project, in that they openly endeavour to present ideas to be examined for their merits and implications. However, sometimes these ideas must be *extracted* from talk about design, i.e. from statements that are *not* explicitly committed to formulating an idea about design. Here, collation and comparison of utterances can reveal an idea finding only partial

representation in each. This is especially the case in Chapter 03, where we investigate the ideas that circulate in contemporary service design. Many of these are made explicit by the field's advocates, comprising direct statements about what service design is - how it should be conceived - and can be treated as such. However, they are also sometimes implicit or at least not entirely definitive, and need to be placed in the context of other statements that may contradict or otherwise alter understanding of them. In that respect, discourse analysis, which sees in discursive formations the traceability of deeper ideas, perhaps only rarely, if ever, explicitly expressed, is a reference point (especially the more philosophical approaches to 'mining discourse' expressed by Thrift (2005) and Rose (1999)). However, once again, this project proceeds in philosophical mode: we are interested in ideas, even if they are initially obscure or need to be tempered through comparison; we do not enter into the close readings which discourse analysts conventionally deploy to identify a genealogy of widespread perceptions betrayed in local remarks, or the tracing of the reproduction of power relations in the same. We are, again, interested in simply *extracting* these ideas and viewing them under the terms of our own agenda; in this sense, we are simply trying to articulate the common idea that might find multiple incarnations, a basic project of abstraction organised by our interest in the specific question of the relation between design and human behaviour with which we are concerned.

By way of example: in the treatment of *métis* in Chapter 04, we will investigate not just *métis*, as Detienne and Vernant describe it, but also look to compare their conceptualisation with the similar ideas emerging in the writings of sinologists, anthropologists, folklorists and others in order to challenge and refine what Detienne and Vernant articulate. In general, this process gave rise to an experience of the development of these ideas as an active and dynamic process: the ideas which were to become articulated in this thesis were material to be worked over, on and through, a process of *wrighting* (Ashmore, 1989), until the ideas cohered sufficiently to be

stable in the face of new information - until, that is, they became relatively *constant*, not needing to be revised in the face of new data.

In conclusion to this section, it behooves us to note that this thesis could not have dealt with *all* possible material that concerns the research question. Stated thus, this point is perhaps obvious, but we should nonetheless address the pattern of these exclusions, and the reasoning that guides it. The time and space permitted in a doctoral research project, as well as the blend of analysis and synthesis this project involved, executive decisions had to be made to shut down avenues of inquiry as it proceeded when they did not directly address a project specifically of *design*, normally something thought to occur in the work of artisans, craftspeople, et cetera, being applied to *human behaviour*. An example of such a casualty is medicine, and the relationship between the body and technology as seen through its disciplinary lens. Where they are mentioned at all, I devote only the barest margin of space to rich fields like the history of anatomy (Sawday, 1996), the construction of the idea of 'normal' physical and psychological health through the governance of people's activities (Foucault, 1991), or the 'sciences of finely divided matter' like synthetic biology and nanotechnology, which today promise new ways to intervene in the body (Jones, 2005).

Likewise, I note only in passing, if at all, the work of some key figures in the history of philosophical conceptions of human beings treated as objects of some kind, especially machines; Rene Descartes (2008), for instance, only features in the argument in passing, and Samuel Butler's *Erewhon* (1872) is not substantially discussed. This is because, despite the well-known quality of these writings, they do not deviate substantially from what is claimed by sources elsewhere apart from in their precise particulars - an extended discussion of which would distract substantially from the overall thrust of the argument. An attempt to exhaustively cite all theorists who had claimed that machines should be the obedient servants of human

beings, for example, would be redundant to the argument on a conceptual level. The issue, from a philosophical point of view, is in the elaboration of concepts determined by their intellectual status, not the fame of their proponents.

02.05 Conclusion

To summarise the above, this thesis can be characterised as a work in the philosophy of design, understood as an examination of the deep assumptions that guide design with regards the prospect of taking human behaviour as its object. In this, it does draw on the work of various contemporary philosophers who have articulated ideas about design and technology, but its principle point of reference is the idea of the 'philosophical tendency' within a discipline as it turns to challenge its own presumptions.

It develops this approach by recourse to the ideas found in a wide variety of sources - ideas different places, time and in differing disciplinary contexts, and 'disciplines' those ideas by reference to the advance of its own intellectual project, a fundamentally *etic* approach. And it sees in this project the possibility of affecting design as a practice because the discursive and philosophical has intimate, if complex, links with the organisation of other kinds of practice, and challenging and developing the ideas that underpin contemporary conceptions of design can result in its alteration. This summary in place, we will now move to the thesis proper, beginning with an exploration of how human behaviour as the object of design emerges in contemporary design circles in the next chapter.

03 Service design and the design of human behaviour

03.01 Introduction

In this chapter, we will explore how human behaviour as the object of design emerges in *service design*, a relatively new subfield of design practice that has garnered considerable attention in the years since its emergence. In the most general term, service design adopts the simple premise that the skills of designers might be lent to the construction of services and the organisations that provide them. It is of interest to us here because it is a highly contemporary design practice - becoming visible since the early 1990s, and gaining serious recognition after the turn of the century - in which human behaviour emerges as a kind of *horizon* or limit-point within the work of designers. In service design, as we will see, the *possibility* presents itself that human behaviour might be *directly designed* by designers - i.e. taken as a specific object on which to work - as opposed to human behaviour being *indirectly shaped* by the artefacts produced by designers of architecture, products, digital interactive systems, and so on.

This is not to say that advocates of service design (a group that includes service designers - who we shall have call to define more closely - themselves, but also proponents of the new practice, like design critics and academics) necessarily understand this to be so, let alone welcome the prospect. Indeed, we will find that the very *idea* that service designers are concerned with taking human behaviour as the 'direct of object of design' has caused some disconcert amongst those that recognise it as a possible interpretation of service design as a practice. Yet, as we will also find, it is difficult to completely evade this idea if 'service design' is to be taken literally; after all, as this chapter proposes, it is quite possible to consider a very simple service, which only involves two people engaged in some kind of interaction the terms of which are specified in advance, as an instance of service design. And when design is said to be applicable in a situation in which there are no artefacts *at all*, only people, it is difficult to avoid

the conclusion that the direct design of human behaviour is in some sense what we are speaking of.

Service design, therefore, offers an opportunity to see how the design of human behaviour is making an appearance in the contemporary design disciplines, and also the way in which it troubles ideas about the limits of design as they are conventionally configured - that is, as a set of practices that ultimately are concerned with the design of nonliving artefacts. The project of this chapter is not to reconcile this question - just as the project of this thesis is not to 'improve' service design, but to examine human behaviour as the object of design and the possible ways in which this might be thought at present. Service design gives us a contemporary backdrop against which to begin - securing the relevance of our question as something at least slightly more urgent than a purely academic inquiry - and also illustrates some of the reactions with which the prospect of designing human behaviour is greeted.

Before discussing the structure of the chapter, a few preliminary words are in order concerning the approach to the material it deals with. The approach to service design here can be broadly characterised as *conceptual*, in that we are interested in different ways to *conceptualise* how services and design might be brought together. Although our principle focus is at the level of relatively abstract (which is to say, philosophical) ideas about design and its ongoing development, we will draw these from what service designers say about what they do.

Ultimately, we are not interested in all possible ways to configure 'services + design', but the way in which a particular configuration of this relationship (human behaviour as the object of design) becomes visible in contemporary practice. We therefore base our approach on the service design discourse, with the caveat that we are not attempting what might be called a *social scientific* endeavour (e.g. to construct a comprehensive history of service design, or perform a discourse analysis of it). Instead we will examine a spread of proposed *ideas* about

how services and design might be brought together, from the idea that it is simply ‘not design’ to the idea that it involves ‘designing human behaviour’, via ideas that service design can be conceptualised as an evolution of interaction design, as a species of practice distinguished by its focus on collaborative working, and so on (described below): a philosophical approach.

As this suggests, in this chapter we will, in effect, be exploring different ways in which service is *definable* according to different tenets, and so we need a preliminary definition of our range of sources that operates as it were at a higher level. Here, therefore, we understand ‘service design’ at its broadest to simply include practices that are *characterised* by those involved with them as ‘design practices’ (i.e. as related to and comparable with architectural, product, interaction, etc. design), with services, or the organisational structures that produce them, as their principle product. This includes the work of self-labelled ‘service designers’ but also others who have adopted a slightly different way of branding their work - for instance ‘transformation design’ (e.g. Burns, et al. 2006), which takes as its especial focus public and third-sector services, or ‘strategic’, ‘social’ and ‘socially responsible’ design, where services are taken as the practice’s primary object (e.g. Tan & Szebeko, 2010).

If we are interested in the *conceptual* aspects of service design, as befits a project in the philosophy of design, we are interested in the *ideas* that characterise its practice. As a work of conceptualisation, I reduce ideas about service design down to a series of ‘minimal templates’, in each case a different way of modelling design’s connection to services. I have endeavoured to draw, where possible, on explicit descriptions of practice by prominent figures in service design to develop and articulate these ideas. To assist in this, I have paid particular attention to discussions of service design in venues that lend them a degree of objective credibility - certified as ‘serious’ through book contracts, invitations to present ideas in prestigious forums, etc. Often, this has meant concentrating on accounts of service design produced by leading

figures in the field: Ezio Manzini (e.g. 2006), Hilary Cottam (2010), and the pioneering design practice live|work, for example. Material is also drawn from (peer-reviewed) service design conferences, and high-profile 'informal' forums, like Jeff Howard's well-regarded and heavily trafficked *Design for Service* blog, for example (e.g. Howard, 2007, 2009). Clearly, we must recognise that we are drawing on the words of people invested in a form of real-world design practice, many of whom work professionally as designers. Especially in this case, it must be borne in mind that public descriptions of their work may be calibrated, strategically or unconsciously, to solicit social or financial support - presented as aligned with management vogues or current government policies, for example - or be shaped by the limitations on what can be said in public about projects that may have involved confidential aspects.

These ideas do not sum to one perfectly integrated 'vision' of service design. Ideas about service design vary substantially between practitioners, and indeed these fracture lines - points where someone describing service design like *this* (e.g. as *mainly concerned with new ways to exploit digital data for commercial ends*) gives a picture of it that is very little like *this* (e.g. a highly participatory practice devoted to working with local communities) - were the starting point for different concepts of service design that I advance. This process itself involved drawing out assumptions or exploring ramifications; noting of absences, elisions or deflections; and other forms of critical conceptual interrogation, in the service of rendering a series of compact conceptualisations of service design. The overall depiction of service design, taken as a field, is therefore consciously *heterogeneous*. Indeed, the attempt to elucidate a spectrum of 'ideas about service design' has rendered an image of it that is considerably less homogeneous than is the discourse in general. Specifically while the discourse as a whole gravitates is largely weighted towards service design as a participatory process (at the time of writing), outlying ideas or unusual positions are included here that would be deemed less

important in a discourse analysis, but are important from a philosophical point of view, as they represent other ways of approaching the relationship between design and services.

Structure of the chapter

Each of the six main sections of the chapter is devoted to a different conceptualisation of service design. In the first, 03.02, I discuss service design as a *theoretical practice* in the formative work of Ezio Manzini and his colleagues. Here we see an early understanding of service design, articulated as a way to escape certain negative associations of product design (as consumerist and environmentally unsound). Considered as a largely academic project, this was the first coherent view in the design disciplines of services as a new medium. In 03.03, I discuss service design as an expanded form of interaction design, in which data becomes a material, in the early work of the service design studio live|work. 03.04 considers service design as an intensely collaborative, participatory practice, a position that can entertain several variations but in all of which the designer becomes a facilitator of processes of service development, rather than considering themselves the main architects of a service's creation.

In section 03.05, we examine a different way of seeing how design and services relate: that they *do not*, because the skills that go into creating services (like those of managers or marketers) are not those of designers - a position that has been inhabited by a number of service design's more vocal critics, in which to begin working with services is to cease having a meaningful claim to be a designer. A more positive version of this critique is visible in section 03.06, in which we see a view of services as the *context* for other forms of design in the work of Lucy Kimbell and Joe Heapy. Here, to *overly specify* service design as (for example) a highly participatory practice is at once to impoverish its potential richness and diminish its individuality. Lastly, in section 03.07, we move on to a kind of thought experiment: to consider that service designers are engaged in *applying design to human behaviour*, which would

differentiate them from both other design disciplines and neighbouring fields. As we will see, where this prospect has been occasionally broached by service designers, it is only to decry it - but while service designers have argued that they are not involved in 'designing behaviour', they are often found stressing the importance of 'encouraging', 'facilitating', or otherwise persuading people to adopt particular practices. This poses questions - to be answered through the rest of the thesis - about the taboo against 'designing human behaviour', how it is constructed, and whether it could be configured differently. I suggest that we might look at a history of *suspensions about designers*, namely that they might extend their practice from nonliving artefacts to human beings, as a way of developing these ideas. The chapter ends by way of a brief conclusion (03.08).

03.02 Service design as theoretical practice

In this section, we will discuss service design as in the form of a *theoretical* practice - that is, as one formulated not in the course of active design work in industry, but in the academy, as a way in which to transcend certain tensions observed at work in contemporary design. Specifically, we will examine the work of Ezio Manzini and his colleagues at Milan Polytechnic through the 1990s. This group was not, strictly speaking, the very first working in design to propose that designers needed to engage with services. In 1992, a course that described its remit as 'service design' was founded in the design school at Köln, helmed by Birgit Mager, later founder and doyenne of the Service Design Network (see Pacenti & Sangiorgi, 2010). But although this is the first documented evidence of 'service design' conceived as a design discipline in the same manner as product, interaction, architectural (etc.) design, there is little extant record of what the course involved, or of any original theoretical contribution it made to

the field. From around the same time, however, Manzini and his colleagues set about developing a comprehensive vision of 'service design', even if one that lacked the detail and sophistication that would be tempered by a programme of encounters between ideas and practice. In brief, the group developed a view of design that built on the growing ubiquity of computational technology to address social concerns and pursue environmentalist ambitions. This was a project that was to rapidly become centred on the prospect of services as a new medium for design. As we will see throughout the rest of this chapter, this work articulated, albeit in germinal form, many of the broader field's persistent preoccupations, even if later views were to extend the concept of service design considerably beyond its initial formulation.¹

We can begin our dissection of this early conception of service design with Manzini's essay *Prometheus of the Everyday: The Ecology of the Artificial and the Designer's Responsibility* (1992). The *Prometheus* essay's central contention runs thus: designers must substantially rethink their practice, applying their mix of technical know-how, on the one hand, and ability to craft images of the world as it could be, on the other, to the production of new, 'environmentally conscious' and socially responsible systems of living. The essay was animated by new technology - particularly networked electronics - and the possibilities it affords for constructing new systems of social co-ordination. In this, it reflected a long tradition of architectural experiments in creating visions of worlds to come, one best represented by oeuvres, simultaneously iconic and utopic, of Archigram and Superstudio in the 1960s. Like these projects, the 'ecological' systems that Manzini speaks of are framed in a cybernetic register; Manzini gives especial attention to the work of Gregory Bateson (cf. Pickering, 2010, on the influence of Bateson, amongst other cyberneticians, on architecture schools.); and as architectural historian Larry Busbea puts it, *Prometheus* amounted to a 'more contemporary model' of the same (2009: 199).

The 'more contemporary' status of Manzini's essay was only in small part an issue of newer technology, although the growing ubiquity of telecoms equipment in everyday life - even before the widespread advent of the mobile phone and the Internet - certainly registers its effects on Manzini's text. What is more insistently novel in the essay is the way in which Manzini grants *urgency* to an exploration of the technological possibilities these devices present to designers. In the first case, *Prometheus* is heavily influenced by the environmentalist thinking that began to make some headway in design circles in the '70s and '80s - for example, Victor Papanek's warning-song *Design for the Real World*, with its (in)famous opening claim that there 'are a few professions more harmful than industrial design, but only a very few of them' (1972: 1). And secondly, but no less importantly, Manzini does not think that literally *unsustainable* practices of design *should* be sustained, and he issues a social critique indebted to the fierce jeremiads produced by the mavens of 80's cultural theory - Baudrillard, Virilio, and Jameson, whom he liberally cites. Deftly coupling these influences, he writes:

technology is distributed in the banal forms of gadgets, disposable products, and ephemeral objects lacking any cultural significance. A feeling of generalised transience, an impoverishment of sensory experience, of superficiality and the loss of relationships with objects derives from this; we tend to perceive a disposable world: a world of objects without depth that leaves no trace in our memories, but does leave a growing mountain of refuse.

Manzini, 1992: 7

Manzini remains very much interested in designers' ability to produce 'visions of possible worlds' (*ibid.* 18), but, extending the line of argument excerpted above, he argues that this must go beyond crafting think-pieces for a limited audience of fellow designers. These visions are not

experiments to be lauded in architecture schools or the art circuit, unlike (for instance) Archigram's work (see Spiller, 2006). Designers, Manzini asserts, need to create images of desirable futures that are not just 'possible', in the broadest sense of being, in theory, feasible, but actually *practicable* - and not only does this mean 'technologically viable', but *desirable to the wider public*. In Manzini's vision, 'the designer provides scenarios that visualise some aspects of how the world could be and, at the same time, presents it with characteristics that can be supported by complex ecological equilibria, which *are acceptable socially and attractive culturally*' (*ibid.* 19, emphasis added). The designer, that is, must conjure 'scenarios' that could plausibly be found attractive by the public at large, and presented to them. They should be *achievable*, and part of doing so was to depict not 'closed worlds' - clearly fictional visions - but objects and systems that could plausibly inhabit 'real life'. Tony Dunne, in the introduction to his seminal book *Hertzian Tales* (1999), summarises thus:

Manzini outlined a role for the designer that offers a fresh perspective... He suggests that the days of the design visionary are over and a weariness with utopian visions has set in. Instead, he suggests that the designer can use his or her skills to visualise alternative future scenarios in ways that can be presented to the public, thus enabling democratic choices between the futures people actually want. Designers could then set about achieving these futures by developing new design strategies to direct industry to work with society.

Dunne, 1999: 13

Prometheus already contains, in embryo, the tenets of a worldview that was later to become very popular in design: the need to, and potential gains of, placing design advantageously in a 'post-industrial' economy, concerns about the environmental status of design and the quality

of life inhering provided by industrial society, and the asserted ability of designers to 'make tangible' possible ways of living (see for e.g. Thackara, 2005, the subject matter of which is almost identical). But at this point, Manzini does not detail specifics of how this 'new role' for the designer is to be enacted in practice, a task that was to be taken up in later work.

The idea that the design of *services* might be an appropriate way effect these ambitions emerges with full force in a series of essays published after *Prometheus* (see Pacenti & Sangiorgi, 2010). These essays included one co-authored with Elena Pacenti (Manzini & Pacenti, 1995) and, building on the latter's 1993 Master's thesis, reprise that essay's concerns while taking services as their object. As Pacenti was to later reflect, her work of that time was inspired by what she considered 'the growing importance of services in contemporary economies', and saw in the design of services 'a potential strategy to move the actual system of production and consumption towards environmental and social sustainability' - that is, the means to effect the *Prometheus* programme (Pacenti & Sangiorgi, 2010: 27).

As well as identifying services as the strategic medium through which to effect the 'social good' and environmental sustainability, work at Milan articulated service design as an evolution of *interaction design*. In the ascendent at the time (cf. Moggridge, 2007), interaction design offered a way for the design disciplines to engage with services on several levels. Pragmatically, the expansion of the Internet produced a spate of organisational redesigns by service operators - that is, they began to develop websites, something that was, at the time, emerging as its own sub-field of design. But interaction design's focus on the *interface* was also to drive the conceptual development of service design, beginning with Elena Pacenti's doctorate under Manzini in 1998 (see Pacenti & Sangiorgi, 2010). Her central contention was that the many points of contact between people and contemporary services - websites, but also helplines, reception desks, tills, and so on - could be seen, in aggregate, as *a single interface* between a

service and the people using it. It is at this point that a new take on services emerges with design: the service not as simply an 'ecology', like a complex architectural programme, but as a *technical object* that has a 'user' who interacts with it. As Daniela Sangiorgi, another of Manzini's former students, observes, this renders service design's remit 'as the design of the area, ambit and scene where the interactions between the service and the user take place', allowing 'an analogy between the design of advanced interactive devices and the design of services, suggesting a shift from the interpretation of services as complex organisations to one of services as complex interfaces to the user' (Sangiorgi, 2009: 416).

This conceptualisation of a service as an object that is 'used' ties well with the view of services as *commodities*, taken in disciplines that neighbour design but have been historically involved with services' high-level specification, namely marketing and management. And it was from these fields that Pacenti, and subsequent service designers, were to draw much of their vocabulary (cf. Pacenti & Sangiorgi, 2010). Since at least the late 1970s, these fields had taken the development of services as posing particular challenges, distinct from those around producing and retailing products (Vargo & Lusch, 2008a). So there was much to draw on: services have 'touchpoints', points of interaction between an organisation and a 'user'; the 'user' experiences a range of these touchpoints over time, amounting to a perceived 'journey' made up of interactions with the service over time - a vocabulary for, and theoretical position on, services that has become part and parcel of service design as it exists today. Interaction design thus provides a way 'into' services as a designed proposition, both practically (as many services were being (re)developed to take advantage of digital networks) and conceptually (the service as an object that is 'interacted with' by its 'users').

The relationship between design and services articulated here, therefore, can be glossed as at one level an expansion of interaction design to more complex interfaces, but at a different level

the pursuit of environmental and social goals. The details were relatively slight, as one might expect from a project that is more concerned with formulating a vehicle in which to depart from (especially) product design, with its ties to consumerism and mass-manufacture, than articulating a destination. However, with services as a medium through which social and environmental agendas might be effected, and their design seen as an evolved interaction design further enhanced by concepts drawn from fields experienced in developing them, a relatively systematic and robust 'minimal template' for service design was articulated at Milan in the 1990s. If it was at this point more of a theoretical than a practical proposition, it did not remain so for long, as we will see; and it was further developed in several different directions, each of which comes to articulate the relationship between design and services differently.

03.03 Service design as evolution of interaction design

If Pacenti and her colleagues had situated interaction design as the means for designers to begin to engage with services, this has been taken considerably further by some of the earliest exponents of service design as a fully commercial *practice* in the early 2000s, the London-based studio live|work. More than any other service designers before or since, live|work's first decade of operations took as fundamental the relationship between digital interactions and designers' possible ways to relate to services, presenting service design as an evolved interaction design that took *data* as its material and aimed to use it to reimagine relationships with everyday products and environments.

Founded in London by Chris Downs, Lavrans Løvlie and Ben Reason in 2001, live|work was one of the first design agencies to describe its remit specifically as *service design*. The studio's

ambitions for the practice were unabashedly commercial, but its founders also took pains to conceptualise and disseminate their ideas through writing, presentations and teaching (for example, as tutors at the now-defunct Interaction Design Institute Ivrea) - an approach that has helped cement the studio's projects as touchstones for service design practice in industry and the academy (e.g. see Vaajakallio, et al. 2009).

The studio's predication of service design on interaction design is clear in even their first project, *Loom*, initiated while Downs and Løvlie were studying interaction design at the Royal College of Art (where their tutors included Tony Dunne and Bill Gaver, who had previously worked with Pacenti; e.g. Gaver, et al. 1999). While a student, Downs had experimentally auctioned 800 pages of personal data - telephone bills, receipts, etc. - on Ebay, which attracted 422 separate bidders and finally sold for £150 (Black, J., 2002). While there is little new in the recognition of consumer information as valuable (it has been the stock-in-trade of marketing since its emergence over a century ago; see Kornberger, 2010), *Loom* derived from the appreciation that, in theory, organisations might pay the individuals who produced the data for rights to it - in contrast to the current system, in Britain and much of the world, where the organisation which *collects* the data from transactions owns it by default. *Loom* envisaged instead the production of 'personal data markets', and proposed a digital system that would allow individuals to sell (or not sell) some or all of the data they produced to organisations.

Although a conceptual rather than 'real-world' project, *Loom*'s ingenious approach to data privacy issues through a service model suggested that an attention to services might lead designers to work in very different areas than they did at the time - in this case, direct involvement in the development of financial systems. The project came at a time when a great deal of attention was being paid to a developing 'post-industrial', 'information', 'knowledge' or indeed 'service economy' in the Global North. Services were frequently claimed to 'now'

comprise a large percentage of national accounts - as much as sixty or seventy percent of such, and in some cases more. These claims, which persist in the service design discourse, are perhaps more contentious than is usually acknowledged. The fraction of an economy attributable to services is dependent on how one defines both 'services' and the boundaries of that economy. Some widely-used accounting methods figure Euro-American economies as considerably less based on services (or 'information', 'knowledge', etc) than 'sixty to seventy percent'. Such figures almost invariably relay gross domestic product for countries that have increasingly off-shored manufacturing to other territories; gross national product of countries that have relocated their manufacturing base overseas tends to place services as a hugely smaller component of the national accounts. Likewise, the growth of specific types of service in these countries, notably the handling of international financial transactions, have seen soaring turnovers in line with policies of financial deregulation across much of the West. (The reader is referred to Sergio Parinello's *The Myth of the Service Economy* (2003) for an introduction to related issues, the title of which bluntly anticipates his conclusions.)

Nonetheless, even *without* a sudden, sharp and significant increase in the importance of services in Europe and America countries, we might concur with Nicola Morelli's point that the very possibility of service design 'requires a thorough rethinking of the role and nature of products themselves, and consequently a strategic repositioning of the design profession' (Morelli, 2002: 17). 'At the very least', write Benjamín Real and his colleagues in a recent article, 'we cannot continue only thinking about products, we must also pay attention to the way each of these products are delivered and the added value given through the service' (Real, et al. 2009: 1). Live|work's vision of service design was in full agreement, and located the opportunities presented to designers specifically in the possibilities of working with a vast system of digital data exchange - i.e., the Internet - and the proliferating global digital interactions it hosted. Indeed live|work's early work embraced a shift from 'designing the

interface' (*pace* Pacenti) to a focus on 'designing what the interface is an interface *to*'. In their words, '[w]hen you deepen an interaction beyond the interface and think about the network, you eventually end up at the service' (quoted in interview with Moggridge, 2007: 413).

This boosted the creative (and commercial) potential of interaction design, particularly around the use of *data* as the principle material for their work (as opposed to, as we will see, more social, collaborative understandings of service design). Service design is, in this view, largely predicated on designing means to *exploit* data, and the possibility of new technologies to collect and connect it. The company was later to adopt the maxim 'data is the new oil', a turn of phrase that Michael Palmer credits to the marketer Clive Humby (Palmer, 2006). As *live|work* director Ben Reason and his colleague Jeremy Walker describe:

Oil has fuelled our economies to a greater and greater extent as the raw material from the ground has been refined into a wider range of products. From aviation fuel to complex plastics, it is the range of applications that makes oil so valuable. The same applies to data. Properly refined, our relatively recent ability to share, store, compute and analyse huge amounts of information can transform the way we live and work. However, we believe that in the case of data it will be the services, not products, developed using these rich sources of data that will create new value in the future... We need to refine the data into services.

Reason & Walker, 2009: no page

As well as an enticing new market, the association of oil and products with past forms of design, and data and services in the new service design, also embodies an update to Manzini's concerns about design's environmental impact. We see how this fostered ideas about the

power of data-driven services in another early live|work project, a collaboration with Streetcar, a London-based car-sharing company launched in 2004 (and later, in 2010, to merge with an American counterpart, Zipcar).



Fig. 03.01 Streetcar interface.

Streetcar's basic service was simple: the company owns a fleet of cars that are parked around a city; Streetcar members are able to locate these cars online, reserve them, unlock them with an RFID-equipped card, and drive them (fig. 03.01). This is an example of *servicisation*, an unwieldy word for a simple idea that is so eloquently explained by Carleton Christensen (2007) that his description is worth quoting in full:

The basic idea is simple: people typically want only the services provided by products, not the products themselves. They typically want photocopies, not photocopiers, access to diverse places, not cars, clean clothes, not washing machines, sawn logs, not chainsaws, and so on. So people could have the things they want if they simply bought the services when they needed them rather than buying the material things which provide the

service. If, however, the economy were arranged around service provision, then the same material things could have multiple users, could be more durable and could be better maintained since the service provider would have an interest in a longer rather than a shorter product life, and so on. A service economy would reduce the materials and energy intensity of economic activity.

Christensen, 2007: 1

We see in ‘servicisation’ a very literal version of Pacenti’s suggestion that services can be treated as comparable to products. If a service is a *technical object* that a ‘user’ can ‘interact’ with to achieve a specific effect, then one could take a current product, and devise a service that achieves the same effect. While a sensitivity to the environmental impact of objects’ production, operation, and disposal is of course desirable, it is questionable whether this can, alone, achieve the roughly *ten-fold* decrease in resource intensity that widely quoted contemporary estimates suggest is necessary (Vezzoli & Manzini, 2008: 6-8; cf. Fry, 2009). ‘Servicisation’ implies, instead, that far fewer products might be produced in the first place, and those that *are* could be embedded not in a regime of personal ownership but of networks of activity that allow people to *access* the product when they want to.

One way to figure service design, then, found in (but in principle separable from) live|work’s focus on data and technology, is that it primarily concerns producing schemes of co-ordination of and access to resources, rather than new objects to be purchased. As such, the relationship between design and services figured in this view of service design is not just that data can be used to create new *types* of service through a kind of deepened and generalised interaction design, but that it is able to *transform* relationships with existing products. John Thackara, in his influential book *In the Bubble* (2005), describes this as the gateway to a ‘less stuff, more

people world', founded on the principle that 'you are what you use, not what you own'. But servicisation is *not*, as Christensen notes, a rebuff to 'consumerism' itself. Indeed, live|work's logic of environmental sustainability was *based* on making services attractive, speaking of need to cultivate 'service envy' to wean people away from a culture of material acquisition (live|work, 2008) - another way, if subtle, in which the 'interaction design approach to services' positions the service as new form of commodity product. This is a vision of service design with an ambivalent relationship to the next model of design and services that we will consider, in which service design is seen as a *collaborative* process more than the elaboration of a 'service product'.

03.04 Service design as collaborative practice

A recognition of the importance of networked digital technology to contemporary services is common to the 'theoretical practice' and 'evolved interaction design' conceptions of service design we have seen in the last two sections, and it is, indeed, acknowledged more widely. However, if it is seen as vital, then interface design or the use of data is accorded a lesser position in the style of service design we will explore in this section. Here, digital technology is acknowledged to provide new opportunities for design - but largely as a means to communicate and coordinate 'communities' around a service. As we will see, this is a conceptualisation of service design that is more interested in the practices status as a vehicle for *collaboration* and, especially, inclusion of 'end-users' as active participants in the design, and indeed deployment, of services. Correspondingly, there is re-description of the designer as a facilitator and curator of bottom-up processes more than the 'author' of a services. This is a simple description of a complex position, and we will see that the idea of *service design as a collaborative practice*,

while conceptually straightforward, encompasses a spectrum of positions about how far the designer is to play a creative versus a facilitating role, and likewise how far collaboration is useful to achieve practical ends versus its being valorised as an end in itself.

To begin, let us return to the idea of *servicisation* of products. Ezio Manzini, in more recent work than we saw in section 03.02, has recognised the importance of services as a means to provide access to products, but has also sounded cautionary notes about the kind of consumerism that, we observed above, limns the idea of ‘service envy’. Writing with Carlo Vezzoli, Manzini has warned of ‘servicisation’ as the marker of a *heightened* consumerism, a sham in which the image of ‘the world as a supermarket’, full of products to buy, is displaced by that of ‘the world as a themepark’, full of ‘experiences’ to be ‘consumed’ (Vezzoli & Manzini, 2008: 20). If such a manoeuvre was to be ‘elaborated in a short-sighted economic background, as is unfortunately common’, the authors write, the result will be

a supply of *experience packages*, conceived and realised in the exact same way as traditional goods: as something meant to be consumed fast and in big quantities... [under this model] *to live well* signifies a possibility to gain access to a series of entirely pre-programmed and pre-designed experiences, as long as one has the money to pay for them.

Vezzoli & Manzini, 2008: 20

What is the alternative? Let us briefly reprise the example of car-sharing. Car-sharing has a long history as an informal practice, organised in an *ad hoc* way by people who share a common destination for reasons mundane (as in the ‘school run’ familiar to many European and American families) and less so (fig. 03.02).



Fig. 03.02 A US propaganda poster by Weimar Pursell, circa 1943: refusing to share is equated with the treasonable act of assisting the enemy.

What is noticeably different about *this* form of car-sharing, as opposed to that offered by Zipcar or similar rental services, is that in the latter, one does 'share' the car with others but never necessarily meets them. We might call this 'temporal' sharing, and contrast it with a situation where one journeys in others' company: 'spatial' sharing. The ability of service design to *connect* people in this way, potentially creating new and highly collaborative interpersonal

encounters and ultimately relationships rather than simply making more use of the same products, is key to the idea of service design as a collaborative practice.

Manzini's advocacy of this idea occupies one extreme of perspectives about how far service design can be envisioned as such. From 2000, the industrial design department at Milan has conducted enormous surveys of 'already-existing' services around the world, with the intention of making 'promising cases' available as 'service ideas' to be reproduced elsewhere, or at least serve as inspirational models to be emulated. One example is 2007's compilation *Creative Communities* (Meroni & Bala, 2007). The partial outcome of EU-funded study called *Emerging User Demands for Sustainable Solutions* (EMUDE), the document presents 56 examples of the titular 'creative communities', for which Manzini's most succinct definition is 'groups of people who co-operatively invent, enhance and manage innovative solutions for new ways of living' (Jegou & Manzini, 2008: 30). That is to say, they are 'grass-roots' services, put together by small-scale entrepreneurs, and are selected specifically as 'promising cases' for service design on the basis that they demonstrate, *simultaneously*, 'social', 'environmental' and 'financial' benefits. The cases presented in *Creative Communities* range from the development of community gardens to recycling systems for used construction materials, to networks involved in the home delivery of locally grown organic produce; they are presented as models of intensely local, 'community-led' services, involving a good deal of interpersonal interaction, to be emulated as the new components of everyday life. As people *chose* to create these services rather than being 'top-down' initiatives of governments or corporations, they would seem to at once provide 'a different approach to designing services' and receive Manzini's seal of approval: 'desired by the public' (see 03.02).

These 'promising cases', taken to herald at least the possibility of far-reaching societal (re)invigoration, are one aspect of what has become the paramount project of service design in

this view: a profound alteration of the role of the designer. As Manzini puts it, this recognition reformats the role of the contemporary service designer to be

first and foremost the development of the communication, design and strategic skills necessary to recognise, reinforce and transmit, in an adequate manner, the ideas and solutions generated at a social level, transforming them into original working proposals and endowing them with greater potential in terms of large scale dissemination, and to find ways to institute them in the most efficient manner.

Manzini, 2007: 14

The intention underlying this approach is to curate and disseminate ideas which might be acted on by the populace at large, 'packaging' ideas judged 'promising', and distributing them for redeployment elsewhere. That is, according to one view, 'the citizens are the protagonists, providing entrepreneurial answers to specific social demands by relying on their energy, passion, creativity and mutual trust', and this (although by what exact mechanism is not specified) 'will engender a sense of democracy that helps to achieve equal opportunities for all' (Un, Rocchi & Green, 2007: 149).

Few designers have been as eager as Manzini and his colleagues to reinterpret their professional role as the selection and repackaging of 'new ways of working' generated by others. But this downgrading of the designer's (assumed) authority, from *dictator* of artefactual form to *assistant* in the production of services by members of the public, can also take less extreme forms. Consider, as a contrast, the work of the RED Unit, a 'think-and-do tank' set up by the UK's Design Council shortly after the foundation of the first service design agencies (Engine Service Design, in 2000, and the aforementioned live|work), to conduct small-scale projects on issues of public concern. RED dubbed its practice 'transformation design', and

associated it with wide-ranging transformations of the relation between governments, businesses, and everyday life. The RED team envisioned, and through a series of very small projects attempted to enact, a form of design practice as focussed on 'the creation of new roles, new organisations, new systems and new policies' as it was with more 'traditional' outcomes of design (Burns, et al. 2006: 21). And this was tied, very closely, to social agendas. 'It's here', the team's senior members wrote, 'in the idea that even organisations could be designed objects, that transformation design's real potential for effecting fundamental change is revealed' (*ibid.* 18); on this basis, RED head Hilary Cottam and her colleagues were to opine that a 'new design discipline is emerging', one that 'builds on traditional design skills' to 'address social and economic issues' (*ibid.* 6) - and later claimed to address, at least potentially, even the 'big social challenges of our century' (Cottam, 2010), in the face of a perceived crisis of 'conventional' political ways of addressing social problems (*ibid.*, see also Winhall 2006a, 2006b).

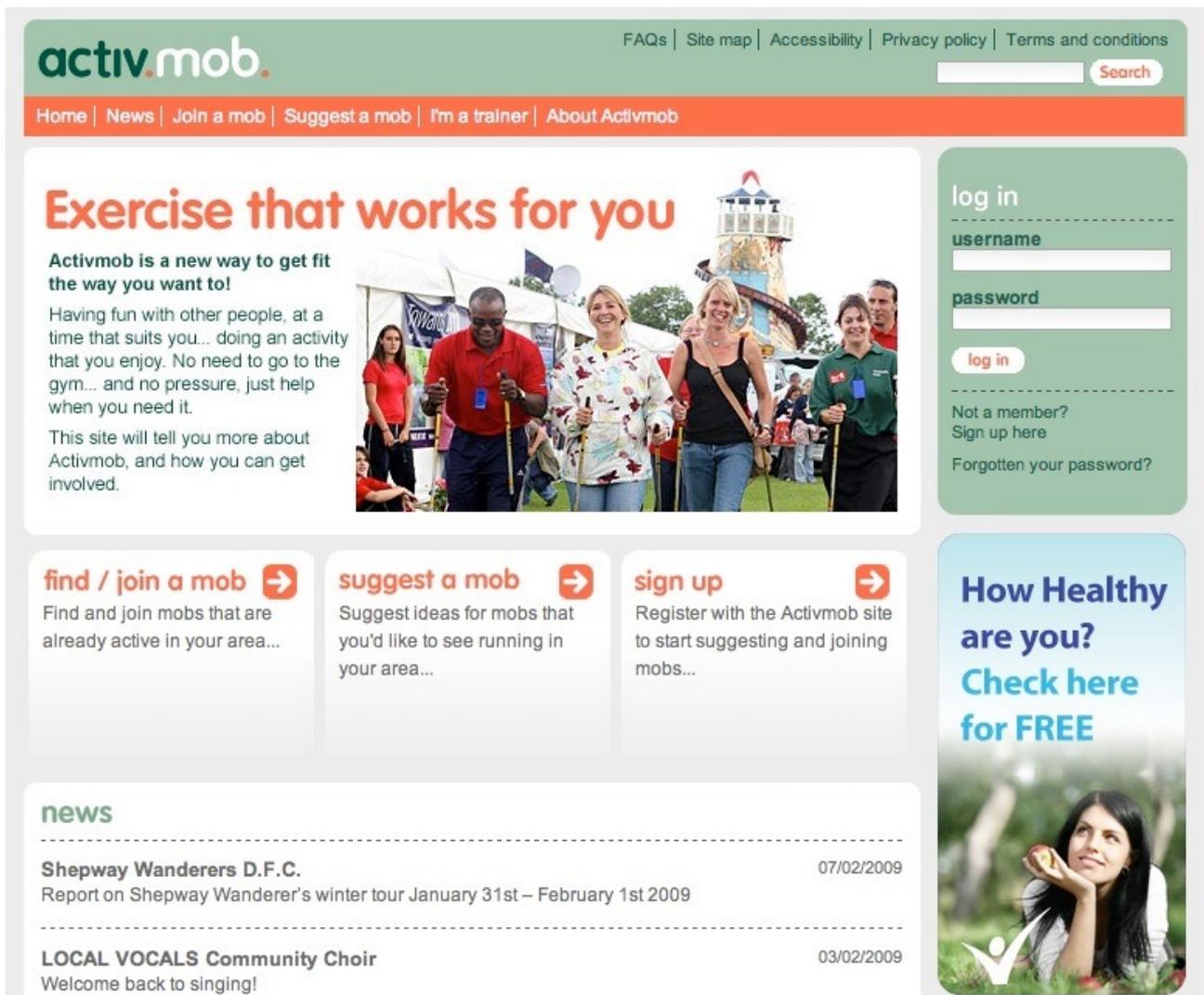


Fig. 03.03 Activmobs website (www.activmob.com).

An example, like many of RED's projects healthcare-related, was *Activmobs*, 'a system that supports people [to] stay active in later life' (Burns, et al. 2006: 14) by providing web-based tools to help find others who shared an interest in pursuing particular activities, from walking their dog to hiring a personal trainer. 'The system', as the RED unit describe it, 'builds on very human motivations, such as socialising, peer pressure and aspirations (the idea of having one's own personal trainer, for example), and gives people simple tools that help them visualise and gain feedback on their progress' (*ibid.*). In RED's work, as with Manzini's, service design is coupled with social issues as a collaborative practice, with the designer as the facilitator of popular participation, but the role of designer is more conventionally creative. Explicitly positioned as an aid to *governmental* processes of service provision, the RED unit's approach

also emphasises a set of practical benefits of highly participatory processes of service design and provision, more than it lauds participation as a good *in itself*. However, the idea that there is an *inherent moral value* to service design, conceptualised as a participatory practice, can be certainly be associated with this position. As such, just as Elena Pacenti and live|work developed a view of service design that saw in it an extension of interaction design, service design can also be positioned as a further development of ‘user-centred’ design practices, in which emphasis is explicitly given to the user of a product (or in this case service). As an illustration, consider an article published by the Design Council in July 2010, in which its chief design officer, Mat Hunter, is quoted thus:

In the bad old days we started with designer centred design, and then we were enlightened and we moved to user-centred design. And then we got even more sophisticated and we started to design with, not just for. And now we're thinking about co-production. It's not even enough to design things together. We now must produce them and run them in this collaborative way.

Hunter, quoted by Design Council (2010a)

As Hunter tells it, a self-indulgent past arcs into a penitent present: the (supposed) once-upon-a-time excluded ‘user’ who had the design of the environs in which they subsisted inflicted upon them from an elite professional class is progressively incorporated into decisions about how those environs should be put together. This is a moral as much as a technical progression - positioned not just as ‘more sophisticated’ but increasingly ‘enlightened’. The desired position of ‘servant leader’ encoded in this last idea can be observed service designers claim that their practice is primarily distinguished, *vis-à-vis* other design fields, in terms of *the values it embeds in its practice*. Jeff Howard, for example, has sought to differentiate his service design from interaction design specifically by *claiming* that ‘service designers intuitively understand

the distinction', because '[o]ur values help set service design apart' - namely '[service designers are humble. They embrace participatory values, particularly the idea that we should be designing *with* people and not *for* them' (Howard, 2010).

It is unclear that this collaborative focus deeply differentiates service design from other schools or styles of design - especially the kind of practices that underpin *participatory design* as a distinct field (see Ehn, 1993; we will have cause to return to some of these ideas at length in Chapter 05). But it is certainly clear that is not only in the product of service design - the services themselves - but in its *process* where designers can bring a collaborative logic to bear.

This is clear in the examination of the practical side of service design that has been the persistent focus of service design conferences,³ journals,⁴ press coverage, courses,⁵ and research programmes.⁶ In particular it is centralised in dedicated repositories of 'tools' for service designers, whether digital (such as the website *Service Design Toolkit*, www.servicedesigntoolkit.org) or in print (e.g. Miettinen & Koivisto, 2009; Stickdorn & Schneider, 2010). Descriptions of these tools frequently stress their value as ways to systematically promote *collaborative working* in the service development process. They are intended as means to forge connections between and amongst service designers, 'users', service providers, or whichever other stakeholders can or must be involved. We see these 'methods' positioned as ways to 'guide, facilitate, critique, propose, listen, communicate, and accelerate discussion among project stakeholders' (Akama, 2009: 6), and as 'tools [that] help move innovation through an organisation as everyone involved is able to share and critique proposals', allowing designers to act 'as translators between different teams or organisations' (Reason, 2008: 39). In part, this has a practical rationale, operating as a way to secure 'buy in' from potential clients, staff, and funders of the service (e.g. Yee, et al. 2009).

In turn, these tools are often configured as means to grasp the 'user's experience'. They are ways to extrapolate, simulate, or otherwise anticipate and develop the 'experience' of the 'user' of a service (usually not around a single touchpoint, but across a whole course of encounters with the service, as when one goes into hospital or other extended 'service journeys'; cf. Stickdorn & Schneider, 2009: 1). Embracing a kind of *indirect* participation, many 'tools' are dedicated to user research. Most of these are, in fact, simple staples of qualitative research, such as participant-observation approaches (for example shadowing service staff or customers), conducting interviews, and distributing questionnaires. But they also include ways to *communicate* this experience, for example storyboarded service journeys or the use of *personas* (fictional characters embodying market segments, observational data or both, who might be, for example, granted a minimal back-story about why they are using the service, and what they want to gain from it) as 'proxy users' in discussion and ideation. (For comprehensive discussion of these approaches, see Miettinen & Koivisto, 2009).

But if service design is, according to such accounts, largely concerned - at least on a practical level - with 'putting together all the different parts [of a service], without forgetting the consumer gets the most attention' (Trevett, 2010c), this concentration on 'the user' is also a means for different groups to work collaboratively. Fran Samalionis of IDEO, for example, describes the service designer's role as one of translating 'diverse languages into the common language of the consumer and tell the consumer's story in a way that will fire their imagination' (Samalionis, 2009: 130); as she writes, people from different backgrounds can 'understand the language of consumers, as they can all relate to the universal experience of being one'; *ibid.*). As is hinted here, the 'common language' of 'user experience' also marks out these 'tools' to be 'involvement techniques' (Holmlid, 2009: 8), helping clients to 'to engage emotionally as well as rationally with their users' (Parker & Heapy, 2006: 106).

In sum, the conceptualisation of service design as a collaborative practice positions the relationship between design and services such that designers aid others to contribute to services, both in processes of development (as in the emphasis of participatory processes of service development), or in the functional structures of services (as in the promotion of services that are structured in such a way so as to support the collaboration of members of the public). As we have seen above, this can be pursued to differing depths. It can not only be seen as a pragmatic measure or as a moral position (or both). The designer's role can also be configured as an agent of collaboration, from being a provider of the means to instigate and assist collaborative working practices in general ('collaborative working tools' or performing the task of 'translating' between different groups), to becoming a pure facilitator of services that emerge spontaneously in a 'grassroots' way (Manzini's role of the designer in which the intended locus of 'creativity' is ceded from designers to 'communities'). Nonetheless, what is consistent in this conceptualisation of service design is that the creation of services is seen as a collaborative venture, and that the role of the designer is to provide the tools to effect this.

03.05 Service design as no longer design

In the previous sections, we have seen a series of different ways in which service design might bring designers together with services. But despite the field's burgeoning popularity, doubts might be entertained about its distinctiveness as a practice, and one possible conceptualisation of the relationship between services and design is that, at least insofar as it dispenses with 'traditional' design skills, it is simply *not design*.

Certainly some ideas introduced in the previous sections seem highly *particular* to service design: the idea of data as a material, or that a service designer's role should be 'to recognise, reinforce and transmit, in an adequate manner, the ideas and solutions generated at a social level' (Manzini, 2007: 14). But these are relatively idiosyncratic conceptualisations, more related to the practice of a specific designer or group thereof than to 'service designers' in general. In the previous sections, we have seen service design understood as related to existing practices - building on interaction design, for example, or manifesting a new depth of 'user-centred' design practice. Sometimes, the distinctions become blurry. Service design's close ties to interaction design, for instance, mean that its trajectory echoes developments in the latter field. The movement of computing from an expensive rarity, through desktop computing as a near-ubiquitous feature of Euro-American workplaces and homes, to the global proliferation of mobile devices, has created new opportunities for interaction designers more generally. It is by no means clear that contemporary interaction designers do not engage in very similar practices of research, development, and indeed the specification of services as do service designers (see for example many of the practices of interaction design reviewed in the now-classic text by Moggridge, 2007). Elsewhere, in a case we have alluded to in the previous section, some service designers have argued that the field's focus on participatory practices is its principle mark of distinction. But again, the participatory, collaborative practices many service designers have spoken of have considerable resonance with existing ones, especially, for example, the conventions of 'Scandinavian' participatory design (cf. Ehn, 1993).

Insofar as service design *explicitly* claims an engagement with services and organisations as the central concept and identifying feature of its practice, it does possess a degree of differentiation from other design disciplines. But this is troubled by its resemblance to practices that share similar concerns but are *not* 'design'. Put differently, the distinctiveness of service design *as a form of design* can be called into question.

For example, Lucy Kimbell writes that service designers address ‘all of [the] interfaces or ‘touchpoints’ between a service organisation and ‘the customer (or other end users) as something to be thought of holistically’. Where in ‘many organisations, the arrangement of these interactions with a customer may well be handled by a number of different departments, replicating the conventional divisions in management thinking between operations management, marketing and IT, for example’, service designers create a single, coherent, intentionally planned customer experience (Kimbell, 2009e: 1-2). This is in some sense a problematic description; its resemblance to marketing practices extends beyond the borrowed word ‘touchpoint’. Specifically, the figure of the *account planner* emerged in marketing in the 1960s and was well-established by the 1980s, predicated as a role precisely on being ‘a representative of the point of view of the consumer’ within an organisation, and co-ordinating the various aspects of research, development and production from this position (Lury, 2004: 11). Indeed, account planning built in turn on earlier practices of positioning qualitative customer research as central to the creative process that date back to the 1920s (see Packard, 1958, for a classic account; for a more contemporary perspective, see Kornberger, 2010). The destination does not seem novel, then, even if service design may have reached it from a different route (e.g. building on user-centred practices in interaction design); we might say that service design, so configured, now appears as the latter-day rehearsal of a role that already exists. And specifically, a role that is not only extant but that is so *outside* design.

There are many more ways in which how service designers have come to describe ‘their’ way of engaging with services simply aligns with existing practices in other fields. Practitioners of ‘service science’ (e.g. Chesbrough & Spohrer, 2006), contemporary operations management (e.g. Blackmon, 2008), and, particularly, service marketing (e.g. Vargo & Lusch, 2008a) describe their practice in almost exactly the terms that service designers do: the standard business school

textbook *Services Marketing: Integrating Customer Focus across the Firm* is on its fifth edition (Zeithaml, et al. 2008). 'New kinds of service' in which service designers profess an interest, predicated on the collaborative potential of digital networks, are ideas that have become central to contemporary organisational discourse; many organisations, from large corporations to small religious groups, have at least expressed the desire to reformat themselves in part along these lines (Thrift, 2005). As Sophia Parker and Joe Heapy note in *Journey to the Interface*, their 2005 manifesto for service design, the redevelopment of public services 'around the user' became mainstream UK government policy in 1997; and recalibration of government service development in the West towards 'bottom up', participatory service models, has been in process for some time (cf. Cottam, 2010, Cooke & Kothari, 2001b). Service design, in this case, fits design into a well-established context, rather than offering 'new solutions' that are unique to it.

So conceived, service designers duplicate what many other fields do. This should not in principle, of course, bar them from doing so - if indeed they are in possession of the relevant skills. Kamil Michlewski (2006), in an excoriating review of the literature on 'designing thinking', observes that especially since the 1990s, designers have frequently attempted to argue that they are entitled to an 'expanded' organisational role; but the evidence of designers' competence to do so is thin. To announce that a given designer, let alone designers *as a class*, are good at empathising, collaborating, or dealing with complex systems (to give examples he cites as particularly prevalent and persistent), is not to demonstrate that they are. Proof, rather than assertion, is, as Michlewski notes, conspicuous by its absence. This is the hallmark, Michlewski writes, of an 'evangelistic line' adopted for the purpose of 'unequivocally 'selling' a positive message about design and designers to the business world', but, at least from a rigorously academic point of view, with 'virtually no evidence of any critical debate about designers' skills and place in an organisation' (*ibid.* 75).

Michlewski repeatedly makes the point that such 'aspirational' accounts tend to downplay designers' *actual* skills and abilities, in the quite traditional form of being *able to make artefacts of various kinds*. If a designer adopts the same practices as a marketer, then why should they not now be regarded as a marketer - why argue, that is, that what they do is still 'design'? Critics of service design from *within* the design community have certainly made the allegation that, insofar as service design constructs services, it is not design. Scathing attacks, especially when service design began to attract serious attention around 2004-2005, have alleged that moving away from 'established' products of design adulterates the meaning of 'design' beyond any reasonable measure, bastardising the practice and sullyng the good name of designers whose work takes a more traditional form. Hilary Cottam, in particular, has been the target of considerable opprobrium within the design community, singled out for her high profile for criticisms that have a more general force than the specifics of her work.

Cottam's receipt of the Design Museum's coveted *Designer of the Year* award in 2005, for the design of the Kingsdale school in South London, provoked a substantial roster of influential commentators into outcry. With regards Cottam's design for the school, the eminent design critic Deyan Sudjic opined that 'the trouble is she did not design it' (Sudjic, 2005). Cottam was, Sudjic writes, involved in lobbying, fundraising and consultancy, not *design*; the school was *designed* by the architect Alex de Rijke, in collaboration with the Architecture Foundation, on the one hand, and the staff and pupils of the school, on the other. Even a trustee of the award-conferring Design Museum itself, interviewed by Sudjic on the condition of anonymity, acknowledged that Cottam's receipt of the award was akin to 'nominat[ing] a major publisher like Victoria Barnsley of HarperCollins for next year's Booker prize' (*ibid.*). And Sudjic's is not an isolated outburst. Amongst detractors of her early work on services was Mike Dempsey, then Master of the Faculty of Royal Designers for Industry, who publicly opined that it was 'very

worrying that the term designer is now so abused', asserted that Cottam and her colleagues were better described as 'organisational impresarios' than as 'designers', and entreated on the behalf of his fellow professionals: 'can we please have our name back?' (quoted by Burns, et al. 2006: 25).

These criticism are certainly *conservative*, and little argument is posed by Sudjic or Dempsey as to *why* 'design' should apply to a given set of media (why 'the design of a school' must *necessarily* be the design of its architecture, for instance, as Sudjic implies) other than appealing to a traditional understanding of the range of materials that designers work with. Such arguments nonetheless hold some degree of force. It may not be problematic to see service design as specialised form of an established practice like interaction design, but arguing for its special status as a more 'collaborative' venture, for example, risks confusion with the activities of other fields that develop services. However, as we will see in the next section, it is quite possible to consider a form of service design that rehabilitates traditional design skills with services.

03.06 Service design as design in the context of service development

If we acknowledge that some conceptualisations of service design risk an undue resemblance with other fields, we might consider building a kind of halfway house, in which 'traditional' forms of design are not seen as incompatible with services but rather find a new home under their auspices. That is, focussing on what designers might bring to processes of service development - considering services simply the *context* in which (some) designers work, applying interaction, graphic, product, architectural, and other forms of design to them.

This is an idea already present, as in the previous section, in the idea that designers might lend their skills to aiding collaborative practices. It is more substantially a conclusion reached by Lucy Kimbell in her ethnographic work examining what practicing service designers actually *do*, premised on participant-observation of a series of encounters between service designers and commercial companies on scale from small start-ups to large multinationals (as part of the *Designing for Service* programme she stewarded at Oxford University; see Kimbell & Siedel, 2008). As in other, recent ethnographies of design practice (e.g. Yaneva & Latour, 2008), Kimbell finds that the most neglected aspect of designing in the kinds of ‘high level’ accounts above, the simple fact of skilled material practices of visualisation and, especially, projecting new scenarios, is paramount to these projects, and something that distinguishes what design practitioners do from the practices of people schooled in other fields. Kimbell sees a variety of approaches - including those recounted in the marketing and management literature - as different approaches to service design in general, as a kind of ‘interdiscipline’; and the involvement of designers, with ‘traditional’ design training, is one aspect of this. What designers bring to services and organisations are a set of very specific approaches that allow them to work with other people in particular ways - ways that are, in large part, based on techniques of visualisation, and the exploratory approach that they afford, as various visions of parts of the service are drawn up (literally and figuratively) and the possibilities for the future service that they present can be opened to debate and critique.

This is particularly useful where services are especially complex, and designer’s visualisation skills might create purchase on situations difficult to grasp abstractly. One set of tools associated with this idea are means to visually map operational sequences and dependencies, for example in the form of the *service blueprint* (a concept first introduced by marketing doyenne Lynn Shostack in her somewhat ambitiously titled 1982 paper *How to Design a Service*). A service blueprint is an abstract map that visualises the relationships between all

the different elements of a service - that is, the people, things, and spaces that must be choreographed for the service to occur. Effectively, a service blueprint is a flow chart or operations map that details all the interlocking processes that make up a service, and aids the consideration of a service 'as a whole' (e.g. Pires, et al. 2004).

Other practices can 'bring services to life' in particular ways - for example, in a practice sometimes called *evidencing* (e.g. Moggridge, 2006), service designers produce mock-ups of parts of the service, like bills, receipts, logos, offline websites, depictions of service environments, etc. But these touchpoints are not always inert; they are often, as in the case of a website or a phone conversation, active engagements in an interactive situation. At the largest scale, there are *service prototypes* - essentially, realistic but adjustable and temporary service environments or touchpoints in which 'clients' and 'staff' can meet - or *service pilots* - i.e., small-scale roll-outs, for instance a single new design for a car dealership, accompanied by carefully monitoring of what transpires in its early stages to adjust the design of forthcoming branches (cf. Kimbell, 2011). Design here takes on a theatrical relationship to services, wherein the service is enacted in bits and pieces in a privileged space, outside run-time operation (in the case of prototypes), and these partial samples are related back to the service as a whole. Parts of services are *simulated* through visualisation, combined with tactics like role-play that *animate* sections of the service, allowing the procedures that make up the service to be 'brought to life' in partial, provisional ways. This allows experimentation with what the service *does* and *how*, without being constrained by the pressures of fully live operation. Here, services can be slowed down or paused, and causes reverse-engineered from desired effects - which, in turn, allows the prospective design of a service to evolve.

Relatedly, Joe Heapy (2012), co-founder of Engine Service Design, details a link between 'services' and 'design' *less decisively expressed* than has tended to be the case in previous

work. Heapy presents a view of 'service design' as the influx of design practices - 2D, 3D and interactive - into a cluster of areas related to the word 'service', finding a place for design in: the expansion of manufacturing businesses from product design into distribution, customer support, and other forms of client service; the development of data-intensive services, like those based around website applications; the converse movement by service businesses into the realm of product design (for example, Amazon's *Kindle* range of ebook readers); the redevelopment of large-scale utilities and infrastructural systems; and, intriguingly, '[e]cologies of physical products linked through software and services', especially *cloud computing* - in which electronic objects like mobile phones or laptops function as terminals to physically distant data centres that store media and perform computational 'heavy lifting', especially under the remit of the notion of 'software-as-a-service'.

Heapy does not make specific claims about the actual or potential role of design practice in these areas, but instead suggests 'service design' as a general category by which they might infiltrate into new areas while maintaining quite clear connections to existing expectations about what (for example) an 'interaction designer' does. An explanation of service design of this kind is at once more humble, more precise, and possessed of wider scope than many of the conceptualisation of service design we saw in previous sections. It is an eminently reasonable conceptualisation of service design - a highly *plausible* account, in which service design might relate its component words in many different ways, and over-specification, for example in prioritising the role of digital technology or collaborative working methods, simply serves to unduly limit the possibilities.

03.07 Service design and the design of human behaviour

However, there is a final way in which we might consider the relationship between services and design, one we can find mentioned by service designers, but not to date embraced by them.

Like the conceptualisation of services as a context in which designers work described in the previous section, this approach looks closely at the *materials* which designers work on. This is where we hove in on the question that service design opens with respect to human behaviour as the object of design: could it be that, in service design, *human behaviour* is a new material to which design is now applied?

This is not an absurd claim, although - as we shall see - service design's proponents find it problematic, on the rare occasions when it is addressed directly. To broach this point in detail, let us examine first the idea that services are 'more complex' than products, because more must be taken into account - more objects, involved in more processes. This complexity, then, is a *logistical* complexity, relates to the difficulty of co-ordinating the interactions of large ensembles of components. Service design is understood to be 'a departure from existing traditions that conceptualise design as based on tangible products or interactions with technologies', because the work of service designers is 'not so much concerned with designing artefacts, but rather arranging entities into sets of relations' (Kimbell, 2009e: 10, 7). While we might appreciate her point, it would seem fair to say that considering how someone uses an artefact is already 'arranging entities into sets of relations'. Indeed, the artefact *itself*, on its own, is a 'arranged set of relations': a car compounds shaped glass, all kinds of metal components, fabrics, paint, plastics, and so on (cf. Lury, 2004). What Kimbell actually describes is a point of *similarity* between artefacts and services, not a difference. And indeed, she observes that, in her ethnography of services designers, 'the distinction between products and

services did not seem important in their work' (Kimbell, 2011). The most obvious point of connection between design and services in service design is the idea of treating people, like any other 'entity', as material to be moulded. If a service is a *designed artefact*, the *people* are what - at least in part - it is *made from*. And both sourcing ideas 'from people' through 'participatory' processes, and securing their consent to act, do not change the intellectual-cum-disciplinary challenge that 'designing a structure made of people' presents.

Clearly, designers have a longstanding tradition of organising human activity, but they have done so *indirectly*, through shaping artefacts that make possible, invite or assist certain courses of action, and present obstacles to others. In service design, the situation shifts. It is now, at least potentially, *directly* concerned with human behaviour. This is all the more salient when we recognise that the *fundamental idea* of 'designing a service' does *not* necessarily entail logistical headaches - if there is a newfound complexity to it, it is of quite a different type. While service design - as we saw above - is often understood by its proponents as continuing and intensifying the development of 'user-', 'human-' or 'people-centred' positions, in design, these positions, ultimately, imply a kind of 'minimal situation' that involves a *person* and an *artefact*. Put simply, the idea is that the artefact should be responsive to what that person wants it to do; under no circumstances, it would seem, should this relationship between 'people' and 'things' be a relationship of *similarity*, where people are treated *as* things. But services pose an incredibly difficult problem for this position. The 'minimal situation' a *service* designer might be confronted with is *one that involves two people*. No 'things', no 'artefacts', at all - unless, of course, one or both of the involved parties are, in some or all dimensions, considered as objects.

It seems that here we have stumbled on a barely visible problem, one rarely spoken of directly, but at the same time substantial: the potential applicability of design practices, forged in the

making of products, directly to human behaviour. In one of the exceedingly rare head-on confrontations with this problem in the service design literature, Lara Penin and Cameron Tonkinwise (2009) point to the ‘tension within service design concerning the extent to which interactions between people can be designed’:

What differentiates service design from all other forms of design is that it is primarily the design *of* people, rather than the design of things *for* people. This makes service design unavoidably political... [W]ithin the notion of service design lies the question of the limits of design, of what can and cannot be designed, but also of what perhaps should not be designed even if it could be. To what extent is service design really a sub-discipline of design, deploying the same methods as are used to determine the nature of products and their production? In which case, is service design treating humans like objects, something that ought not to be done and in most cases cannot in the long term be done?

Penin & Tonkinwise, 2009: 1-2

Note here the assertion that design both *cannot* (‘long term’) and *ought* not to be done - the second point relying on the tendentiousness of the first, one might observe, as there is no little point levelling an interdiction against the clearly impossible. Nonetheless, while it is *acknowledged* that human behaviour is potentially the object of design in the practice of service design, such a perspective is immediately to be *rejected* if it is shown to be occurring.

This creates a very thorny predicament for a set of practices - to wit, ‘design’, considered as a whole - that *do* work with nonliving objects; therein lies their distinctiveness and expertise: now it approaches the domain of human behaviour. We see in Carla Cipolla’s work (2008) the

problems this is thought to entail. Cipolla, a former student of Manzini, speaks of the challenge that a form of service design conceptualised around an intense concern for participatory collaboration poses to the 'standard service model'. In this 'model', the person providing a service is

an employee: he/she is part of the service like a part in a mechanical operation. He is part of the service solution, but he participates on an anonymous basis. Another [employee] can substitute for him and the service will still work well. Some relational output can be generated, like friendship or intimacy, but this is not seen as an essential part of the service operation, i.e. it is an unexpected result.

Cipolla, 2008: 153

That is, the 'standard model' treats people as components in a system to be designed; service designers wish to avoid this, by focussing on 'relational output... like friendship or intimacy'. '[P]eople involved must be mainly considered as presences', Cipolla writes, 'not as arms and brains operating according to a definite plan: it's necessary to go beyond that' (*ibid.*). This raises, though, a serious conundrum, as Cipolla recognises:

Interpersonal relations, however, cannot be designed... it is only possible to design meta-services oriented to stimulate and facilitate interpersonal encounters... if we want to conceive platforms of services that are oriented to reproduce the creative communities' best practices - or are inspired by these practices - these solutions need to be designed to promote interpersonal relational qualities between participants.

Cipolla, 2008: 153

What is particularly problematic about this conclusion is that in some sense interpersonal relations *can* be 'designed', and clearly are, and constantly; Cipolla means, perhaps, that they *should not* be seen as objects of design. Cipolla, although she appears to state a 'solution', instead reveals a different kind of problem. What she suggests it either not really service design, because it is not 'designing services', merely providing (in this case, unspecified) tools that 'help services come into being'; or, this *is* service design, and it based on more diffuse, probabilistic processes of construction that we might expect. That is, one might question, what, exactly, differentiates 'designing' interpersonal relationships (which 'shouldn't' be done), and 'stimulating' or 'facilitating' specific forms of them to come about.

Cipolla's conceptual separation of 'design' and more diffuse and probabilistic engagements with human behaviour is re-enacted widely in the service design discourse, which is replete with assertions that people's behaviour should not be 'controlled', yet certain kinds of behaviour should nonetheless be *cultivated*. Disavowing top-down planning, Hilary Cottam and Charles Leadbetter nonetheless opine that service designers must 'encourage new norms of behaviour within society' if their initiatives are to be successful (2004: 5), because these intensely participatory services will only be feasible 'when people are mobilised in their role as citizens, co-producers and consumers' (Stø & Strandbakken, 2008a: 171). If designers are 'to turn the pyramid upside down', we are told, they must 'explain the value of it to people so they aren't so cynical' (Currie, 2010).

There is something very strange about the treatment of human behaviour as the object of design in these passages. It is something that 'cannot be done', yet it seems eminently plausible; or it *shouldn't* be done, because it would 'reduce' people to the status of machines - but it is clearly not so straightforward, as the distance between 'designing behaviour' and

‘encouraging new norms of behaviour’, ‘mobilising’ people in the required fashion, ‘persuading’ people of the value of some proposition, and so on, are as of yet indistinctly differentiated. Perhaps it is the case that we simply need to explore further what designing human behaviour might mean, in practice. Seeing human behaviour as the object of design is, in fact, at least one way in which the contribution of design to a broader field might be marked out as distinctive, compared to the operations of marketers or managers - and indeed lawyers, economists, psychiatrists and many others who make it their business (literally and figuratively) to lay normative claims on the conduct of interpersonal affairs. In a further development of the comments made on Simon, above, perhaps design can be seen as implied in other fields through its applicability to human behaviour, and we do indeed need a richer view of it if this is so; but more than this, perhaps design can in fact bring a particular *perspective* on such a situation. It may be that, framed as design, certain phenomena which are not apprehended well by our habits of political, moral, or ethical thought might bring to light - an alien perspective,, but not necessarily one without value.

I would suggest that such a project would not necessarily seek to *inform* service design, in particular - to extend, enhance or ‘complete’ its project as a subfield of design in its own right. We will head in a different direction than efforts to develop service design *per se*. While service design might persist as a reference point - it is, after all, through service design that we came to the point of disembarkation on the venture, and service design, as a model of dealing with (or failing to deal effectively with) the question of human behaviour as the object of contemporary design remains ; in this sense, perhaps ‘counterpoint’ rather than ‘reference point’ is more apt a term. But this project might, against this foil, deepen our understanding of what we think taking ‘human behaviour as the object of design’ might consist in, tracking the intellectual roots of the abhorrence service designers show for the phrase, and prospecting for new possibilities in understanding it in a more positive, or at least alternative, light.

How would we structure such an endeavour? I will contend that we might approach this by constructing a constellation of ideas about how this question has been addressed by looking at related ideas that have emerged historically, while also casting the net wide in a geographical sense. To guide such a project, we might entertain the conceit that we are developing an understanding of ideas focussed on *suspensions about designers*. In this context, by ‘designers’, I mean, simply, people who shape nonliving artefacts - something close, in fact, to lay expectations about what people who call themselves ‘designers’ do (cf. Milestone, 2007a, 2007b). This is the designer in the familiar, everyday sense of someone who devotes much of their time to organising nonliving material stuff into forms like buildings, dresses, and mobile phones; people for whom ‘thinking about objects’ is a ‘profession and avocation, and the chance to do more of that is considered to be [an] opportunity’ (Sterling, 2005: 21); the kind of designer that Dempsey and Sudjic implicitly expect a designer to be. And by ‘suspensions’, I mean voiced concerns that these makers of wares might add living human beings to a palette that more usually includes minerals (metal, stone), parts of animals (like leather or bone), plant material (such as wood, or cotton) and, latterly, synthetics (plastics, pixels).

03.08 Conclusion

In this chapter, we have explored service design as a general phenomenon, a practice that can be conceptualised in heterogeneous ways: variously, as a vehicle of sustainability, a means to pursue a governmental programme, the exploitation of data networks, the assistance of ‘communities’ in providing services to one another, a new context for ‘traditional’ skills of visualisation, and so on - indeed, even simply as *something other disciplines do and designers*

don't. We have seen too how the field broaches - in a way that is not at all obvious in other design disciplines - the possibility of applying design *directly* to human behaviour, although within its own disciplinary matrix, when this prospect arises at all, it appears as only as a problem.

Inadvertently, it would seem, at least one conceptualisation of service design as a kind of contemporary 'disciplinary project' of design, an attempt, that is, to formulate a new practice, brings the design disciplines into a space better known as the territory of politicians, lawyers, ethicists, and so on. The outstanding question is whether designers might contribute anything to situations of this kind, other than effecting programmes sanctioned by others - that is, do designers have an independent voice to contribute, in a chorus that includes many other fields (better established, and at present, almost needless to say, generally held to speak about it in a tone of greater authority). At the same time, how this 'design perspective' on human behaviour might take shape is unknown.

Perhaps one way to approach this is to consider it in historical context. If service designers have been conscious that their practice involves *suspensions about designers*, namely that they might take human behaviour as their object, then perhaps we can explore these ideas in greater detail. Tracing how links have been made between the construction of artefacts, on the one hand, and shaping of people's behaviour *as a comparable activity* might furnish us with a renewed perspective, and this is a task that begins in the next chapter, *Craft and Being Crafty*.

NOTES

1. Much of the early Italian work has not been translated into English, and many of the early ideas have gained a wider audience through their reiteration in later, English-language, writing from Milan. A useful brief history of service design's Italian inception, written by two of the figures involved, is Pacenti & Sangiorgi (2010).

2. The first international conference dedicated to service design, *International Service Design Northumbria*, took place at Northumbria University in Spring 2006. Since then, specialist conferences have multiplied, and indeed become regular fixtures - since 2008 *ServDes* conference has been an annual fixture, and Service Design Network has convened 1-2 conferences per year.
3. For example, the Service Design Network's peer reviewed journal *Touchpoints*.
4. A partial list of institutions now offering service design as a specialisation or substantial component on a degree programme includes Aalborg, AHO, Carnegie Mellon, CIID, Domus, ELISIVA School of Design, Gothenburg, IIT, the ITP programme at NYU, Köln, Linköping, Lucerne, Northwestern, Politecnico di Milano, the Royal College of Art, RISD, Savannah College of Art and Design, the School of the Visual Arts in NYC, UC Berkeley, and Utrecht.
5. Amongst others, these include the *Designing for Services* programme at the Saïd Business School, Oxford University (Kimbell & Siedel, 2008), the *Design Activism* programme at Leeds Metropolitan University (beginning 2007), and the second iteration of the publicly-funded *Designs of the Time* series, *Dott Cornwall*. Service design has also featured prominently on the initiatives like *Design Denmark*, *Managing as Designing*, *Design for the Other 90%*, and the V&A's *ThinkTank: The Future Designer*, as well as ongoing research enterprises like *Sustainable Everyday* (www.sustainable-everyday.net), and *Service Design Research* (www.servicedesignresearch.com).
6. Well-trafficked blogs include Jeff Howard's *Design for Service* (designforservice.wordpress.com) and Lucy Kimbell's *Design Leads Us Where, Exactly?* (designleadership.blogspot.com), which often highlight and cross-reference ideas in the field, a function also achieved by informal networks like the international *Service Design Thinks* operation, which organises meetups for those working, or interested, in service design (www.servicedesigning.org/).

04 Craft and being crafty

04.01 Introduction

We left the last chapter with a specific observation: that service design broaches the possibility of human interaction taken as a subject for the design disciplines - not *indirectly*, through the use of an artefact that mediates the encounter between people, but *directly*, in specifying how this encounter arises and proceeds. Service designers have done little to engage with the basic question their practice, as a form of *design*, raises about the relationship between people and designed things (and perhaps for good reason, as it is dangerous ground, morally and politically speaking). Where the service design discourse makes much of being ‘user-’, ‘human-’ or ‘people-centred’, insisting that people and things are different and that the latter should be responsive to the desires of the former, service design also raises the question of how people and things are *similar* - that is, how people, and their behaviour, is something to be designed.

And we concluded the last chapter by noting that, perhaps, this is not an entirely new situation. We have no reason to think, *a priori*, that such suspicions are a historical novelty. Human beings are material structures, after all (even if one believes them to be animated by some nebulous, non-fleshy vitality: mind, soul, spirit), and it does not stretch the imagination to understand how someone could see their behaviour as being ‘structured’, ‘crafted’, ‘designed’. Surely other people, albeit possibly in quite different situations, have raised this issue before.

But *how* has this question been raised before? A browse of the design literature reveals little - or rather, much as in the last chapter, many suspicions are hinted at, but they we only very rarely find them acknowledged directly. We will have to look to other literatures to construct a history of these misgivings.

The most visible, if still usually implicit, suspicions about designers extending their practice from the shaping of nonhuman objects to the direct shaping of human activity tend to take the form - as we saw in Carla Cipolla's work - of designers 'objectifying' human beings, treating them like 'things' (and especially 'machines'). This is an understanding of 'the design of human action' as potentially implying the ordering of human bodies as though components within a machine, condemning them to enact abstract plans imposed on them from above. This is, of course, the very stuff against which service design so vocally rebels, through an attention to 'people's experiences', a preference for the 'bottom up' over the 'top down', the embrace of values like 'community' and 'wellbeing', and, above all, an insistence on 'starting with people' if design is to be a 'force for good' (as we saw in the last chapter).

But, although it is very deeply internalised in contemporary Global North cultures, this is actually a relative newcomer, philosophically speaking; it gains full force around the time of the Industrial Revolution. It will prove important to investigate this particular suspicion, a task we will undertake in the chapter that follows this one. In *this* chapter, we will explore one of the longest-running suspicions about designers - but one that is, surprisingly, never directly mentioned in contemporary design discourse. It is part of a much longer tradition of misgivings about designers *vis-à-vis* organising human behaviour that is expressly *not*, as one might reflexively assume, about a sort of proto-totalitarianism, under which human beings were, by and large, not accorded 'modern' standards of dignity. It is rather the suspicion that the design of artefacts is one mode of expression of a cunning, devious mentality, one that elicits improbable effects from unpromising materials, and is the means by which the weak come to prevail over the strong - an ambivalent prospect, as the 'weak' and the 'strong' only sometimes, and from some positions, coincide with the parties we would deem 'good' and 'bad'. As we will see in the present chapter, *this* suspicion about designers is one that has emerged, independently it seems, in different cultures, over a huge wash of time. Indeed, this suspicion

is still deeply present in the Western popular culture today - but it is completely absent from formal design discourse.

Structure of the chapter

By way of a general introduction to this venerable and widespread set of suspicions about designers (04.02), we begin by noting the eerie and apparently unerring relation between terms associated with design, like 'craft' or 'scheme', with the particular sensibility indicated by words derived from them, like 'crafty' and 'scheming'. To explore the genesis of these connections, we then wind back to a very old expression of concern about this connection (which, as we will see, has proven persistent and re-emerged in many quite separate cultural situations) between design, deceit, and manipulation. Our starting point is Plato's prohibition on the creation of hunting traps, which he believed would foster what he saw as the 'wrong' kind of political sensibility, and how traps have figured in other cultures as a link between design and knavery (04.03). These commentaries have what we be called today a distinctly *ecological* bent, based on the manipulation of situations by materially intervening in them in oblique and timely ways - a quality of action that is best fleshed-out by an extended look at a form of intelligence that Plato, along with Aristotle and all the other major theorists of ancient Greece whose perspectives have been handed down into contemporary Euro-American culture, ignored or decried: *mêtis*, the forgotten companion-term to *poesis* and *techne*, which denotes skill with materials guided by a kind of cunning intelligence (04.04).

The rest of this chapter develops our understanding of *mêtis*. We see how *mêtis* operates through timely and roundabout interventions in a shifting environment, a quality that is most evident in moments where something radically *new* is produced - but which leaves traces, too, in the most humble forms of craft. We also see how this has, historically, attracted suspicions that designers *continually disturb the world*, making it ever-more suffused with cunning and

traps (04.05 and 04.06). Towards the end of the chapter, we explore how this also is manifest in interpersonal affairs as a strange kind of ‘infrapolitics’, which isn’t easily compatible with what we usually call ‘politics’. *Mêtis* is, as we will see, implied where the *weak* prevail over the *strong*, but it has nothing to say about which party we judge sympathetic (04.07). The chapter ends with a brief conclusion, which makes some final observations on *mêtis*, and notes its apparent disappearance from design discourses, a phenomenon that we discuss in more detail in the chapter that follows this one.

04.02 Dictionary traces

A wealth of words that are used in design, neutral, technical, certainly unremarkable and even quite bland terms, have a secondary association that relates to interpersonal behaviour, and they have a very particular inflection. Imagine that we, like the Czech philosopher Vilém Flusser (1999), decide not just to look to designers, philosophers of technology, or other assumedly expert commentators on matters of design, to inform our understanding of ‘what design is’, and instead simply browse a good English dictionary to discover the meaning of the word ‘design’ and the various terms related to it. A dictionary, after all, lists how words are used in expert but also in non-expert ways, and across a long history - they chart the meanings that are lost, archaic, latent, or rarely used, as well as related terms (synonyms, antonyms, and so on) - the associations that a word picks up along its history; and, as Flusser found, the compilers of the dictionary give us a quite different sense of design than do specialist authorities on the subject matter.

Indeed, we might be forgiven, after a short foray through the dictionary, for coming to the conclusion - as did Flusser - that 'designers' sound like particularly unlikeable people: apparently a 'designer is a cunning plotter laying his traps', Flusser observes (1999: 17). How would we come to this (as people concerned with design) rather insulting conclusion? Firstly, 'design', as a noun and a verb, means ('among other things', Flusser carefully qualifies), a *scheme*, a *plot*, a *concoction*, and a *simulation*, 'all these (and other meanings) being connected with 'cunning' and 'deception' (*ibid.*). Words like *plot* and *scheme*, usable in some contexts as synonyms of 'design', form *scheming* and *plotting*, activities or character traits linked to duplicity and conspiracy. 'Design' arises not only in the innocent phrases like 'he designed a building' but the considerably more dubious 'she has designs on him', or 'he has designs on the throne' - phrases that communicate someone secretive, unscrupulous, manipulative. Indeed, even 'manipulation', literally meaning nothing more suspicious nor foreign to the designer working with his materials than 'handling' or 'moving with the hand' (as when clay is manipulated, for instance), implies something insincere when we say that someone is 'manipulative'.

Nor would you be alone with Flusser in picking up on these unpleasant connotations. Wolfe, whose commentary on the overlap between the language of machines and courtesy we saw above, notes the frequency with which 'terms such as 'machine', 'engine' and 'device' have been defined 'as synonymous with fraud, cunning, and other non-mechanical forms of power that work by deception or obfuscation rather than force', ever since the first recognisably modern dictionaries appeared (2004: 10). 'Cotgrave's 1611 French-English dictionary', Wolfe writes, defines *engin* as 'toole' or 'instrument', but, additionally, as 'understanding, policie, reach of wit; also suttletie, fraud, craft, wilnesse, deceit'" (*ibid.*) Around the same time, Shakespeare had his angsty Prince Hamlet deploy 'a cunning and artful 'device' or plot, which is conceived of in terms of the devious skills of a military engineer. Unknowingly, [Rosencrantz

and Guildenstern] are carrying letters that will condemn them to death'; Hamlet congratulates himself on out-engineering his the scheming and plotting courtiers - 'for 'tis the sport to have the engineer / hoist with his own petard' (Sawday, 2007: 99). Such machinations - another term that links machines with deviousness - will, ironically, see Hamlet-the-engineer hoist from *his* own petard.

While, as in this case, a sort of devious cleverness has often attracted 'designerly' imagery, it is, intriguingly, *not* the case that technological terms always began life describing machinery and were later transferred to human affairs. The earliest appearances of 'technology' in European dictionaries, for instance, defined it as 'the art of verbal artifice'; only later did it acquire an association with what we would understand as 'technological' systems - as was the case with the related Italian word *ingegno*, in the 17th century CE denoting wit, cunning, or acumen, later to machinery (Wolfe, 2004: 10-15). Indeed, sometimes, all kinds of spatial and conspiratorial ideas have been wound together into a complex braid, as we see with the word *plot*. In its contemporary usage, 'plot' has a range of senses: it can be used to describe a spatial geometry, especially in the form of a drawing; it can refer to narrative, as in the plot of a book or a film; and it also has a further, more conspiratorial sense, implying a secret plan.

Henry Turner recounts how these associations were layered through the 16th and 17th centuries CE. The original use of 'plot' was to describe a section of land - a sense still present in the word today, when we speak of a 'ground plot'. It refers to a simple marking-out of space, and is therefore also associated with legal titles to territory - that a particular zone of land that belonged to someone. Associated as the word 'plot' was with architectural construction and agricultural work, in the sixteenth century the interchangeable words *plat*, *platte* and *plot* had come to mean 'the minimal material representation of an ideal geometrical form'. This was 'terminology taken from the workshop': 'the schematic working drawings used by the mason,

carpenter and surveyor are called 'plats' or 'ground-plats' in building contracts as early as the second decade of the sixteenth century' (Turner, 2006: 70; it is not clear how 'plat' and 'plot' separated (*ibid.*); 'plat' lived on in 'plat-form', while a fuller range of associations came to be housed under 'plot'). In the late 1500s CE, that the word *plot* begins to spread its range of meanings from a relatively small space, on the one hand, and a working drawing that that schedules interventions in a such a space, on the other, to encompass a broader spectrum of meanings. The hands-on profession of the *playwright* - we still use this word, with its artisanal undertones, rather than speaking of *playwriters* - began to use 'plot' to describe the arrangement of people and things on the stage (or 'platform'). It was through the adoption of this word that 'plot' began to take on a narrative sense: The 'plot' of a stage-play originally denoted *plotting* as the geometric arrangements of items in relation to each other - i.e., the 'spatial, geometrical, and topographic' sense of 'plot' as a design term (*ibid.* 39), but here, a geometry of actors, props, scenery, and so on, arranged, in motion, so as to tell a story. In the working notes of playwrights and directors of the time, there is frequent mentions of 'the need to convert 'storie' *into* plot', a process of 'dramatic emplotment' (*ibid.* 195) that was both necessary, difficult, and potentially rewarding in artistic terms.

Here, then, the meanings of 'design' and 'plot' converge, firstly, in the sense of 'imagining an action that unfolds forward in time', and secondly and more particularly, 'of thinking about action in concrete spatial circumstances, action that was forced to respond to specific environments, physical obstacles, and counter-actions even as it reshaped the circumstances in which it took place' (*ibid.* 230). Indeed, design and plotting were seen as so closely related that Cotgrave's dictionary of 1611 translated the French *desseign* as design and plot, as though the two words were near-synonyms (*ibid.* 229). And so, 'plot' shifts from describing an inert space, to the activity of 'plotting out' the use of that space, and acquires a narrative sense when the action 'emplotted' involves actors, props and scenery, arranged with respect to one

another so as to best tell a story. And so a spatial term becomes translated into a narrative one, so thoroughly, in fact, that when we now speak of the plot of a book, the spatial sense is underplayed almost to the point of invisibility. Around the same time, the less neutral sense of *plotting* also emerges - as in, to give a high-profile example, the description of the failed attempt to bomb the House of Lords on November 5th 1605 as *the Gunpowder Plot*. This sense of plot, as in a 'plot against the king', is of particular interest to us. Turner himself has little to say about it directly. He does not that the use of the word in this sense was already present in the French *complot*, roughly meaning 'plot' in the sense of an 'intrigue, design, or a strategy of action, particularly one of harmful intent' (Turner, 2006: 229). Certainly, there is a proximity to be observed between *this* kind of plot and a *theatrical* plot - that is, how *plotting* can imply malevolence and conspiracy. The 'plotter' of a narrative, who arranges objects and people on the stage so that a particular story plans out according to their design, is, after all, *nowhere to be seen on the stage*. 'Plotting' is something done out of sight - in the wings, as it were.

As innocent as a trip to the dictionary may be, it seems that here we have stumbled on something strange here, a set of transactions between design and a certain kind of orientation toward the organisation of (other) people's behaviour, something that connotes cunning, guile, wiliness, acumen, chutzpah - a link perhaps most economically expressed by two terms we have yet to mention: *craft*, on the one hand, and *being crafty*, on the other. There is perhaps a temptation to dismiss these associations as merely surface effects, 'figures of speech' that have no real weight, amounting at most to an etymological curiosity; in short, to write these odd associations off as a set of coincidences - albeit strangely consistent ones, one given the number of terms we have listed - from which there is nothing more to be learned. But, as we will see, the sense of a certain *deviousness* to design that we can faintly detect in this brief survey has not been dismissed in the past; if anything, it has often been seen as an obvious connection. The sense of *craftiness* imminent to *craft* has now largely disappeared, from formal

design discourse, at least. But as we will see here, in cultural moments that have seen a continuum between the creation of designed artefacts, on the one hand, and courtly intrigues or military acumen, on the other, the idea that craft might be held up as an innocent, 'socially responsible' model of technological practice, something transparent and wholesome, would have seemed utterly absurd.

In the next section, we will begin to develop the line of inquiry that we have opened here by looking at a very old text by a very eminent philosopher - Plato's final dialogue, the *Laws* - which will help us understand these ideas better, calling, as it does, for the design of a certain kind of artefact - the trap - to be suppressed, on the grounds that learning to make and use them will foster the 'wrong' kind of political sensibility.

04.03 Plato's trap

Let us... ask ourselves what animal traps reveal about the human spirit... Do animal traps, in their bare, decontextualised presence, tell us no more than that human beings like to consume animal flesh?

Gell, 1999: 199

Plato's *Laws* is believed to be the last of his dialogues, penned sometime around 350 BCE. Plato's mouthpiece in the text is an unnamed Athenian, who expounds to his interlocutors - a Spartan citizen, Megillos, and a Cretan politician and lawmaker, Kleinias - on the laws that would be adopted in a 'perfect' society - those strictures that would place it in harmony with the ideal Good.

Toward the end of the eighth book of the *Laws*, the conversation turns to the practice of hunting and its regulation. In some respects, this is a straightforward series of passages. The Athenian proceeds to describe different forms of hunting and the ‘praise and blame which is assigned to [them]’ (Plato, 1960: 202); he separates acceptable forms of hunting from those which must have limits placed upon them. Yet his pronouncements may seem a little peculiar to the contemporary Euro-American reader. He finds little to commend in means of securing food that are practical and efficient - indeed, *quite the reverse*. The most efficacious means of hunting - the laying of traps - should, the Athenian opines, be banned outright, while the most physically taxing form of hunting, the chasing of large wild animals, is to be encouraged.

The word *encouraged* is of considerable significance here, as we find that, in what is perhaps a further rupture to our expectations, the context in which the Athenian discusses hunting has nothing to do with the day-to-day operations of feeding a society. Instead, it arises in a section of the dialogue that deals with the responsibility of the legislator to induce the ‘correct’ values in the population his laws govern, not merely lay out what must be regarded as unacceptable breach of the common good. ‘[T]he legislator appears to have a duty imposed upon him which goes beyond mere legislation’, the Athenian tells his interlocutors. This duty is to not only forbid certain activities, but to encourage and praise ‘appropriate’ ones - ‘the praise being assigned to that kind [of activity] which will make the souls of young men better’ (*ibid.* 201). And in this context, the Athenian declares his ban on traps precisely because their construction and use is a taint on the ‘souls of young men’; more specifically, they cultivate the ‘wrong’ sort of *political* sensibility. This is the logic which underlies otherwise very strange juxtapositions in the Athenian’s description of different forms of hunting:

Let us address young men in the form of a prayer for their welfare: O friends, we will say to them, may no desire or love of hunting in the sea, or of angling or of catching the creatures in the waters, ever taken possession of you, either when you are awake or when you are asleep, by hook or with weels, which latter is a very lazy contrivance; and not let any desire of catching men and of piracy by sea enter into your souls and make you cruel and lawless hunters. And as to the desire of thieving in town or country, may it never enter into your most passing thoughts; nor let the insidious fancy of catching birds, which is hardly worthy of freemen, come into the head of any youth.

Plato, *ibid.* 202

Angling is equated to piracy, catching birds corresponds to theft. And in the passages that follow, the Athenian legislates against fowling, too, and those who 'pollute the water with poisonous juices' - that is, by dumping drugs in water to kill or incapacitate fish (*ibid.*; cf. Detienne & Vernant, 1991: 33). From the Athenian's perspective, such practices, it seems, embody an 'inauthentic' attitude toward the world; an ignoble, even *sneaky* evasion of the 'proper' effort that should attend the acquisition of food. The deployment of traps does not promote the virtues of strength, fleetness, and agility. They are 'lazy contrivances' that procure their success through technological means - or rather, and perhaps importantly, through technological systems more subtle in their design and effect than a spear or bow and arrow, which act as prosthetics that directly extend the range and power of the hunter's arm. The general rule advanced is that any form of hunting 'in which the strength of beasts is subdued by nets and snares, and not by the victory of a laborious spirit' (Plato, *ibid.*) must be abolished. '[O]nly the best kind of hunting is allowed at all - that of quadrupeds, which is carried on with

horses and dogs and men's own persons, and they get the victory over the animals by running them down and striking them and hurling at them' (*ibid.*)

For the Athenian, hunting sizeable prey (deer, for example) with dogs, horses, and personal weaponry like spears is all well and to the good; *the chase* is an appropriate way to conduct oneself, a noble, even sacred pursuit in which great skill is coupled with great effort, and large animals, highly mobile, are preferable game. Yet hunting with traps, with nets, snares, fishing lines and covered pits - all are untenable. These prohibitions must be emplaced not because they are ineffective ways to secure prey, but because they cultivate *the 'wrong' kind of sensibility*: people's use of poisons in turn poisons their souls.

What we witness in this brief meditation on the *tricky* potential of 'design' is, as we discussed above in our brief etymological survey, the concern that *craft* might directly encourage a *crafty* sensibility: the Athenian's forthright condemnation of these forms of hunting is founded in the recognition that 'all these techniques foster the qualities of cunning and duplicity which are diametrically opposed to the virtues that the city of the *Laws* demanded from its citizens' (Detienne & Vernant, 1991: 33). And Plato's decrial of traps, and those who made and used them, was not an idiosyncratic outburst. Needless to say, Plato's writings, along with Aristotle's, cast a very long shadow; he remains a philosophical point of reference today, a prominent figure on the Philosophy 101 reading list in European and American schools. And so some of the culpability for the survival of this attempt to suppress - at least in theory, if not in practice - clever practices that used machines might be laid at this door. But he did not originate these particular ideas about traps; he consolidated a more general cultural current prevailing in his time and place. Suspicions about the use of technology to contrive results without 'proper', 'fair', 'authentic' or 'natural' effort were deeply and widely felt in the Greece of Antiquity. As we will find in the next section, there was in fact a particular type of intelligence or

quality of action that Plato, and other major Greek writers whose intellectual assays still inflect Euro-American habits of thought today, that was quite well-known, and quite well-discussed. This was *mêtis*, a form of cunning, witty intelligence that was the means by which artisans, *and others*, went about designing ingenious new things. The term, as we will presently see, was lost; the culture of the time found it, on the one hand, very difficult to incorporate into the philosophical systems of the time; and on the other, and with at least equal importance, inserted a troubling undercurrent into moral reasoning that, as with Plato, meant that often it was easier simply to argue for its annihilation.

04.04 *Mêtis*, the missing term

Those who browse the more cerebral quarters of today's literature on design will be familiar with two Greek terms for constructive activity that are still deployed today: *poesis*, roughly meaning 'making', and *techne*, which approximates to 'art' or 'skill'. Both were philosophically dissected by key authors like Plato and Aristotle; Heidegger's famous essay *The Question Concerning Technology* (1958), which discusses them both within the context of his philosophy, is, on occasion, referred to. Yet at the time of Plato's inscription of the *Laws*, and for centuries before and after it, there was a third term, *mêtis*, that precisely encompassed the dimension of 'design' (as we would call it) that aroused the suspicions of Plato and others, not least because it encompassed those untrustworthy aspects of artefactual work that might bleed into the organisation of human affairs. Unlike *poesis* and *techne*, *mêtis* was barely discussed by any of the major writers whose influence persists in Euro-American culture. (And, as we will see, if the Greek authors of the time, or for that matter Heidegger, had accommodated them, these philosophies would have been quite different.) We have no English equivalent for it *mêtis*; and

where *poesis* gives us ‘poetry’ and *techne* ‘technique’ and ‘technology’, we have inherited no variant of *mêtis* (Raphals, 1992: xii). Despite the fact that it seems to have been a commonplace of everyday language in the Greece of Antiquity, and that its meaning remained remarkably consistent over the roughly thousand years from Homer to Oppian, we will not find any historical sources in which it was comprehensively discussed, as it was thoroughly excluded from formal philosophy. *Mêtis* was ‘never explicitly formulated, never the subject of a conceptual analysis or of any coherent theoretical examination’; it was mentioned in passing, but almost nothing was written about it in any of the philosophical tracts that have travelled the millennia from then to now (Detienne & Vernant, 1991: 3). Even though the concept proved ‘extraordinarily stable’, ‘it is absent from the image that Greek thought constructed of itself’ (de Certeau, 1984: 81). ‘Even Aristotle had nothing to say about it’ (Chia & Holt, 2009: 192). But it is precisely *mêtis* that Plato thought that the design of traps embodied, and sought to exclude from a perfected society. What, then, is *mêtis*?

Attempting to answer this question was difficult for the Greeks of antiquity, and remains so for us, as we have inherited many of the intellectual tendencies that made *mêtis* so difficult to grasp millennia ago (Jullien, 2004). In one of the scant attempts to resuscitate the word in recent times, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (1998), the anthropologist James C. Scott describes *mêtis* as a form of ‘know-how (*savoir faire* or *arts de faire*), common sense, experience, [or] a knack’ (1998: 311). It is a type of intelligence displayed in acts that aren’t exactly ‘skilled’ (contra *techne*), because they are often improvised; that are not exactly ‘productive’, in the conventional sense of production as ‘making an object’ (contra *poesis*), as the operation of *mêtis* does not necessarily leave a material trace. This ‘knack’ is hard to acknowledge within a grand conceptual scheme, and this lack is, for Scott, precisely why such schemes are doomed to fail when they are conceived as grand social projects. ‘Radically simplified designs for social organisation seem to court the same risks of

failure courted by radically simplified natural environments' (*ibid.* 7); they face what pioneering military strategist Carl von Clausewitz called *friction*, the features of an environment that are unknown, accorded insufficient importance, or by nature unpredictable, that suddenly emerge and derail even the most careful strategy during the course of its deployment: 'Hence the fact - in Field Marshal Moltke's words - that 'no plan survives contact' (Guha, 2010: 332). What these plans 'ignore - and often suppress - are precisely the practical skills that underwrite any complex activity', Scott continues. These 'practical skills', for Scott, are precisely the manifestation of *mêtis* (Scott, 1998: 311). Expanding on what, precisely, is lacking in these schemes, Scott describes *mêtis* as 'the kind of knowledge that can be acquired only by long practice at similar but rarely identical tasks, [and] which requires constant adaptation to changing circumstances' (*ibid.* 177-178).

Or, at greater length:

Mêtis is most applicable to broadly similar but never precisely identical situations requiring a quick and practiced adaptation that becomes almost second nature to the practitioner. The skills of *mêtis* may well involve rules of thumb, but such rules are largely acquired through practice (often in formal apprenticeship) and a developed feel or knack for strategy. *Mêtis* resists simplification into deductive principles which can be successfully transmitted through book learning, because the environments in which it is exercised are so complex and nonrepeatable that formal procedures of rational decision-making are impossible to apply. In a sense, *mêtis* lies in that large space between the realm of genius, to which no formula can apply, and the realm of codified knowledge, which can be learned by rote.

Scott, 1998: 316

For Scott, *mêtis* is very much an embodied, local, vernacular knowledge, resistant to being formalised: *mêtis* is ‘necessarily implicit, [and] experiential’ (*ibid.* 315), like riding a bicycle, chairing a meeting, or knowing from a glance at the sky that it is just about to start raining. Not readily amenable to codification, such practices do not show up in grand schemes because they are extraordinarily difficult to represent within them.

But it should be noted that Scott’s economic expression of *mêtis* emphasises particular aspects of it at the expense of qualities that, as we will find below, considerably repay further attention. In particular, Scott *does* tell us is that *mêtis* ‘is typically translated into English as ‘cunning’ or ‘cunning intelligence’, a definition that he tells us ‘not wrong’, but fails to encompass the full range of the word’s connotations (*ibid.* 313). But, to the contrary, it seems that rather than other authors failing to encompass *mêtis*’s range of meanings, he is actually making quite a lot of some of its lesser connotations, while ignoring the central point. While Scott brushes off the association of *mêtis* with guile, it ‘is tempting but misleading to reduce *mêtic* intelligence to ‘know-how’ (Chia & Holt, 2009: 196); and to shear *mêtis* of the associations of ‘trickery’ and ‘wiliness’ the word compounds with ‘skill, ingeniousness [and] prudence’ (Vernant, 2006: 12) is to considerably misrepresent it. Most other extended meditations on *mêtis* (with the caveat that there are rather few), especially those that engage with what surviving, minor Greek texts make mention of it, speak of ways in which *mêtis* is *defined* by cunning. And following their arguments helps us understand something that Scott’s account does not: why Plato should have seen the distinctly *mêtic* practice of trapping - as Scott says, a local, vernacular, etc., practice - as *politically abhorrent*, rather than just *conceptually inconvenient*.

It is the association of *mêtis* with cunning that provides the starting point for the only extensive discussion of the term to have appeared to date, Marcel Detienne and Jean-Pierre Vernant's *Cunning Intelligence in Greek Culture and Society* (1991). The book attempts to rehabilitate this lost term, once accorded great import, but in strange ways not amenable, perhaps even corrosive, to philosophical practices as we tend to think of them. Detienne and Vernant describe *mêtis* as:

a type of intelligence and of thought, a way of knowing; it implies a complex but very coherent body of mental attitudes and intellectual behaviour which combine flair, wisdom, forethought, subtlety of mind, deception, resourcefulness, vigilance, opportunism, various skills, and experience over the years. It is applied to situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic.

Detienne & Vernant, 1991: 3-4

We can see in this example as obvious connection to Scott's view of *mêtis* as know-how or knack, but also terms alien to his account, like deception and opportunism. How are we to understand what ties these various qualities together? Detienne and Vernant range out the kinds of activities in which *mêtis* is manifest. They explaining that *mêtis* inheres in

the stratagems used by the warrior the success of whose attack hinges on surprise, trickery or ambush, the art of the pilot steering his ships against winds and tides, the verbal ploys of the sophist making the adversary's powerful argument recoil against him, the skill of the banker and the merchant who, like conjurors, make a great deal of money out of nothing,

the knowing forethought of the politician whose flair enables him to assess the uncertain course of events in advance, and the sleights of hand and trade secrets which give craftsmen their control over material which is always more or less intractable to their designs. It is over all such activities that *mêtis* presides.

Detienne & Vernant, 1991: 47-48

So *mêtis* is manifest in practices of design, as we would call them today, in the 'sleights of hand and trade secrets' that render materials tractable, able to be worked on. This is all very well - a somewhat truistic point to make, even; an observation that verges on the banal. *Of course* craftspeople deal with materials, like stone and metal, that push back against their advances. And *of course* their skills are founded in ways overcoming this recalcitrance, making their materials workable - at least, this is certainly a fairly obvious take on practices of design. But it is this *mêtic* aspect of craft connects designing with the operations of lawyers, 'sophists', merchants, and others, and therefore promises a link between 'design' and the other activities listed - but *not* by appealing, as per Herbert Simon and others, to 'planning' and 'structuring' as features of design so basic that they can be seen as a kind of 'meta-activity', common to all or most human projects. Instead, *mêtis* ties design to certain other practices by foregrounding a very particular similarity they possess. All involve working with materials that are 'always more or less intractable to their designs', and techniques to make them pliable - a dynamic relationship between what is designed and the person designing it, responsive to the vicissitudes of material, and therefore necessarily improvised, at least in part. These are all points that require some expansion, a task we will set about in the next section of this chapter.

04.05 The cunning artificer

The dimension of craft production that, strictly speaking, is *mêtic* is that aspect of it which *elicits improbable effects from unpromising materials*. This is a statement that can be unfolded with reference, again, to Vilém Flusser's work, which, as we saw earlier in this chapter, engages the 'deceptive' aspects of design. Flusser is not specifically interested in the extension of design to human behaviour; rather, he has a more traditional view of design as the thinking implied in the construction of nonhuman artefacts. It is here that he looks to locate design's association with devious and deceitful behaviour. Ruminating on the subject, Flusser considers one of the humblest sorts of device, the lever:

The lever is a simple machine. Its design copies the human arm; it is an artificial arm. Its technology is probably as old as the species *homo sapiens*, perhaps even older. And this machine, this design... is intended to cheat gravity, to fool the laws of nature and, by means of deception, to escape our natural circumstances through the strategic exploitation of a law of nature.

Flusser, 1999: 19

Like a magician's trick, the lever conjures an improbable effect from materials in the environment: a person lifting a boulder. This observation is, we should note, not Flusser's own, although his writing typically shies from the academic standard of reference-giving, and we require a forensic approach to identify it. Adopting one, we find that Flusser is, here, actually restating an argument that first appears - down to the use of the lever as an example - in a pre-Archimedean Greek text, known as the *Machina* or *Mechanical Problems*. The *Machina* expounds on the principles behind oars, gear-trains, windlasses, and other ancient machines,

describes mechanics as the art which adjusts the movements of 'Nature', useful because 'Nature, so far as our benefit is concerned, often works just the opposite to it' (quoted by Winter, 2007: 1).¹ In the *Machina*, we find that the lever, and other simple machines, are described as exploitations of existing physical phenomena, redirecting them in the service of human projects:

Such it is where the lesser overcomes the greater, and when things having little impetus move great weights... The matter of the lever is concerned in matters of this type, for moving a big weight with a small force seems absurd, and the more so the bigger the weight. What a person cannot move without a lever is moved - even adding the weight of the lever - easily.

pseudo-Aristotle,

quoted by Winter, 2007: 1

Craft, in the sense understood by the *Machina*, is the art by which 'the lesser overcomes the greater', the material world cunningly bent into new shapes, guided by an ingenious form of intelligence. The environment is carefully organised *just so*, and incredibly improbable effects - like the ability of a person to lift a boulder - flow from this arrangement. It is in this sense that Detienne's co-author Jean-Pierre Vernant describes artefacts as 'traps set at points where nature allowed itself to be overcome' (Vernant, 2006: 313), and Erik Davis writes that human technology, loaded with *mêtis*, has historically been understood as 'a spell and a trick, a device that crafts the real by exploiting the hidden laws of nature' (Davis, 2004: 23).

Vernant's phrasing begins to make clearer the connection of traps to building more generally, and, in turn, the implicit link between craft and craftiness that so bothered Plato. We shall return to this point presently. In the meantime, we can note to set such a trap - an attempt to

snare the laws of physics, a blind but extremely elusive prey - requires a deep sensitivity to the materials at hand; a responsiveness, that is, to the opportunities available in the environment.

Consider the philosopher Brian Massumi's description of carpentry:

Take wood. A woodworker who sets out to make a table does not pick just any piece of wood. She chooses the right piece for the application. When she works it, she does not indiscriminately plow into it with the plane. She is conscious of the grain and is directed by it. She reads and interprets it... [She judges the wood's] capacity to be affected, or to submit to a force (the action of the plane; later, the pressure of salt shakers and discourteous elbows), and the capacity to affect, or release a force (resistance to gravity; or in a nontable application, releasing heat when burned)...

Massumi, 1992: 10

This is 'not craftsmanship in the sense of a human creation of artifice outside nature, but craftsmanship in the sense of refining, patterning and organising raw material' (Puett, 2001: 49). It may seem to stretch credibility, or at least be rather poetic, to understand or describe this activity, as Flusser does, as a form of 'deception'. But there is an element of *deviousness* implied in the manipulation of the environment, coaxing effects *from* it, rather than imposing effects *on* it by the application of force alone. The dimension of design practice emphasised by *métis* sees the designer not 'producing artificial objects', but an engagement in *artifice*, human involvement in material phenomena that otherwise would proceed quite differently. The tree that one day becomes the table of Massumi's carpenter would have continued to grow; the chopped-down tree would have laid idle, rotting away; the rough-hewn block of wood would have kept its basic geometry in the corner of the workshop; and so on, without human

intervention at each stage. The product is a 'hybrid' of natural and manmade processes (cf. Latour, 2007).

And this artifice is predicated on actions that are not only *indirect* or 'devious', but also *well-timed*. It may help if we switch here from Massumi's carpenter to an example of a more volatile, experimental, and, in certain senses, impressive (or at least daring) situation: the production of explosives. We can draw, at this point, on Manuel Delanda's *War in the Age of Intelligent Machines*, in which the philosopher describes human artisanship as a practice of 'tapping into the resources of self-organising processes' (1991: 7), and illustrates his claim with an account of the development of early firearms. This involved gunsmiths experimenting with the creation of charges that would explode under the right conditions, and means to channel this eruption of force in a particular direction. This meant 'tracking' the 'critical points' in the behaviour of metals and explosives, such as 'the critical point of pressure at which black powder explodes, the detonation point of fulminates and the threshold of spin after which the rotating bullet acquires coherent aerodynamic capabilities' (*ibid.* 8). This volatility emphasises the *timeliness* of interventions made into it, even a sense of *opportunism*; but patience, also: allowing the situation to develop until such a point that action will have a full effect (Jullien, 1995).

Perhaps the richest description of this 'timeliness' is the philosopher François Jullien's understanding of *disposition*. Any 'situation', Jullien writes, has a 'disposition'. A 'situation' is *not* a single, demarcated place, a particular site, that acts as 'a frame into which the subject's action inserts itself or the ambience in which he or she exercises his or her capacities' (Jullien, 2004: 188-189). It is a whole, shifting ensemble of human beings, designed artefacts, other living creatures, conditions of light and atmosphere, features of the terrain, and so on. All come together to compose a situation. And, rather than being conceived as a static network, situations are seen as dynamic: they *unfold*, whether quickly and dramatically, or slowly, almost

imperceptibly. This is the situation's *disposition*, the 'inherent potentiality at work in [its] configuration' (1995: 14). Consider 'a round ball on an inclined plane': 'Disposition locates activity not in movement but in relationship, or relative position. The ball doesn't have to roll down the hill to have disposition, and glass is brittle without being shattered. Disposition never has to create a verifiable event' (Easterling, 2010). It is an attunement to the always-moving disposition of a situation, as it 'develops before our eyes (as a relation of forces)', that helps us see in it the *potential* 'which is implied by that situation and can be made to play in one's favour' (Jullien, 2004: 17).

The *active* nature of these materials, which is what necessitates their approach in *oblique* and *timely* ways, has often been missed by commentators on design. To observers, craft practices can appear to be the imposition of a preconceived idea on more or less passive materials. A reasonably skilled carpenter, for example, might appear - to someone who is not one - as simply imposing his or her will on the wood they work, bringing forth a shape they have already imagined it to take. For example, in a passage that re-enacts the view of design rehearsed by a long lineage of thinkers whose more prominent members include Aristotle and Immanuel Kant, Karl Marx wrote that:

A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in his imagination before he erects it in reality. *At the end of every labour process, we get a result that already existed in the imagination of the labourer at its commencement.* He not only effects a change of form in the material on which he works, but he also realises a

purpose of his own that gives the law to his *modus operandi*, and to which he must subordinate his will.

Marx, 1867: Chapter 7, section 1,
emphasis added

But while there may be a plan, either in a literal form like a working drawing, or prescribed by custom (a sense of the 'correct' shape of table, for instance), this disguises the improvisational and exploratory aspects of craftwork. (Were he alive, we might ask Marx whether he had preconceived *Das Kapital* in its entirety before he put pen to paper, faithfully transliterating it from his imagination, as he seemed to believe that architects do with buildings.) In a situation like that of Massumi's carpenter, these formations and reformations of plans, nesting short-term ones (a single chisel blow) inside larger ones (the construction of a table), are largely embodied. Certainly, under skilled hands, the carpenter's wood seems to be rather *passive*; the forces it exerts are 'less active than [those exerted by] the tool. Their action is slower, their force weaker. They have an encounter with the tool, and are overpowered' (Massumi, 1992: 12). And so there is, as Barry Allen says, an understandable temptation for 'contemplative lookers-on', a 'spectator innocent of artifice', to see this work as 'something effortless, even mechanical' - 'but only because of what they cannot see, like alternatives considered and rejected, risky transitions in form or operation, and split-second choices to compensate for unforeseen developments' (Allen, 2008: 56).

One of the reasons why *traps* are such a potent image of *mêtis* is, in turn, because they make *obvious* the active status of physical materials that are worked on by processes of design - simply because, as they work to exert effects on living creatures, this 'active status of materials' is pushed into the conceptual foreground. The trap is at once a tutor of *mêtis*, as Plato suspected, and visible evidence of it at work. Traps themselves are a familiar enough

class of object, even if, unlike cars, phones, sofas, televisions, billboards, books, and so on, they are hardly a prominent artefact of Western material culture, and have tended to evade critical attention as interesting objects in their own right. Although 'feeling trapped' is a reasonably common turn of phrase, traps *themselves*, while they surround us, are largely ignored by anyone not tasked with setting and clearing them. As cultural artefacts, traps are more visible (so to speak) in so-called 'traditional' (hunter-gather and small-scale agrarian) social set-ups, where they are often the most sophisticated, intricately built artefacts, requiring considerable skill to make and to place, and a vital way of securing sustenance. Yet they are still surprisingly understudied, at least by observers from outside of those societies; they only tend to be seen in purely functional terms, technical means about how rural communities feed themselves, despite having an often subtle and lively heritage as important elements of material culture in those same communities (cf. Gell, 1999). Perhaps this should not surprise us; traps are often placed out of the way, in the margins of architecture which serve, exactly *because* they are 'out of the way' of human beings, as the domain of pests that make occasional raids deeper into our living spaces. So traps inhabit the corners of kitchens or are tucked out of site in the basements of hospitals and schools: mousetraps, flytraps, pellets of poison pressed into bread and put out to put down the rats, and we forget about them.

If we're to interrogate what about this caused such ire in one of the ancient Western world's most enduringly influential philosophers, we need to think about them beyond their function. The anthropologist Alfred Gell, in his essay *Vogel's Net*, invites us to meditate on what one would make of a functioning trap transposed from the 'real world' into the interior of a Western art gallery. This proves a handy conceit: it frees the mind from a functional expectation, ridding us of the assumption that traps are merely pragmatic objects, and allows us to consider them as artefacts with a rich and complex philosophical status, rather than as purely a means to secure food, or restrain the growth of pest populations.

Gell observes in the first case that, if we were to approach a net, snare, covered pit or similar trap with the kind of contemplative attention we usually reserve for objects in a gallery, we would likely have impressed on us how, '[w]e read it in the mind of its author and the fate of its victim' (Gell, 1999: 200). If we examine animal traps, he writes, 'we are able to see that each is not only a model of its creator, a subsidiary self in the form of an automaton, but each is also a model of its victim' (*ibid.*). In some respects, this is a simple attention to the victim as a material structure: the arrow or stake must meet its victim with sufficient force to penetrate its body and inflict a mortal wound on it. But the trap's 'model of its victim' extends beyond an attention to gross physiology. That is, we see in the hunting trap a device that models its intended victim's *habits*; it is placed somewhere they will be likely to go, and baited with food they like to eat, for example. Traps 'subtly and abstractly represent parameters of the animal's natural behaviour, which are subverted in order to entrap it'. And they are 'lethal parodies of the animal's *Umwelt*' (*ibid.* 201).

By way of clarification, *umwelt* is a term means the world an organism can perceive surrounding it. It means something slightly more specific in the work of the ethologist Jakob von Uexküll, who introduced it in his book of 1934, bearing the peaceable title *A Stroll Through the Worlds of Animals and Men* (von Uexküll, 1992). The *umwelt* is the sensory world available to an organism; everything that is inside it, it can or will act on; what is outside of it disappears - a blind spot that doesn't, moment to moment, register a presence, like the space behind the back of our heads. Just as unaided human perception does not detect the goings-on in the X-ray portion of the spectrum, other organisms live lives within a particular window of the world. In his famous example of the tick, von Uexküll writes of how the female tick 'climbs to the tip of a twig on some bush. There she clings at such a height that she can drop upon small mammals that may run under her, or be brushed off by larger animals':

The eyeless tick is directed to this watchtower by a general photo-sensitivity of her skin. The approaching prey is revealed to the blind and deaf highway woman by her sense of smell. The odour of butyric acid, that emanates from the skin glands of all mammals, acts on the tick as a signal to leave her watchtower and hurl herself downwards. If, in so doing, she lands on something warm - a fine sense of temperature betrays this to her - she has reached her prey... [S]he burrows deep into the skin of her prey, and slowly fills herself full of warm blood.

von Uexküll, 1992: 321

For the tick, the warmth of the sun, the scent of butyric acid, and the right temperature of skin is, essentially, her whole sensory world, her *umwelt*. Scientists of von Uexküll's time had already found that the tick can live for a long time - some 18 years - without food; if they are not 'activated', they simply wait (*ibid.* 326). The rest of the environment, although it can affect her (she can of course be crushed, or washed away in a flood), is not something she responds to. To use a later ecological term, the environment *affords* very little to the tick. Here Tim Ingold summarises psychologist J.J. Gibson's concept of affordance, describing it as 'the most fundamental contribution of Gibson's approach to perception' (Ingold, 2000: 166; cf. Gibson, 1979):

Depending on the kind of activity in which we are engaged, we will be attuned to picking up particular kinds of information. The knowledge obtained through direct perception is thus *practical*, it is knowledge about what an environment offers for the pursuance of the action in which the

perceiver is currently engaged. In other words, to perceive an object or event is to perceive what it *affords*.

Ingold, 2000: 166

The concept of affordance suggests that '[m]eanings are not attached by the mind to objects in the world, rather these objects take on their significance - or in Gibson's terms, they present the affordances that they do - by virtue of their incorporation into a characteristic pattern of day-to-day activities' (*ibid.* 168). And this is of relevance to our topic here because the maker of traps, we might say, weaponises the *umwelt* of their intended victims. Trappers build, in forms relatively more subtle or crude but always with a certain cynicism, structures that fit into the world of the prey, and introduce into that world their own covert agenda. They turn their prey's propensity to act - to go for a morsel of food that they perceive as tasty, for example - inwards, against themselves; their means of survival turned into their lethal affliction, delight the vanguard of damage. This is a kind of *radicalisation of affordance*, in that what an environment affords an animal becomes a tool for the trapper to manipulate them: the affordances to which an organism is sensitive become, in turn, affordances for *another* organism to manipulate the first. And thus, 'the rat that likes to poke around in narrow spaces has just such an attractive cavity prepared for its last, fateful foray into the dark' (Gell, 1999: 201).

But more than this, Gell continues, 'the trap embodies a scenario, which is the dramatic nexus that binds these two protagonists together, and which aligns them in time and space' (*ibid.* 202). What Gell finds powerfully affecting about the binding-together of these protagonists, as this excerpt suggests, is that it is unequal: a carefully studied animal becomes the victim of its tendency to act in particular ways. Unlike Plato's excoriation of traps in favour of 'the chase' and the nobility he sees in it, Gell finds a very different, and rather eerie, poetry in the trap:

The fact that animals who fall victim to traps have always brought about their downfall by their own actions, their own complacent self-confidence, ensures that trapping is a far more poetic and tragic form of hunting than the simple chase. The latter kind of hunting equalises hunters and victims, united in spontaneous action and reaction, whereas trapping decisively hierarchises hunter and victim.

Gell, 1999: 202

Traps prey, therefore, on a 'complacent self-confidence' that the world of appearances is all the world there is; a tasty morsel is simply a lucky find, as though the life has turned usually generous on a whim. And we might add to Gell's observation the further one that the *structure* of many hunting traps, most obviously in the case of nets and snares, is often deliberately conceived so that the more the victim struggles to free itself, the further they become entrapped. The calm, cruel rationality of the hunter, in this case, thoroughly co-opts not only the general behaviour of the animal - baiting the trap with something the victim will find irresistibly delicious, for instance - but also predicts what the prey will do when it *realises* that it has been trapped, exploits its desperation to make the trap more efficient. The trapper is, we might say, *locates and hacks into* the tendencies in the material environment, and re-routes them in accordance with his or her own design. And this is a sense of *métis* that seamlessly transfers from the very subtle activity of wood or stone, to more obviously lively - because alive - actors.

04.06 The trickster logic of production

When the trap is considered not as a simple, functional implement, but as modelling a relationships between the designer and the materials designed - both of which are, in this case, living creatures - it has a certain poignant and eerie quality. Gell's commentary brings this elegantly to the fore. But he is perhaps too quick to say that 'trapping decisively hierarchises hunter and victim'. It is more accurate to say a trap that *works* decisively hierarchises hunter and victim. As with Plato, Gell's words imply there to be something *easy* in trapping, that it isn't a *contest*; that is purely an instance of an intelligence exploiting the observed tendencies of the less intelligent, or at least the more predictable.

Certainly there doesn't *seem* to be a contest in the moment of shock when the trap snaps shut - the moment when it's *too late*, when it is revealed that one has been delivered by one's own inertia into the belly of the hunter. But beforehand, it is a struggle to equip oneself with information: the 'model of the victim' that Gell speaks of needs to be created. How to build a working trap is often, as Gell notes, passed down generation to generation, especially in so-called 'traditional' cultures. A functional trap of this type embodies endless iterations of experimental trial and error. These many steps disappear in the final product. Leaving aside the crafty style of traps' *function* for a moment, the trap *itself*, like Massumi's carpenters' table, does not communicate one of the most powerful aspects of *mêtis*, where the cunning ingenuity it connotes is visible in the most direct and obvious way: when design produces a *novel* intervention in a situation - when, that is, it hacks an environment in a *new* way.

This is something explored in Lewis Hyde's *Trickster Makes This World* (1998), a book that is both a compendium of global trickster lore, and a subtle mediation on the cultural role of these characters, who appear so commonly it seems no mythology is truly complete without one. Loki

caused delight and havoc in Norse tales, Monkey roamed pre-human China, and Coyote stalked the plains before the Americas were inhabited by men. That true trickster figures are, in general, lacking in present Euro-American cultures is in some ways surprising, as the Greek culture that has so definitively shaped those territories' cultural map had a whole brace of them: Prometheus, whose gift of fire to humankind was a stolen one; Hermes, god of eloquence, trade and crossroads; Hephaetus, misshapen forgemaster and father of automation; the estranged couple Odysseus and Penelope, both masterful in extricating themselves from apparently inescapable situations, be they war and the wrath of gods, or an endless line of suitors; and Mêtis herself, swallowed by Zeus so that he could incorporate (rather literally) her cunning. Hyde's account spans these and other traditions, elaborating the general qualities that tricksters display, and speculating about what might be divined from strange consistency of the trickster figure across many cultures. The kinds of sensibility and activity associated with the trickster remain fairly consistent across the accounts Hyde examines, and in a way that deepens our understanding of the relation between traps, design, and human beings - because the trickster is often, Hyde finds, associated with the development of the very first technological artefact, and that artefact, almost invariably, is *the trap*.

The trickster is never physically imposing, but, in compensation, he *is* dexterous; and while he is never settled in one habitat - his home is the road - he is *very* good at improvising. (The trickster is usually, but not invariably, a he.) The trickster excels at *inventing* - and *needs* to invent, if he is to survive, ways of getting by in new situations, often unsettling those happily at home in the places he visits. Often, the trickster's first invention is a *trap*, the pure technological representation of *mêtis* we were discussing above. Traditional stories of traps' invention tend to run along these lines: The trickster, arriving fresh to an environment and with little in the way of physical agility or strength to help him counter the travails it poses, first of all needs to feed himself if he is to survive. While both weak and lazy, he *knows* he is weak and

lazy; he is what we might call *a scholar of his own shortcomings*. This is where his inventiveness begins: in the recognition that, he is hungry, but *other creatures are hungry too*; and perhaps, through devising some kind of *mechanism*, he might use what unsatisfying reserves of food he has to tempt other creatures - too wary and too fleet for him to chase them down - close enough to make a meal of them. And so he invents the net, the snare or the fishing-line, a device that allows him to exploit the hunger of other animals in order to satisfy his own. Hyde calls the trickster, therefore, *a technician of appetite and instinct*. The trickster's *mêtis* is found in a recognition that his environment exhibits certain *tendencies*, and that, through *invention*, he might contrive ways of bending them to his own profit. He can fill his belly by offering to other creatures the seductive mirage of a chance they might fill their own. This *empathy* - ironically, a quality championed by contemporary designers (e.g. Winhall, 2006a; and also the marketers and others we met in Chapter 03) - presents an enormous risk to any force that strives to keep the world the same, because it is emphatically the quality which is used to find ways in which people might be manipulated.

There is more to be said about the trickster, and the ambiguous, shifting world he inadvertently conjures into being in the mythic moment when his cunning effects the first technological artefact. We will return to this point. First, we should note something about how the trickster's primordial trap makes especially clear the link between craft and being crafty. This is that the first trap is *new*. It is unprecedented. And for all that *mêtis* inheres in roundabout approaches to an environment in motion, it is in *novelty* that it becomes most apparent.

We can begin exploring this ideas through the philosopher Raymond Tallis's remarks on the 'sense of wonder we should feel at our collective human genius at fabrication'. 'We do not, that is for sure', Tallis writes, 'admire this collective genius sufficiently':

Sneering at technology is almost routine, though writing down the ingenuity, and the practical and theoretical knowledge embedded in even the simplest item, such as the much despised polystyrene cup, would take a lifetime. Doing full justice to the ideas, the visions, the manual and wider practical skills that are implicit in all the steps that led to the mass-manufacture of such objects would fill a book of many thousands of pages.

Tallis, 2003: 250

We should note that Tallis's 'collective human genius at fabrication' does not just relate to the fact that many people have worked out how to make many kinds of artefact; his point is, rather, that many people have contributed to making a *single* type of artefact. Massumi's carpenter, like Gell's trapper, exists within a long tradition of their craft. Insofar as their practice is not totally self-taught by trial and error, it is informed by some blend of the observation of others' work and tuition direct (face-to-face) or indirect (from books or the Internet), which compound generations of experiment and the onwards-passage of tips and tricks, the very 'sleights of hand and trade secrets which give craftsmen their control over material which is always more or less intractable to their designs' that Detienne and Vernant describe as *mêtis* (1991: 48). *Mêtis* is certainly present in the relationship between the craftsperson, their tools, and the material their tools will be applied to. Humans are relatively weak, and the environment exhibits a powerful inertia; the material world is *recalcitrant*; it does *not* exhibit 'an easy susceptibility to human understanding, reform, or control' (Bennett, 2010: 1). It requires indirect approaches - 'devious' ones - to turn, to reprise Massumi's example, a tree into a table. A tree is a very solid physical structure, compared to a human being. It takes a thorough process of trial and error, expedited through passed-down tricks of the trade, to develop means of manipulating wood in desirable ways. In this case, it is in a form much like what Scott called a 'knack', with only, really, a very faint trace of *craftiness* inhering in it. Indeed, Jean-Pierre

Vernant is very clear that *mêtis* is, if present at all, minimally present in ‘the blind routine of a man who works at a craft’ (Vernant, 2006: 312). What *mêtis* draws attention to is, instead, moments of *extraordinary* craft: the production of something radically *new*. It becomes visible when, to use Christian Bök’s (2001) terms, we find not the *expected* rules applied to *expected* materials that yield the *expected* effect, but in the *exception* to these anticipated rules, materials, and effects. As the anthropologist of craft Mary Helms says, it is what distinguishes ‘the ‘true’ potter and the man who merely works at making pots’ (Helms, 1993: 14-15); precisely what is *not* ‘technical, routine, impersonal, and oriented toward the continuous production, in series, of goods’, but ‘unique, strange and potent’ (*ibid.* 16, 56).

It is perhaps helpful, at this point, to differentiate two different senses of *production* that are at work here. ‘Production’ is often considered in the context of agricultural or factory production, the elaboration of many instances of the same. The great deal of talk about *production* which attended the advent of the factory in the 1800s CE was noted by Emile Durkheim’s teacher, the (proto-)sociologist Gabriel Tarde. Tarde observed that the huge amount of attention political economists devoted to production, for all its societal importance, blinded them from considering the *origin* of the near-identical objects factories turned out in vast quantities. The ‘production’ that attended the factory was, Tarde observed, certainly ‘productive’, in the sense of producing a new object. But this object was the *reproduction* of an existing idea. It was *actual* or *true* moments of ‘production’ that were most of note, Tarde believed: *inventiveness*, the articulation of a way of doing something new, or a new way of doing something old (see Latour & Lépinay, 2010, for a full account). And it is in such moments that *mêtis* shines forth; the everyday fact of craftwork is a kind of twilight of *mêtis*, re-enacting old innovations. Which is not to say, of course, that these ‘old innovations’ are trivial; only that *mêtis* implies the unpredictable - the explosive ingress of new, cunning and ingenious ploys of material manipulation.

It is in this trickster-like sense of producing the *new*, with literally and figuratively *unsettling* results, that Mary Helms identifies one of the longest-running suspicions about designers. In the book *Craft and Kingly Ideal: Art, Trade and Power* (1993), a far-ranging anthropological review of craft in 'traditional' societies, Helms notes the distrust in which designers have been held. While artisans' most ingenious constructions are often elevated into something like the acme of human achievement, designers *themselves* have generally been seen as societal liabilities at best, downright dangerous at worst. They are seen as 'lazy, guileful, irresponsible, untrustworthy, overly independent, poor providers, unfit (polluting) commensal companions, and inappropriate or unwise marriage choices' (1993: 52). 'By virtue of their special abilities', Helms continues, 'artisans may be recognised' - that is, lauded for their accomplishments. But, 'by virtue of those same special abilities, they may be condemned as perpetual children to sit by the sidelines in community discussions, ignored by the majority of fully adult folk' (*ibid.* 53).

Helms locates the source of these suspicions in designers' assumed contact with what she calls 'the beyond'. The *beyond* is not necessarily the 'far away', in the literal sense of distance. It is the *inaccessible*, a pervasive yet insensible realm from which designers bring forth *remote possibilities*. Consider, for example, the 'highly obvious changes in physical state readily observable in certain fabrication processes', 'perhaps most dramatically of all, when raw ores are transformed into molten metal and then reformed and tempered into solid objects' (*ibid.* 18). What to another a layperson (so to speak) is a dirty lump of rock, through smelting and smithing, becomes shining metal, as though some kind of *magic* had been put into effect. Mircea Eliade asks us to imagine 'the first potter who, with the aid of live embers, was successful in hardening those shapes which he given to his clay'; surely he (or she) 'must have felt the intoxication of a demiurge: he had discovered a transmuting agent' (Eliade, 1979: 79).

Indeed, *mêtic* aspects of designing have a long association with magic. As Iain Couliano notes, even in cultures which are very religious, contemporary technology is largely secularised, and we forget that many functions of today's technology were anticipated in tales of the supernatural:

Electricity, rapid transport, radio and television, the airplane, and the computer have merely carried into effect the promises first formulated by magic, resulting from the supernatural processes of the magician: to produce light, to move instantaneously from one point in space to another, to communicate with faraway regions of space, to fly through the air, and to have an infallible memory at one's disposal.

Couliano, 1987: 104

In a variant on the sci-fi writer Arthur C. Clarke's famous 'third law' that 'any sufficiently advanced technology is indistinguishable from magic', Gell (1999) observes that it is the (apparently) effortless accomplishment of (apparently) impossible feats that seems to be the most captivating aspect of all technology. This is most obvious when cultures that possess a fairly basic level of technological development come into contact with ones that have achieved greater feats of technological sophistication. The very *idea* of 'magic' is perhaps, Gell suggests, best understood as an expression of 'the ideal means of technical production' (Gell, 1999: 180): 'All productive activities are measured against the magic-standard, the possibility that the same product might be produced effortlessly, and the relative efficacy of techniques is a function of the extent to which they converge towards the magic-standard of zero work for the same product. Magic is', therefore, 'the baseline against which the concept of work as a cost takes shape'. Magic 'haunts technical activity like a shadow'; it is 'the negative contour of work' (*ibid.* 179-180). This rather utilitarian perspective does not capture how acts of designing,

can radically transform materials. Magic is, Simon During writes, most often asserted or accused where 'abstract categories like time, space, and causality (which are taken for granted in everyday life and rational thought) modulate, bend or fragment' (During, 2004: 38), as when Eliade's demiurgic proto-blacksmith covertly transforms nondescript ore to gleaming metal, as though this figure had tapped into 'space of supernatural energetics' (as Helms often calls 'the beyond'). Improbable effects elicited from unpromising materials, indeed.¹

Although today we might understand this 'beyond' as a space of material-energetic flows, to be apprehended in the language of the natural sciences, it remains a powerful figure of thought: the latent possibilities that the environment holds, and which the crafty hand can bring into the world - having destabilising effects *on* the world. This returns us to the trickster who, Hyde observes, is almost always associated with the invention of technology, *per se*, usually a trap, and usually as part of some sort of short-term project trick to extract himself from a sticky situation. So much we have seen; but Hyde also points out that this originary act of invention often gives birth to a world. Not the *first* world; the trickster is only rarely given credit for the Great Creation itself. The trickster is, instead, the one who tampers with some original, Arcadian, better-ordered and safer world. In hacking the environment to create the first trap, he creates a cascade of effects: the world begins to *fill up* with traps of many and various kinds, ultimately leaving the difficult, treacherous, in some sense fallen world in which humans then come to live, and relay his story (see Hyde, 1998: Ch. 2; cf. Scott, 1990). But why does the world 'fill up with traps'? Not simply because they present an efficacious way to feed ourselves, but because the only way to face a treacherous environment, full of traps, is to deploy *better* traps, those that are *more* oblique and *more* timely in its construction: 'Nothing counters cunning but more cunning' (Hyde, 1998: 20). And hence trickster tales, rather than being remonstrations against cunning, tend to both warn against unwariness, while also promoting the utility of acting like a trickster, in a world that brims with traps (*ibid.*). With the inaugural instance of the

trap, we might say, the trickster sets in motion a world that is 'like a world full of snares, inhabited as it is by ambiguous creatures whose harmless appearance belies their true, deadly nature' (Detienne & Vernant, 1991: 30). But this world of snares is also *a fund of opportunity* that might be drawn on; and perhaps, in certain important regards, this is a world that functions as a fund of opportunity *because* it is a world of snares, and *vice versa*.

04.07 The strange politics of efficacy

Mêtis caused all kinds of problems for Greek thought. As we have seen, *mêtis* 'presupposes movement and elusiveness and is thus refractory to the imposition of any form set up as a model' (Jullien, 2004: 9). 'The concerns of abstraction, propositional knowledge, logocentric formulation, and 'objective' bases of knowledge all tend to make *mêtis* intelligence invisible', writes Lisa Raphals, 'precisely because it cannot be formulated in terms of a definition or essence and because its 'objects' are changing, ambiguous situations that are not amenable to rigorous logical demonstration' (Raphals, 1992: 3). The *mêtis* figure is directly contrasted to intelligences that aspire to be 'pure, ordering, embodying the solar world of clarity and light' (Davis, 2004: 21). Instead, it

insists that there are always cracks and gaps in such perfect architectures; intelligence moves forward by keeping on its crafty toes, ever opening into a world that is messy, unpredictable and far from equilibrium... [a] fecund space of possibility and innovation...

Davis, 2004: 21

Conceptual travails notwithstanding, it was difficult for the Greeks to accommodate *mêtis* within formal philosophical structures for *moral* reasons. Associations with witchery aside, *mêtis* attracts an untrustworthy reputation because of its distinctive political slant. As we've previously discussed, *mêtis* is a means by which the 'lesser overcome the greater' (for instance, in the simple example of the lever). This becomes particularly charged when the 'lesser' and the 'greater' are individuals or groups of humans. Detienne's co-author Jean-Pierre Vernant explains *mêtis* in a way that will help us reinforce this connection between craft and political action:

Employing every kind of ruse, shrewdness, craftiness, deception, and resourcefulness, it is a practical form of thought that struggles against obstacles and faces every opponent in an ordeal of strength whose outcome appears both decisive and uncertain. For the wise and sensible man, an expert in many twists and turns, *mêtis* brings success in situations where at first it seemed impossible.

Vernant, 2006: 12

More precisely, Detienne and Vernant write, *mêtis* operates in any situation 'in which man must learn to manipulate hostile forces too powerful to be controlled directly but which can be exploited despite themselves, without ever being confronted head on' (1991: 47); elsewhere, Chia and Holt describe *mêtis* as 'a cultivated *art* for reversing unfavourable or disorienting or even unrecognised situations into ones replete with potential that involves alertness, sensitivity and a peculiar disposition that is particularly attuned to emerging opportunities contained in unfolding circumstances' (Chia & Holt, 2009: 197). It is here, in these 'reversals of unfavourable situations', that the construction of artefacts, considered in its *mêtic* dimension, is most overtly allied with daring military moves, political intrigues, or the explosive ascent by

the commercial entrepreneur into the upper reaches of wealth. In such situations, a complex environment is faced, and cannot simply be dominated. These environments are *especially* tricky because they involve other human beings, who can be some of the most difficult materials to craft of all - indeed, can not only foil attempts to trap them, but excel in setting in counter-traps in their turn. In amongst these twisting turns, *mêtis* is implied only in actions by which *the weak prevail over the strong*. Yet only sometimes, and from some perspectives, are 'the weak' the party we deem 'the good' and vice versa.

As such, *mêtis* implies 'skilful means', but implies nothing about the judgment of the *ends* to which these means are leant. It is, we might say, concerned with *efficacy*, not with morality, and is difficult to capture with the terms of what we think of as 'politics' (Jullien, 2004). It is perhaps less 'political' - as that term is usually understood - than *infrapolitical*, a set of operations occurring 'beneath' or 'out of sight of' the kinds of politics we are accustomed to (Scott, 1990). François Jullien opines that, because of this, *mêtis* should be regarded 'morally neutral and of a technical order' (*ibid.* 19). But perhaps 'neutral' is misleading, implying passivity. If *mêtis* is 'neutral', it is because, like a small country in a continental theatre of war where all involved keep their money, it can entertain transactions with multiple opposing sides; *mêtis* can be marshalled in the cause of *both*, say, democracy and despotism. That it overturns and subverts established orders does not make it *feel* neutral: it is, rather, the vector of extreme emotional affects. If *mêtis* incorporates characteristics that are often considered attractive, like foresight, pragmatism and ingenuity, it can also imply insincerity, deceitfulness and manipulation. Of course, we might say that one person's 'deceitfulness' is another's 'pragmatism'. *Mêtis* can entertain promiscuous relations with political programmes, while its very presence serves to undermine any limited, normative view of the world that is placed at their heart.

It is this aspect of *mêtis* that brings us back to Plato's prohibition on traps, and the link between *craft* and *craftiness* suggested by the *Laws*. The tendency of Greek-influenced philosophical traditions has been to treat *mêtis* not as an *amoral* but an *immoral* sensibility:

While the scientific tendency [of ancient Greek thought] may make *mêtic* intelligence invisible, a second 'moralist' tendency makes it vicious. *Mêtic* intelligence is morally and ethically problematic because the abilities we recognise and approve as wisdom may be the same abilities we disparage as cunning and cleverness.

Raphals, 1992: 3

Plato's trap presents itself as a philosophical riddle that he felt we should not try to solve, because we might learn something dangerous. As in *The Laws*, it might be better simply pushed away, remaindered to an undesirable behaviour triggered by unenlightened minds, or at least hearts that lack virtue. But perhaps we should not be quick to wish *mêtis* away - that is, to say that because it troubles our customary political scripts, it would be better if it did not exist. As a 'cultivated art of reversal', *mêtis* is, definitively, the orientation that the weak must develop in the face of powerful actors (human or otherwise). Discouraging this is not, perhaps, the optimal strategy, when we are amongst the weak - or our sympathies lie with them - suffering the predations of the strong. It is *mêtis* that 'enables the smaller and weaker to dominate the bigger and stronger', so that 'the defeat of the weak and the frail is not a foregone conclusion' (Detienne & Vernant, 1991: 44, 46). Ultimately, Plato was able to write the moral and political ambiguities of *mêtis* out of the *Laws* because he project is to describe (what he sees as) a utopia; in the actual world, *mêtis* offers itself as both a problem and as a resource.

04.08 Conclusion

In this chapter, we have explored one of the oldest and most potent suspicions about designers, a set of tendencies encapsulated by the lost Greek term *mêtis*. *Mêtis* is manifest in oblique approaches to and timely interventions in an environment, ‘hacking’ into existing tendencies within it with transformative results. As we’ve seen, *mêtis* is found not in a comprehensively put-together plan to quash the complexity of the environment by force, but a recognition of this complexity, an imaginative assay of what might be coaxed from it, and remarkable results drawn from it through manipulation. Although a lever, the simple example given in the *Machina*, is a rudimentary example of ‘the lesser overcoming the greater’, it encodes a general sense of prevailing against the recalcitrant inertia of the material environment that reaches its peak in the spectacular coups of unprecedented material invention. This is a mode of action suited to a world perceived as shifting and ambiguous - indeed, as we saw in Hyde’s account of the trickster, *mêtis* not only *reacts* to a dynamic and partially unknown environment, it also renders that environment world *yet more so*. These are qualities that are implicit in the most humble aspects of craft, but their full *craftiness* is on display in the moments that Tarde called ‘actual’ or ‘true’ production, highly particular and exceptional moments. *Mêtis* allows us to grasp something new - to us - about design, and how the design of artefacts can be linked to the design of human activity in a way far more particular than does a generalised understanding of design as ‘planning’ or ‘structuring’. This sensitises us, too, to a much-neglected dimension of politics, a particularly manipulative and amoral but not simplistically ‘bad’ aspect (Cf. Jay, 2010). Many of the attributes claimed by service designers for their practice, like a desire to ‘start with people’ and the ‘empathic’ qualities of designers, become much more ambiguous in the light of what we have discussed here.

Is *mêtis* something universal? It would seem difficult to answer this question in the affirmative, not only because contemporary academic scholarship tends to resist grand and totalising narratives, but also because *mêtis* in *itself* seems opposed to any universalism, which breeds exactly the kind of complacency that traps exploit. Nonetheless, *mêtis* seems to give us a handle on some deep issues pertaining to technology, articulating qualities of our relationship to invention and inventiveness that stretch beyond a singular culture: while the study of *mêtis* has seen it as a European form of intelligence, similar perspectives have arisen, independently it would seem, in the world beyond - as we saw in Hyde's trickster myths, or in Scott's work. To the extent that human beings are thoroughly and emphatically 'technological' in their relation to the environment (cf. Tallis, 2003; Allen, 2008; etc.), *mêtis* can be understood as at least one way of expressing *tendencies* persistently 'lurking beneath the architecture of human rationality', although often they are only dimly recognised as a consistent phenomenon (Chia & Holt, 2009: 195).

But *mêtis* is certainly not a universal account of *design*, the 'only' or the 'true' understanding of its practice; nor is it necessarily the 'best' one to apply in any given situation. It is, as its co-existence *alongside* other terms - *techne*, *poesis* - suggests, a *dimension* of design, an *aspect* of design. But it provides a powerful link between the making of tables and the creation of governments, the fashioning of garments and the plotting of lawyers. This reveals a very different 'design thinking' than that espoused by within service design, one involved with ingenious ruses that treat the world as a fund of opportunity.

As the reader will no doubt have noticed, the observations in this chapter in a sense merely add depth to what is already a *familiar* proposition. We are used to craftiness and cunning. *Mêtis* is particularly visible in Europe and American popular narratives, where it takes several forms. In

the first, as in many thrillers and action films, we find protagonists - usually anti-heroes and - heroines, sympathetic but gruff - who are 'loose cannons', who don't 'play by the rules' but 'get results', and who, strikingly often when one pays attention to it, resort to building machines or rigging traps that allow them to turn the tables on their opponents when they are outnumbered and/or outgunned. This is very much *mêtis* in its heroic aspect, a public display of ingenuity. Perhaps closer to the experience of *mêtis* in everyday life, *mêtis* is a quality of action that animates the plots (in both conspiratorial and narrative senses) of 'complex', 'edgy', 'gritty' and 'sophisticated' fiction. Audiences delight in rogues, cheer on bank robbers, and are horribly fascinated by serial killers' elaborate schemes. Often, in these cases, *mêtis* emerges around massive bureaucracies like corporations or governments, whose very existence is (secretly) predicated on *mêtis*, even while *mêtis* is what threatens to undo their plans from within and without. Although he doesn't use the term, an excellent example is Jason Mittel's analysis of the recent TV show *The Wire*, which exemplifies the persistent charm of *mêtis* (Mittel, 2011). *The Wire* is a complex, layered, multi-perspectival and richly characterised portrait of contemporary Baltimore that takes as its focal point the interactions between Baltimore PD's Major Crimes Unit and the drug-trafficking street gangs that are its target. What is notable about it from a theoretical point of view, Mittel writes, is that

[d]espite being centred on crimes and detectives, *The Wire* offers almost no mysteries. We typically know who the criminals are and what they did... Instead of mysteries, the show's narrative is focused on the game between competing systems, with suspense and tension generated through anticipation of what procedures will pay off for each side, and how the various sides will end up before the next round is played...

Mittel, 2011

Mittel's lucid account of the show's appeal recognises that it functions by 'present[ing] a new model of serial procedurality that offers a probing social investigation of the urban condition' (*ibid.*). Minor figures in the police department, the gangs, and other institutions like schools and newspapers are characterised in *The Wire* as labouring under organisational bureaucracies they must cleverly work around to even achieve the demands those bureaucracies place on them. But the bosses who oversee them must also contend with larger forces. The gang leaders are at constant risk of overthrow from schemes inside and outside their organisations, and the politicians that are the police's paymasters must contend with public opinion, developing ingenious ruses to keep themselves standing still as they are pushed to and fro by the vagaries of events.

In this barrage of cunning adaptations, manipulations and counter-manipulations, any attempt to be simple and honest becomes a prop in someone else's scheme, and it is here, in fiction that probes the actual conditions of power, that *mêtis* - the historical 'design thinking' - persists and thrives. One of the virtues of disinterring the term from the more obscure regions of Hellenist study is to be able to fix a label to it, and glimpse something of its typical mechanisms of action. In the next chapter, *Seasons of Suspicion*, we will consider how it was pushed into the background by the advent of the factory, and the normative understandings of design that developed in its wake.

NOTES

1. The developmental links between craft, religion, alchemy and science are beyond the remit of the current text. The reader is referred to Mircea Eliade's *The Forge and the Crucible* (1979), a remarkable scholarly work on prehistoric technology that 'attempt[s] to gain an understanding of the behaviour of primitive societies in relation to Matter and

to follow the spiritual adventures in which they became involved when they found themselves aware of their power to change the mode of being of substances' (1979: 7); and, for a more recent discussion of historical and contemporary tendencies to situate design as the activation of supernatural forces, Erik Davis's *TechGnosis* (2004).

05 Seasons of suspicion

05.01 Introduction

In the last chapter, we examined a very old suite of suspicions about people that we, today, would call designers. We found in the concept of *mêtis* a focus on one aspect of design that is neglected in current discussions of it - and a corresponding way of linking the construction of artefacts to the direction of human behaviour that, likewise, has disappeared from design discourse. It illuminates the facet of designing that takes the shape of oblique approaches and timely action, occurring in a shifting, ambiguous, and environment that cannot be controlled 'head on'; and which coaxes improbable effects from materials that are obscure, stubborn, volatile, or otherwise resistant to manipulation. *Mêtis* links the construction of artefacts to all kinds of political intrigues, military stratagems, commercial scams, and so on.

And, as we saw, the cunning ingenuity that is indexed by the term *mêtis* has proven problematic for intellectual discussion, at least in the West. It presents a kind of theoretical conundrum, on several levels. It relates to activities that are unpredictable, and bound up with in highly particular contexts; this is not something that can be easily reconciled by ways of thinking that prefer perfect, distinct objects that can be modelled. And it presents problems of a moral and political character, too. It resists capture by the normative stance - '*this* is how life should be lived' - of which Western traditions of thought have proven so fond, principally because it is concerned with *efficacy*, and the weak prevailing over the strong, not arguments about who 'should' prevail and who 'shouldn't'.

Mêtis may be an ancient Greek term, but it captures a sense of 'design' that resonates far beyond the shoreline civilisations of European Antiquity. Yet it has largely disappeared from explicit discussion about design - although it still persists, intuitively familiar, sensed but unnamed, in Western culture, like the sharp-toothed grin of the Cheshire cat. It seems

surprising that it has been so thoroughly excised from contemporary design discourse, irksome an object of study as it may be. Perhaps we might best understand its evacuation from talk about designing as the consequence of a *redirection of focus*: if *mêtis*, or *mêtic* qualities, have been the source of one of the principle historical suspicions about designers, it has been supplanted by other, newer ones which are not articulated in a vocabulary of cunning, guile, wiliness, or manipulation. It is much more common, as we glimpsed at the end of Chapter 03, to frame these suspicions in a language of demands impressed on people from 'above', treating them as 'things', 'objects', 'machines'.

In this chapter, we will explore these suspicions about people being treated 'as machines', which have forced other, older modes of suspicion into the cultural background. These newer suspicions are most obvious in calls to be 'user-', 'human-' or 'people-centred', terms that imply designers have a tendency to think *not* primarily about people, but about objects. But they are also present, if more subtly, in other vectors of talk, like that of the Internet ushering in a 'new age' of mass collaboration to the importance of 'participatory' practices. (All of which, the reader will remember, limned the service design discourse that we investigated in Chapter 03).

Concerns about designers 'treating people as machines' are themselves old - if not nearly as old as *mêtis*, trickster myths, the concern that designers traffic with a supernatural 'beyond', and other suspicions we discussed in the last chapter. They have a definite, if broad, point of historical origin: the sociotechnical white heat of what is usually called 'the Industrial Revolution'. It is in this period, which is usually placed in Europe and assigned to the years 1750 to 1850 CE (although estimates differ depending on one's precise definition of both 'industry' and 'revolution'), that a certain kind of horror about people 'treated as machines' becomes engrained in the Western imaginary - a horror forged in the factory.

For, as we will see in this chapter, it is in the factory - considered less as a particular physical site than as a set of practices and technologies - that the machine comes to possess a range of associations that make it compare unfavourably with tyranny. The machine attracts associations with precise, rapid, efficient and above all maximally *productive* labour, shored up by practices of domination. Here, the relationship between people and machines becomes dramatised in a particular way: people forced (by economic circumstances, in the first instance) to tend to machines are then turned *into* machines. They are rendered anonymous, generic, interchangeable, unskilled, and locked into tightly controlled and repetitive circuits of behaviour; most of all, *all their movements are determined in advance* by an authority figure: not just the foreman who surveys their work, or the usurer to whom they are indebted, but the implacable master that is the machine, and, at one remove along a linear chain of ethical causality, the designer of that machine. On the factory floor, that the practical possibility of 'treating people as machines' became highly visible: understandings of 'people-as-clockwork-automata... [were to] become irreducible aspects of industrial societies' (Glenny & Thrift, 2009: 50); and this thoroughly invigorated a political and philosophical tendency to define "human' as particularly distinguished from 'machine'" (Pynchon, 1984).

The suspicion that designers, whose practices are keyed to the production of inorganic artefacts, might possibly approach the design of human activity *as the design of a machine* is a powerful one; no wonder, we might say, that the service design discourse makes so much of treating people 'as people', 'starting with people', 'putting people first', and so on. But perhaps, I suggest toward the end of the chapter, something is missing here. While the narrative of participation is a powerful one, it mostly speaks of forms of power based on excluding people - not *including them*. *Métis*, with its sense of 'harnessing tendencies in the environment', and crafty ingenuity rather than domineering attempts to impose a plan on the world, might give us some purchase on this.

Structure of the chapter

We begin this chapter looking at some of the antecedents of the relationship between people and machines that was to characterise the factory. It is the fact that that people are material structures that can be understood to move through particular *spatial sequences*, a quality shared by organic and inorganic matter, which allows them to be apprehended most easily 'as machines'; and in the next section (05.02), we examine some early Modern precursors to the factory. These examples - drawn from theatre, etiquette manuals, and dance as well as more obviously 'industrial' contexts - show human bodies apprehended 'as machines' for the purpose of their direction - a project that anticipates 'treating people like things' in the factory. A handy description of the turning point - where a sense of wonder at the ingenuity of machines meets with a terror at their ability to achieve literally *inhuman* degrees of work - comes in Heinz von Kleist's story *On the Marionette Theatre*, which is briefly discussed in the contexts of early attempts to diagram and specify the body in motion, *as though it were a machine*.

The section that follows discusses more deeply how people were 'made into machines' on the factory floor (05.03). These concerns were both refined and added to by Marx, amongst others, in full-bore theoretical broadsides against factory conditions. In these dingy and dangerous spaces, we see people forced to tailor their behaviour to the demands of their tools. The sense develops that people are becoming as abstract and anonymous - as *inhuman* - as the machines they tended. People being 'reduced to' the status of 'mere' machines also becomes something observed far more widely than the factory *per se*; an astonishing variety of commentators, otherwise very different in their political and philosophical outlooks, have used almost identical language for nearly two centuries to deplore this state of affairs (05.04). Under the terms of this argument, 'The Machine' is pitted against the desire for a more humane form of

technology, expressed, in Ivan Illich's phrase, as 'convivial', which, no matter how complex, is comparable to craft tools, understood as obedient servants that extend people's ability to sense and act while not pre-determining their projects (05.05). Much 'participatory' rhetoric - as we saw in Chapter 03 - builds on this position. Toward the end of the chapter, we explore who the narrative of The Machine is also projected *back in time*, giving a view of 'craft' that is thoroughly shorn of 'being crafty'; and I note that *métis* might perhaps provide us a different kind of purchase on current developments (05.06). The chapter concludes with a brief overview in section 05.07.

05.02 Industrial precursors

The clearest point of conjunction between human beings and machines is that the activity of both can be understood as an 'ordered arrangement of components' operating in spatial sequence - and that humans can, therefore, be approached as 'fundamentally mechanical' (Sawday, 2007: 105). This is an old idea. The point of its first emergence is unknown; it seems such a ready point of comparison to the human body, in medicine for example, that is likely to have emerged several times in different places and in different ways (see Kuriyama, 1999). It is a connection that seems to be made possible by the very existence of *complex machines*. A *simple* machine, like a wedge, screw or lever, transforms the direction and magnitude of a force; it increases 'the power of the hand' (Tallis, 2003: 235). A *complex* machine, an amalgamation of simple machines acting in concert, does 'not merely magnify the power of the hand, but... simulat[es] some elements of its dexterity, carrying out chains of operation', making more precise transmutations of force possible, and also making a comparison between machines and people possible (*ibid*).

And before the Industrial Revolution, complex machines were more prevalent than is sometimes assumed. In the Europe of the Middle Ages, for example, much experimentation occurred with new designs for cathedrals, forges and water-wheels. If not ubiquitous, these technically sophisticated devices were certainly not rare (Gies & Gies, 1994). In Renaissance Europe, for example, machines often of extraordinary ingenuity dotted the landscape; coming across accounts of them - however much those accounts may be distorted by the times and perspectives of their enthusiastic documenters - they appear almost anachronistic. We find this, to give one example, in the travel journals of essayist Michel de Montaigne, recording his ventures through Germany, Switzerland and Italy between June and November 1580 - a document that brims with detailed accounts of 'the most ingenious things that can be seen' (Montaigne, 2003: 1100). In the town of Augsburg alone, he recounts instance after instance of sophisticated, often playful technology (*ibid.* 1093-1102). Some are small delights of civic engineering, like 'an amusing fountain-pipe, while you are looking at it anyone who wants to can open to passage to little imperceptible tubes, which from a hundred places cast water in your face in tiny spurts; and in that place is this Latin sentence: *You were looking for trifling amusements; here they are, enjoy them*' (*ibid.* 1098). But not all are so 'trifling': Arriving at the town of Augsburg, Montaigne comes across 'what can only be described as Europe's first mechanised entry system: the town gates consisted of a complex of remotely controlled iron chains, moving drawbridges, and sequential chambers, culminating in a room where the entrance fee to the town was extracted mechanically'. Throughout this process, no other human being was even seen, although entrants were consistently monitored by out-of-sight guards (Sawday, 2007: 47; cf. Montaigne, 2003: 1099).

Unsurprisingly, given the prevalence of machines of some considerable complexity during the period in which Montaigne wrote, many comparisons between human beings and machines

were made. They were particularly common in relation to forms of highly stylised human activity - like play-acting, dance, and etiquette - were understood as 'machine-like', sometimes in ways that, today, we might find surprising (Wolfe, 2004). For example, in *The English Renaissance Stage* (2006), Henry Turner reports that Johannes Ferrarius, writing in 1556,

still listed 'stage-plaiyng' last among the seven mechanical sciences, after husbandry, wool-working, carpentry, navigation..., hunting and surgery. By the mid-sixteenth century the 'mechanical sciences' [also included] mining, glass-making, and other forms of small industry; 'arte[s] of occupying of tooles or instrumentes', including masonry and surveying; and civil and military engineering projects of all kinds.

Turner, 2006: 25

The common ground of these fields, Turner writes, was at the time understood to be a form of 'practical geometry' (*ibid.*), in which - echoing *mêtis* - 'craft, wit and cunning' were mobilised in the manipulation of the spatial environment (*ibid.* 44; the reader may recall that, in the previous chapter, the idea of a *plot* was elaborated in its overlapping spatial, narrative and conspiratorial around this time).

This 'practical geometry' found particular favour in writing on how to 'do' or 'make' courtesy. Those who took a formal interest in courtesy found the language of machines to be a potent resource for describing the artifice of courteous gestures. Where the movement of bodies - individual or collective, is precise, repetitive, and outstands the 'normal' flow of relaxed behaviour, and especially where there is understood to be a 'correct' or 'optimum' way to move, the body's gestures become something that can be diagrammed. If the 'mechanical was that which conformed to universal principles of mechanical efficiency which, in turn, derived from

an analysis of abstract spatial forms' (Foster, 1998: 70), then the machine becomes a point of reference for the geometry of the perfect bow, handshake, or dance-step. 'Courtesy books', which prescribed the conduct becoming to those in high society, already comprised an established genre by the fifteen hundreds, but in that century became a very popular accoutrement amongst the monied classes (see Burke, 1996). Baldassare Castiglione's *Il Cortegiano* (*The Courtier*) of 1528, for example, was to become one of the most widely read books of its time, translated into no less than six languages - an astonishing development in that period. In a English translation from the eighteenth century - the existence of which attests, we might note, to the book's persisting charm - we find the author of *The Courtier* describe how a person's 'whole Carriage, Gesture, and Behaviour, besides Words and Actions lead us to form a Judgment of the Qualities and Inclinations of those in whom they are observed' (Castiglione, 1903: 45); and what, therefore, constituted 'appropriate' carriage, gesture, et cetera, detailing a complex regimen of genuflections, hand-waves, and other gestures alongside the postures appropriate to adopt when riding a horse or standing in a social situation before superiors, inferiors and peers.

The Courtier notes its connections to mechanics, and indeed 'from the latter half of the sixteenth century onwards', Jessica Wolfe writes, 'the interrelated discourses of mechanics and courtesy theory work together to cultivate a prized group of intellectual and physical qualities', fortitude and constancy amongst them (2004: 15). One of the ways in which this occurred was, as Wolfe observes, through a link between machines and the operations of court, especially the cultivation of a serene demeanour, no matter how, so to speak, the cogs must whir beneath the surface. Wolfe notes that Castiglione's book particularly emphasised the virtues of *sprezzatura*, 'studied carelessness', by which whatever effort went into great accomplishment was all the more impressive for its concealment beneath an unruffled exterior. The association of

sprezzatura with machines, especially in the cultivation of gesture, posture and other stylised aspects of personal comportment, was much remarked upon by writers of the time:

courtly *sprezzatura*... all[ied] the operation of mechanical devices with the cultivation of a new order of virtues and values - equipoise, grace, prudence and resolve... [T]he study of mechanics is reinvented in the latter half of the sixteenth century as an instrument of courtly grace, so much so that the regular, even movements of machines come to epitomise physical control, elegance, and emotional tranquility.

Wolfe, 2004: 57

Especially given that they were to, some extent, inflicted on people (the children of the rich or those who aspired to be so, for example), these techniques of disciplining the body can be read from a point of view today as harbingers of the controlled behaviour that typified the factory. In her history of ballet, for example, Susan Foster notes how in the 1700s,

dancers' virtuoso command of an expanding, demanding vocabulary of steps met with enthusiastic adulation. The exquisite geometry of bodily shapes and group configurations, the enchanting élan with which one image resolved into another, intimated a perfectibility of body and spirit that confirmed expectations of progress towards human enlightenment.

Foster, 1998: 57

This 'project of perfection', glimpsed in the arduous yet serene actions of dancers, comes from what Foster calls the body's 'fulfilment of spatial and temporal specifications', the way it accords to explicit or implicit instruction - or, more simply, conforms to a difficult plan (*ibid.* 77).

And this was, again, a specifically *machinic* state of grace: 'The body's easeful and moderated movement in all social situations shared with the machine a detached, well-timed precision. Humans aspired to perfectly guided actions, so much so that the formal protocols regulating all social intercourse could easily seem like instruction manuals for a vast social mechanism' (*ibid.* 78). Choreographers, as instructors of the dance, were developing new and ornate dances 'more or less complicated machinery, an intricate organisation of interlocking parts' (*ibid.* 81).

And it is precisely in dance that we glimpse an early recognition, at the very outset of the Industrial Revolution, of suspicions about designers to come. The anxiety provoked by the new machines' tireless grace is the centrepiece of Heinrich von Kleist's story *On the Marionette Theatre*, written in 1810. Kleist was deeply discomfited at the project of perfection hinted at by the new machines, not because it indexed a profane, Daedalus-like hubris - as in Shelley's *Frankenstein* - but precisely because Kleist suspected machines might be more capable of beauty than humans could ever be.

The narrator of *Marionette Theatre* embarks on a conversation with an old friend - a professional dancer - he meets by chance while walking in a park. Their talk turns to the dancer's enthusiasm for puppet shows: 'any dancer who wished to perfect his art could learn a lot from them', says the friend, who goes on to dismiss the narrator's admiration for the skill of puppeteers, opining that they would be even more beautiful if 'the last trace of human volition could be removed from the marionettes, and their dance transferred entirely to the realm of mechanical forces, even produced... by turning a handle'. Perfectly executing their dance without tired stumbles, capable of acrobatics no human could hope to achieve, marionettes are, the dancer says, far better more graceful than any human. 'My reply', the narrator tells us, 'was that... he would never make me believe a mechanical puppet can be more graceful than a living human body. He countered this by saying that, where grace is concerned, it is impossible

for a man to come anywhere near a puppet. Only a god can equal inanimate matter in this respect'. What disturbs the narrator about this prospect is the increasing irrelevance of human beings - their being out-competed by machines; even more so because his friend, a dancer, refuses to champion even this most apparently non-utilitarian art as the special province of human beings.

In these ideas we see the first glimpses of the machine as a kind of authoritarian figure, a step on the path to the ultra-disciplined environment of the factory. In the case of choreography, we might note that the description of dance-steps as machinic - as Foster describes, above - did not lend itself to personal expression, except, perhaps, that of the choreographer, who prescribed them as actions for others to undertake. The use of the diagram for the description of dance moments is not, Foster writes 'an instrument for registering the individual soul's peregrinations' (*ibid.* 79). Instead, it expressed a 'parade of patterns' (*ibid.* 70) that were impersonal; in theory, anyone could adopt them, with the proper effort and/or training.

This *impersonality* is at the very core of perhaps the first body of work that directly foretells current suspicions about 'treating people as machines': the *De Re Metallica*, written by George Bauer under his *nom de plume* Georgius Agricola. The *Metallica* was first published in Basel, 1556, and remains in print in the 1912 translation by Herbert Hoover - engineer and, within twenty years, the 31st US president (Agricola, 1950). Over the course of the *Metallica*'s 540 original folio pages (excluding 86 pages of preface, index and glossary, and Hoover's addition of many further pages of annotations), we find described, in an astonishing level of detail, the practices of mining and metallurgy in Europe around the time the book was written (cf. Sawday, 2007: 86-96). It is not the first such treatise (trailing, for example, Vannoccio Biringuccio's *Pirotecnica* of 1540), but it *does* bring together two (at the time) extraordinary innovations in the governance of human activity. Firstly, the book is addressed to the German aristocracy, arguing

that an expert knowledge of mining will allow them to pluck great fortunes from the earth; and secondly, to effect this ambition, the *Metallica's* gallery of woodcut illustrations document and analyse a set of human tasks *in the format previously used for machines*.

Many Western (and other) artistic traditions, needless to say, have a long history of portraying labour. There is nothing novel *per se* in the depiction of fields being hoed, clothes being sewn, and so on. Likewise, treatises on machines that couple text and illustration to describe their surfaces and inner workings, in precisely the format used in the *Metallica*, date back, in the European tradition, to Antiquity. But the *Metallica* does something quite new: it shows many machines - the industrial state-of-the-art of the time - but the notation used for machines spills beyond them, into the activities of the workers who surround and tend them. In its pages, we find tasks like smelting segmented into exhaustively described sequences of physical action, without any distinction made between the activities of machines, on the one hand, and people, on the other. Bauer 'carefully indicat[ed] every act or movement of the labourers' bodies... No action is left to the imagination, but each is painstakingly described' (Sawday, 2007: 90); and Bauer evaluates the relative efficiency of different ways of performing these activities that he observed around Europe in the roughly two decades it took to compile the book. And, in a further, yet-more-prescient turn, the *Metallica* does not describe instructions for a single individual to carry out (unlike the ancient practice of writing cooking recipes, for example). Substantially before, say, Adam Smith's observations of how labour might be made more effective by breaking down the process of making pins into separate tasks for different individuals to undertake at the same time (his famous concept of 'the division of labour'), Agricola presents dense networks of operations that are executed by many people in parallel, and makes observations about how they must be carefully timed to perfectly intersect with one another at precise junctions: the loading of a machine to crush material, the sieving of its proceeds, the movement of the powder elsewhere, and so on (e.g. Fig. 05.01).



Fig 05.01 Woodcut from *De Re Metallica*, 1556.

In this, the *Metallica* appears as a pioneering venture that takes strategies we today associate with design, specifically, drawing and notating geometrical forms, and applies them directly to human beings, whose joint efforts appear as a gigantic, distributed machine to be designed. By

doing so It is one of the first examples of a trend that was to take off in later centuries, whereby human practices were treated not as something that changed through slow evolution, but could be scrutinised, disassembled, and reassembled in a 'better' - more efficiently productive - form.

The *Metallica* also, as was briefly suggested above and not coincidentally, an image of the kinds of practice that service designers fear that the conjunction of 'service' and 'design' might connote, and are at pains to publicly distance themselves from. This is not least because the *Metallica*, as briefly noted above, is written as a tool for wealthy elites to make money out of organising people over whom they are in a position to exert control: 'We learn from history that mining has brought wealth to many', Bauer writes, recommending his text to those who would make their fortune (Agricola, 1950: 5; see *ibid.* 5-19). But the *Metallica* makes no mention of the discomforts of miners, metallurgists and others in their (considerable) exertions, let alone what desires they might have to spend their time in other ways. The book presents itself simply as a *device*, a kind of directorial how-to, for the achievement of profit through efficiency.

It is this lack of consideration for the people who are having their movements specified from 'above' is precisely the source of horror that is widely felt, at least by members of Western cultures, when we speak of someone treating someone else 'as a machine', a phrase that is usually an accusation, and inflected by anger, revulsion, and horror. The person considered as a machine is stripped of individual identity; they are *reduced* by the comparison into something generic, interchangeable, anonymous: a set of functions and an array of physical gestures to be determined and implemented, not a *person*. To treat people this way is to deny, or at least ignore, that they have opinions, feelings, desires, aspirations; that they are not, to put it compactly, simply a physical structure to be commanded. It is *bad* to treat people as machines, bad according to any moral calculus or ethical position that does not adopt as its starting

position - utterly reprehensibly, to the inhabitants of liberal democracies (amongst many other cultures) - the idea that certain people or groups of people are, by birth or circumstance, should be denied what we understand as basic rights, and are available to be 'used' by other sections of the population.

05.03 The advent of the factory

These are ideas that took on particular force during what is usually called 'the Industrial Revolution', a useful term but one that should be treated with a little caution. No doubt there is 'a widely held belief that the most momentous event of our times is the machine's sudden and absolute ascendancy over the conditions of human existence', and this *ascendancy of the machine* is a key feature of said Revolution (Francastle, 2000: 29). But we should note that accounts differ as to what this involved, and where and when it happened first.¹ The Industrial Revolution seems sprawling and uneven - so much so that scholarly arguments exist and are ongoing about how many 'industrial revolutions' have occurred, centred on different technologies. If we take 'the industrial revolution' as a period of time, it is debatable whether we have exited it into a stable 'industrial society', or whether - given accumulation of new technologies, which keep arriving - we are still inside it, perhaps even in its early phases; and whether there have been a series of them, and when this series, and each of its component stages, began - with the spinning jenny, for example, or with the 'scientific movement which flowered during the Renaissance' (O'Brien & Quinault, 1993: 6), all the way back to the invention of smelting, or of agriculture (cf. Eliade, 1979). All of which is to say that, insofar as the IR was a *change in the mode of production*, from craft practices to those based on an extensive division of labour around an 'assembly line' model, this was not a clear-cut process. When Adam Smith

described, in the *The Wealth of Nations* (1776), the 'division of labour' (the disassembly of complex tasks, in his example the making of pins, into many smaller tasks to be conducted in parallel, with more 'productive' results), the brewing industry in London for more than a century had been shifting from a 'handicraft affair' to an assembly-line production model (Mathias, 2001); conversely, 'other industries retained their medieval form of production and structure of organisation until the later nineteenth century - such as flour-milling, glove-making, shoe-making' (Mathias, 2001: 1).²

But, undoubtedly, in Europe during the first half of the 19th century, there was some kind of *breach*. The differences between North European (and to some extent American) social structure in 1750 and in 1850 are so great that 'the evidence for an intervening period of pronounced discontinuity still seems unmistakable' (O'Brien & Quinault, 1993: 2). People of that time and place themselves noted that wide-reaching sociotechnical events of significant future import were in progress, although they tended to be seen as 'progress', 'achievement' or simply 'change' rather than attracting a specific term - i.e., a name like 'the Industrial Revolution' (Crump, 2010).³ And part of this diffuse but pressing 'change' was, undoubtedly, the new prominence of complex machines, and the artefacts - including other complex machines - they were capable of producing relatively cheaply, which began to populate everyday life.

Increasingly sophisticated and abundant, machines became understood not solely as *tools*, but also as an object of politics, a kind of authority that enforces efficient productivity. If we were compelled to select a specific moment when this occurred, perhaps the best candidate is the point in 1785 that the inventor Oliver Evans, in the process of developing designs for the mechanisation of mills, 'noted that on the day the worker only directed the autonomous movement of the machine instead of using it as a tool to augment the power of his hands, new relationships between man and materials were defined' (Francastel, 2000: 100). This was the

moment when technology could no longer be understood as a simple prosthetic (although the use of that word to describe this relationship was to come later), but 'was now a rival, offering its own organisational principle, in opposition to older patterns of human activity' (*ibid.* 101): 'Now the aim was to produce objects that complied as closely as possible with the new conditions of human labour and that derived from a recalculation of the user's gestures', rather than mass-produced versions of older technologies, like axes or pots (*ibid.* 100).

It is in the factory that these 'new relationships between man between man and materials', those that 'recalculated gestures', were most conspicuous. The factory is the emblematic site in which human beings have their actions restricted to pre-determined gestures, from which deviation is not allowed. On the assembly line - as per Smith's theorisation of the division of labour, which allowed the idea to spread - complex tasks are broken down into simple ones, which are split across multiple people, and repeated in closely co-ordinated parallel. Of course, the factory was not the first site of domination, of the reduction of human beings to entities capable of physical labour, directed by an overseer of some kind. As the vagueness of the concept of the 'industrial revolution' itself suggests, it would be absurd to maintain that, before the advent of the factory, the various technologies it brought together had not existed, or even had not been brought together, before (cf. Ingold, 2000). Paul Glenny and Nigel Thrift (2009), for example, direct attention to a long and subtle history of the timetable as a means to co-ordinate labour; in his famous analysis of *discipline*, Michel Foucault (1991) is keen to stress that the close surveillance of people's labour by overseers, ensuring, through intimidation and through more direct and spectacular forms of violence, minimal deviation from a pre-determined and inflexible pattern of activity, was not *per se* an invention of the Industrial Revolution but had a long run of antecedents - as is indexed by the word 'factory' itself. 'Factory' is a term derived from shipping, more specifically the trading that formed part of various European nations' colonial (mis)adventures. Pre-Victorian shipboard life already

provided a model for the tightly-controlled assembly line; the operation of ships served as, as Peter Linebaugh and Marcus Rediker have put it, as the 'prototype of the factory' (2000: 150). 'Factory' evolved from 'factor', 'a trading representative', and specifically one associated with West Africa, where factories were originally located' (*ibid.* 150). 'The ship', Linebaugh and Rediker write, 'provided a setting in which large numbers of workers cooperated on complex and synchronised tasks, under slavish, hierarchical discipline in which human will was subordinated to mechanical equipment, all for a money wage' (*ibid.* 149-150). That is, the name of the factory itself is associated with a situation of highly technologised slavery.

The Victorian factory presented a disturbing and novel vista: vast fields of human activity, *entirely ordered around the demands of efficiency*. Workers' actions were to be synchronised with the requirements of the machines they tended, rather than *vice versa*; and the workers themselves became, by a kind of contagion, machinelike. One of the most acute observers of these developments was Karl Marx, who wrote elegantly and powerfully of the conditions in the factory that prevailed in his time. Woven into his philosophy of history, labour theory of value, account of social classes, proto-anthropological observations on the commodity, and various attempts at prophecy, we find occasional references to the relationship between people and machines in the factory that are of relevance to us here, as we will see. It should be noted that, in addition to being just one, partial aspect of Marx's work, his commentary on the interface between humans and objects in the factory is also not entirely novel. As Thomas Pynchon has observed, people had been smashing machines for two hundred and fifty years or more (most famously the Luddites, active in Northern England between 1810 and 1812), and it 'took no German philosopher, then or later' to guide their revolt against factory conditions (Pynchon, 1984). But Marx did give very precise expression to a set of broader cultural concerns (Morus, 2002), succinctly providing a statement of 'the fundamental vocabulary' that had become, and

remains to this day, the means with which we usually describe and ‘understand the relationship of humans and their machines’ (Sawday, 2007: 72).⁴

In the following passage, drawn from *Das Kapital*, we see find a compact expression of this ‘fundamental vocabulary’:

Machinery is put to a wrong use... In handicrafts and manufacture, the workman makes use of a tool, in the factory, the machine makes use of him. There the movements of the instrument of labour proceed from him, here it is the movements of the machine that he must follow. In craft manufacture the workmen are parts of a living mechanism. In the factory we have a lifeless mechanism independent of the workman, who becomes its mere living appendage.

Marx, 1867: Ch. 15, s.4

For those with an interest in current design discourse, this short excerpt contains a proposition that is surely familiar: a separation between the ‘right’ and the ‘wrong’ application of technology. In ‘handicrafts and manufacture’ (the latter term being one Marx means literally - ‘making by hand’), tools are *obedient servants to the person using them*. They allow the person to act more efficaciously with materials than he or she could bare-handed, but ‘the movements of the instrument of labour proceed from him’ (or her); the person remains in control. The contrary case, the ‘wrong use’ of technology, ‘reduces’ a person to status of *an obedient servant to machines*, the ‘mere living appendage’ to a ‘lifeless mechanism’. We will presently return to the idea that ‘good’ technology is submissive to human will, as encoded in Marx’s brief statement. But first, let us examine more closely how it is that in the factory, people become

'appendages' to machines, and how this robs them of their humanity - specifically, by making they themselves *into machines*.

On the factory floor, people became 'machinelike' by having to accommodate themselves to a very tightly specified set of actions that proceeded at a pace set by the machine. It is not that previous forms of - especially agricultural - work did not run to particular rhythms, nor that they were not physically demanding; but the factory brought with it new, faster, and more repetitious forms of working, involving the contortions of both body and mind to match the requirements of machines around which labour was structured (Glenny & Thrift, 2009). The action of the machines in the factory, at last as far as their creators were able to effect at the time, 'conformed to universal principles of mechanical efficiency which, in turn, derived from an analysis of abstract spatial forms' (Foster, 1998: 78).

Designed to be as efficient as possible, in order to maximise attainable output, their tenders were forced to conform, in turn, to the demands the machine placed on them. Workers were forced to 'adapt [their] own movements to the uniform and unceasing motion of an automaton', namely, the machine he tended (Marx, 1867: Ch. 15); 'the rise of industrial society' here effects a new form of discipline that is 'explicitly enforced by machinery..., obliging workers to adopt to the rhythms and the pace of machinework... [and] alienating them from their own labour and their own bodies' (Morus, 2002: 4). Physically, the machine-operator in the factory suffered a *form of confinement*: their activity was organised in rigid, repetitive spatial sequences - the bars of their prison were the programmed gestures of factory space. Mentally, the machine-operator had to remain vigilant but entirely unimaginative as he or she went about the day's work. For Friedrich Engels, 'supervision of machinery' was 'the most deadening, wearing process conceivable', it is 'utter monotony', 'the keenest torture', a 'condemnation to be buried alive' (Engels, 1892: 177). Forced by a role of machine-tender to think and act in ways that

machines demanded, a common experience of Victorian workers were flashes of panic when 'it is difficult to distinguish minds and bodies from machines... physiological and technological systems merge', as when early telegraph operators suddenly felt themselves 'lost in the wires' (Otis, 2001: 155; cf. Davis, 2004).

And in a further stroke of 'dehumanisation', the role of 'machine-tender' was not (usually) even a particularly specialised task; it could be played just as easily by a man, woman, or child; it simply needed a body, any-body. *Skill*, especially, was largely removed from many people's employment. Prior to the Jacquard loom or the Gutenberg press, 'other than perhaps in the case of artefacts produced with the help of the highly skilled craft of working with the mechanical rotary motion of the potter's wheel', writes Sawday, it had not been possible to 'contemplate the production of any human artefact in considerable quantities of near uniform design, appearance, size and quality' (Sawday, 2007: 83). Yet now it was not only possible, it was everywhere occurring. 'Being in possession of the 'property of skill'... was a crucial component of eighteenth- and early nineteenth-century artisan's sense of themselves' (Morus, 2002: 3), they could not effect the degree of repetition and regularity that stood out as 'the hallmarks of the machine', and 'their [e]xperience, skill, aptitude or dexterity were all made redundant by the uniform blow of the mechanically-driven hammer' (Sawday, 2007: 75).

It is when a person is 'reduced' to a machine, Marx wrote, 'he can be confronted by the machine as a competitor' (Marx, 1844). Understood only in terms of their ability to effect material transformations, labourers can be substituted out for more efficient systems which require only minimal involvement. This is concisely expressed by mining engineer and, later, politician Wilhelm Schulz's *The Movement of Production*, published in 1843, wherein the author bemoans that the fundamental 'problem of the factory' has not been addressed: '[c]onsideration has not been given... to this big distinction as to how far men work *through* machines or how far as

machines' (quoted by Marx, 1844). And it is on people *as* machines that the factory places emphasis.

05.04 Reduction to mere machines

Marx's use of the term *reduced* is indicative of a wider semantic trend, in which the principle that to *objectify* is to *dehumanise* - setting up humanity and machines as opposed terms - is expressed in the language of *descent*. An earlier set of writings, collected as the *Economic and Philosophic [sic] Manuscripts of 1844*, adds to 'reduction' a litany of downwards movement: workers are 'depressed spiritually and physically to the condition of a machine', 'sunk to the level of a machine', 'declin[ing] to a mere machine' (Marx, 1844). And this descent is often also characterised as in the process of *spreading*, or as having already spread: an epidemic of dehumanisation.

For example, Sadie Plant describes how office machinery was, from its origins in the nineteenth century, 'intended to produce faster, more accurate, ordered and efficient versions of existing modes and structures of work' (Plant, 1997: 117). The calculator, for instance, replaced the mathematical skill of bookkeepers, and people could be trained to perform bookkeeping tasks - now a machine-operating task - in a matter of weeks, extinguishing the once-common role of 'the 'craftsman' clerk' (*ibid.*). But this is hardly restricted to the theft of skills from people, and their incorporation into machines (cf. Delanda, 1991). Coloured by Weber's sociological contentions about the 'iron cage of bureaucracy', Siegfried Giedion enjoined his readers to

[c]onsider, for example, the mechanical precision with which many of our institutions are expected to operate. Organisational life is often routinised with the precision demanded of clockwork. People are frequently expected to arrive at work at a given time, perform a predetermined set of activities, rest at appointed hours, and then resume their tasks until work is over... Often, the work is very mechanical and repetitive. Anyone who has observed work in the mass-production factory or in any of the large 'office factories'... will have noticed the machinelike way in which such organisations operate. They are designed like machines, and their employees are in essence expected to behave as if they were parts of machines.

Giedion, 1975: 12-13

Giedion goes on to describe the transference of this image of productive efficiency to 'service organisations of many kinds', wherein 'every action [is] preplanned in a minute way, even in areas where personal interactions with others are concerned. Employees are frequently trained to interact with customers according to a detailed code of instructions and monitored in their performance. Even the most casual smile, greeting, comment, or suggestion by a sales assistant is often programmed by company policy and rehearsed to produce authentic results' (Gideon, 1975: 14). Giedion's disgust is maintained by others, like George Ritzer (2004), who describes the growth of 'non-jobs', and the 'non-people' required to enact them, in twentieth-century service industries.

As many have noted, the infectious machinic process of rationalisation extends well beyond the deliberate adoption of the machine as a model. (See Meyer, 2009, for an extensive account.) The concept of the 'organisation as 'rational-technical machinery'', for Robert Witkin, 'gives rise to an aesthetic characterised by those familiar elements of modernist design: the sharpness and

simplicity of line, the suppression of colour, the smoothness and hardness of tactile values, and the preference for planar forms' (Witkin, 2009: 56). This is visible in 'the design of buildings, furniture and furnishings, in the organisation of physical space, in the use of colour and texture, and in organisational artefacts of all kinds'; but it seeps beyond them, manifesting also in 'organisational constraints and expectations in respect to dress and personal presentation, in modes of address, and in office manners' (Witkin, 2009: 59).

Machinic rationalisation extends beyond the factory by another vector, too: in the shape of *the products of the factory* themselves - in the first case mechanical and, later, electronic objects. Because these objects are *interactive*, they tend to have specific ways they should be used built into them, in the form of 'scripts' (Akrich, 1992). These rigid scripts are tiny fragments of factory logic, slipping its bounds and covertly entering the home. In *Hertzian Tales* (1999), Tony Dunne describes what he calls our 'enslavement' to the vision of the user's behaviour that is inscribed in many electronic products:

while electronic objects are being used, their use is constrained by the simple generalised model of a user these objects are designed around: the more time we spend using them, the more time we spend as a caricature. We unwittingly adopt roles created by the human factors specialists of large corporations. For example, camcorders have many built-in features that encourage generic usage: a warning light that flashes whenever there is a risk of 'spoiling' a picture, as if to remind the user that he or she is about to become creative and should immediately return to the norm.

Dunne, 1999: 21-22

Accounts like these are very common indeed. In fact it is difficult to overstate how deeply this perspective is engrained in Western discourse - and discourses pertaining to *design* are, understandably given their proximity to its subject matter, certainly not the exception to this rule. As Paul Glenny and Nigel Thrift put it in *Shaping the Day* (2009), their recent book on 'clock time', a narrative decrying the human (and sometimes environmental) cost of a "production-line world" is repeated 'in a long line of multi-stranded jeremiads' with 'a remarkable historical consistency' (Glenny & Thrift, 2009: 51). Kirkpatrick Sale likewise notes the persistence of these arguments, taking almost exactly the same form, since the Luddites began smashing the machines that were being introduced into their workplaces and 'taking their place' between 1810 and 1812. Notwithstanding that there are considerable aesthetic and philosophical differences between them, the same *basic* critique is repeated over and over again by a dizzying array of commentators on technology. Blake, Wordsworth, and Byron all made these kinds of observations around the turning of the 18th century into the 19th; the latter century, in line with the invasion from the factory, would be restated by Thomas Carlyle, William Morris, John Ruskin, G.K. Chesterton, Hilaire Belloc, Charles Dickens, Nathaniel Hawthorne, Edgar Allan Poe, Herman Melville, Ralph Waldo Emerson and Henry Thoreau (Sale, 1995); and as 'industrialism perfected itself into the 20th century' was refreshed could be found most often in the works of 'a remarkably diverse set of critics and intellectuals, beginning with people like Thorstein Veblen and Max Weber and Oswald Spengler, going on to Martin Heidegger, Aldous Huxley, the Frankfurt School, and the towering Lewis Mumford, and then to Jacques Ellul, Herbert Marcuse, and Paul Goodman, to pick only the most prominent of a quite distinguished set' (*ibid.* 18-19). As Sale summarises,

[t]he concerns and causes and methods vary, but there is to it all, at bottom, [a single] message...: beware the technological juggernaut, reckon the terrible costs, understand the worlds being lost in the world being

gained, reflect on the price of the machine and its systems on your life, pay attention to the natural world and its increasing destruction, resist the seductive catastrophe of industrialism.

Sale, 1995: 19

The politics specific to *The Machine* are, in fact, often portrayed as a form of global enslavement. If, on the factory floor, people are 'reduced' to tending machines, becoming their anonymous, interchangeable assistants, engaged in movements as quick, precise, and unvarying as those of their inorganic masters, the political corollary is a particular extreme kind of *slavery*. In fact, anthropologist Tim Ingold has identified and unpicked exactly this association of the machine with an ancient, indeed as-yet *unending*, form of extreme political domination based on the denial of human autonomy. The machine offers itself up on the one hand, as the instrument of the slave-driver; and the human thus compelled to work to the machine's geometries and rhythms, 'like a machine', becomes a slave. Humans can, Ingold writes, in language that by now will be familiar to us, 'be virtually reduced to a machine existence through the systematic repression of their powers of autonomous action', citing the image of 'the oarsmen of the Roman slave-galley, chained to their benches so that they have no other possibility of movement' and thus rendered in a state of 'corpse-like obedience' as ancient precedent for this view of humans as machines (Ingold, 2000: 307-308).

As we have already seen, this was not, in fact, necessarily a predominating view of machines *at the time of which Ingold speaks*, and we will return to this point to develop it further later in the chapter. In the meantime, it is worth noting that this evocative imagery has hardly faded. For those interested in perpetuating this narrative of the human 'as a machine' being synonymous with the destruction of autonomy, the twentieth century was willing to provide a rich source of distressing examples. From the European artillery bombardments of 1914-1918 to the

worldwide proliferation of the AK-47 rifle and the terrifying absurdities of the nuclear arms race and the 'mutually assured destruction' rationale that guided it, machines repeatedly entered the popular imagination as instruments of death. Critics were quick to seize on the continuous nature of peacetime and wartime mechanisation programmes - for example, on the highest level, in the idea (and fact) of the 'military-industrial complex', a term introduced by Dwight Eisenhower in his presidential farewell address in 1961; but on lower levels, too, particularly amongst critics of technology. There is perhaps no more vivid image than the following: punched cards, 'originally introduced for musical automatons and instruments, were applied for weaving by the eighteenth-century inventor and robotic engineer Jacques de Vaucanson' (Becker, 2009: 18), were adapted by Herman Hollerith to be used by US Census bureau's 'tabulating machines'; Hollerith was later a founder of one of the companies that merged to form IBM, whose machines found a use tracking inmate populations in the death camps. 'With a Hollerith Abteilung in almost every concentration camp, the original Auschwitz tattoo was an IBM number' (Becker, 2009: 19). Wilhelm Reich's psychoanalysis of fascism, which he calls 'the way of the machine, the dead, the rigid, the hopeless', and to which he opposes the 'way of life' that 'is fundamentally different' to it, 'does not consider man as a machine, or the machine the master of man' (1946: 284-285). Here, Reich comments on the desire underlying the development of machines - to wit, that they extend human abilities to sense and act:

[Machines] enable him [i.e., man] to master nature to a far higher degree than he could with his hands alone. They give him mastery of time and space. Thus, the machine has become a part of man himself, a beloved and highly esteemed part. He has the perennial dream that the machines will make life easier for him and will give him an increased enjoyment of life.

And in reality? In reality, the machine has become man's worst enemy. It will remain his worst enemy unless he differentiates himself from the machine.

Reich, 1946: 287

Making people 'angular, machine-like, without spontaneity' (*ibid.* 293), Reich determines the machine as the crux of a culture in which there is a 'complete identity of mechanistic natural science, mechanical human structure and sadistic murdering', and marked by 'the hierarchic concept of state, machine administration of society, fear of responsibility, longing for authority and a Führer, expecting to be told what to do, mechanistic thinking in natural science, machine-like killing in war' (*ibid.* 285, 294).

05.05 The ideal programme of technological development

While this view of machines as, actually or potentially, 'dehumanising' is a standard component of cultural critiques of technology since the advent of the factory - if not in quite so extreme a form as in Reich's writing - it is outstandingly rare to find in these critiques a complete rejection of 'technology', in all its forms. There is a general recognition that human beings are *homo faber*, and that human life would be much impoverished, perhaps even inconceivable, without designed artefacts (cf. Allen, 2008: 114). And so the question asked is not 'technology: yes or no?', but rather one of what constitutes the 'right kind' of technology, the qualities of artefacts that allow human flourishing rather than a toxic mixture of oppression and dependence.⁵ Peter Sloterdijk summarises this point of view thus:

Technology takes the 'upper hand'; it 'threatens' to degrade human beings; it 'wants' to make us into robots. But if we pay attention and keep our souls in shape, nothing will happen to us. For technology is, after all, there for people and not people for technology. The image is approximately that of a seesaw. On one end sits the threatening, the alien, technology; on the other, the humane spreads out and, according to whether oneself or the alien presses harder, the seesaw falls to one side or the other.

Sloterdijk, 1986: 448-449

In the same stroke that the diagnosis is made in some of the critiques of the factory, an embryonic solution is prescribed. We might consider again Marx's comments on craft: how in craft, a person 'makes use of a tool', whereas 'in the factory, the machine makes use of him'. In the former case, technology is the servant of people; in the latter, the situation is reversed. The schema is simple: either people and machines are treated as fundamentally different, and the latter are in the service of the former, or people and machines are treated as similar, with catastrophic social results. And hence a 'good' designer, at least in the sense of one who is 'socially responsible', directs their attention to the former option, and makes objects that fit people's lives.

So widespread is subscription to this point of view that it produces highly unlikely bedfellows. We find it, for example, in the most extreme primitivist arguments, like John Zerzan's book *Against Civilization* (1999) and Derrick Jensen's *Endgame: The Problem of Civilization* (2006). These books, as similar in perspective as they are in their titles, equate The Machine of myth with 'civilisation' itself, and call for its disbandment - Jensen, in particular, calls for a campaign of active sabotage against Western technological infrastructure. But we find it also in those who most emphatically take up the idea that progress in technological sophistication is an

unstoppable force, possessed of its own dynamic. For example, techno-futurists like Kevin Kelly (1995) argue that technological development is embarked on a runaway tendency toward superhuman artificial intelligence, which they see as inevitable; but, in a strange moment of correspondence with the most ardent machine-haters, they opine that its development must be steered (as far as possible) in desirable directions: if there is to be a superhuman AI, we should endeavour to calculate how it might be made 'friendly', for example.

Needless to say, these are extreme positions. But for all their obvious disagreements, they nonetheless concur in the importance of intervening in technological development to, as Sloterdijk puts it, 'keep our souls in shape'. More mainstream commentators on technology have, perhaps, done the most to consider how this might be done in practice. In the last several decades, this has mostly taken the form - as in service design - of questioning the 'value' of technology, and trying to make the process of its development maximise this 'value'. It is the introduction of 'people's views' into both the *conception* and the *use* of designed artefacts that would seem to be the way to do this. This is the basis of, for example, John Thackara's popular *In The Bubble: Designing in a Complex World* (2005). In the introduction to the book, Thackara lays out a familiar position. 'It's no longer clear', he writes, 'to which question all this stuff - tech - is an answer, or what value it adds to our lives' (2005: 2); we must work toward a 'world in which well-being is based less on stuff and more on people' (*ibid.* 4) and take on the work of 'designing people back into the picture' must begin (2005: 4). 'Throughout the modern age', Thackara asserts,

we have subordinated the interests of people to those of technology, an approach that has led to the unthinking destruction of traditional cultures and the undermining of forms of life that we judged, once, to be backward. The victims of this approach to modernisation have not just been hapless

people in rain forests. 'Getting people to adapt' to new technology has affected us all. We believed that the assembly line and standardisation would make the world a better place, yet along with efficiency came a dehumanisation of work. We act no less as slaves to the machine today when we lambaste [*sic*] teachers as 'obstacles to progress' when they do not embrace the latest technological fix for education.

Thackara, 2005: 3

Save the mention of 'people in rain forests', this passage contributes almost nothing new to arguments that we have already seen, above, made generations beforehand. But what form should 'good' technology take? One of Thackara's major influences is the iconoclastic scholar Ivan Illich, who is best known for his intelligent and provocative assaults on Western institutions - amongst others, schools and healthcare. These should, he argued, be entirely dismantled, in favour of decentralised, informal institutions. Detailed analysis of the merits and deficiencies of Illich's argument *vis-à-vis* particular institutional formats are beyond our scope here; but a slightly later work, *Tools for Conviviality* (1973), is directly pertinent to our exploration. *Tools...* is a book dedicated to describing the qualities possessed by 'good' technology, namely, tools that 'support' the titular 'conviviality'. 'Conviviality' is, for Illich, the *precise opposite* of The Machine. He even defines it as such, pitting conviviality against 'the amorphousness and meaninglessness that plague contemporary society' (1973: Ch. 2), such that conviviality

designate[s] the opposite of industrial productivity. I intend it to mean autonomous and creative intercourse amongst persons, and the intercourse of persons with their environment... I consider conviviality to be

individual freedom realised in personal interdependence and, as such, an intrinsic ethical value.

Illich, 1973: Ch. 2

Convivial *tools* are, in turn, those that 'guarantee [people's] right to work with high, independent efficiency, thus simultaneously eliminating the need for either slaves or masters and enhancing each person's range of freedom'; 'technology to make the most of the energy and imagination each [person] has, rather than more well-programmed energy slaves' (*ibid.*). Illich's description, the reader might note, strongly echoes both Marx's instruments of craft - they are means for human beings to flourish, supporting the projects people want to partake in, without describing too strictly what those projects *are*. Illich's own chosen example is the telephone:

Some institutions are structurally convivial tools. The telephone is an example. Anybody can dial the person of his choice if he can afford a coin...

The telephone lets anybody say what he wants to the person of his choice; he can conduct business, express love, or pick a quarrel. It is impossible for bureaucrats to define what people say to each other on the phone, even though they can interfere with - or protect - the privacy of their exchange.

Illich, 1973: Ch. 2

This is, for Illich, something like a vision of the 'ideal technology', a technology that maximally extends the people's ability to sense and act, while minimally determining the conception of their projects. Technology 'should' *open possibilities*, not *restrict* them; it should, simply put, provide a practical infrastructure for people to do what they want, rather than be a means to impose *someone else's* view of what they should be doing. Telephones connect people, and allow them to organise themselves (assuming that people have access to them, of course). As

such, it neatly combines two aspects of technological development that, for Thackara and others, are both mutually reinforcing, and opposed to The Machine: 'participatory' practices of self-organisation, and the technology that assists it.

Perhaps the classic statement of 'participatory practices' in design, those that involve not the imposition of models but the democratic development of them, is that they involve 'designing with, not for' people. This compact injunction is often stated without attribution, as though a proverb. It ultimately derives from the architect Giancarlo de Carlo's 1969 essay, *Architecture's Public* (de Carlo, 2005). In this relatively short piece, de Carlo lays out a manifesto for architects and urban planners. He excoriates the imposition by an elite class of designer of plans on the populace, and encourages actively involving people in developing what is to be designed. They, after all, are the ones who have to live with it; they, not the client, nor one's fellow architects, are architecture's public. This is de Carlo's rationale:

In the case of planning 'for', the act of planning remains forever authoritarian and oppressive, however liberal the initial intentions. In the case of planning 'with', the act becomes liberating and democratic, stimulating a multiple and continuous participation. This not only gives the planned event political legitimation: it also makes it resistant to the wear and tear of adverse circumstances and changing times.

de Carlo, 2005: 15

This essay, which also contains the less common but still oft-heard sentiment that 'design is too important to be left to designers', outlines the basic gist of participatory sentiments in design: the acknowledgment that the 'ultimate arbiters of system adequacy' are 'those who will use the technology in their everyday lives and work' (Suchman, 1993: vii), and that 'the people

whose activity and experiences will ultimately be most affected by a design outcomes', as HCI doyen James Carroll writes, 'ought to have a substantive say in what that outcome is. The moral proposition is that users have a right to be directly included in processes of design' (Carroll & Rossen, 2007: 243). 'Participation', as these excerpts suggest, is advanced as a direct challenge to people's absence from the processes by which designed artefacts are *conceived*, and as such is 'an espoused attempt to enable those individuals and groups previously excluded by more top-down planning processes, and who are often marginalised by their separation and isolation from the production of knowledge and the formulation of policies and practices, to be included in decisions that affect their lives' (Kothari, 2001: 139). In theory, it promises to overcome the kind of authoritarian sensibility that is indexed by The Machine. Indeed, 'participation' is almost invariably 'justified in terms of the shortcomings of conventional [design] methods, which are seen as lacking in a 'human' or 'social' dimension' (Francis, 2001: 72). And participatory practices, as per Carroll, are very strongly based on the *moral good* of considering people as 'active participants'. Ramia Mazé parses this sentiment when she writes that, within participatory practices, people 'are not considered merely as users, as passive objects of study or possessors of needs, addressed in design development through analysis, problem-solving, and well-fitting products. Rather, people are considered as stakeholders, active in developing products - whether directly involved in product development processes or in adapting products to use' (Mazé, 2007: 145).

This basic idea has been manifest in various ways over the last several decades in design. A key reference point, although later than de Carlo's essay, is the simply-titled 'participatory design' (often acronymised to PD) that took shape in Scandinavia in the 1970s and through the 1980s. Closely associated with the 'industrial democracy' movement, 'participatory design' was spurred by the introduction of new automation systems in workplaces, particularly factories.⁶ The principal objective of this practice, at least to begin with, was to mitigate the assaults on

dignity caused by new machineries' obsolescence of workers' existing skills (and thus embodied much the same perspective on 'the machine' that we saw above; see Ehn, 1993). But while the PD movement, perhaps the most extensive and intensive advocacy of 'participation' in design before service design, had quite specific interests - it was government supported, and closely collaborative with the trades union - as the ideas 'spread outside Scandinavia and to other domains of practice, explicitly political agendas diffused into more general motivations of emancipation and empowerment' (Mazé, 2007: 142), or, in Stefan Holmlid's similar words, became focussed on an assemblage of 'emancipatory objectives, co-operative approaches and involvement techniques' that could be widely applied, as we saw to be the case in service design in Chapter 3 (Holmlid, 2009: 8).

05.06 Craft without craftiness

This is the view of an 'ideal programme of technological development' that has developed since the Industrial Revolution. It is presented, of course, in terms of a general overview of its architecture, and this account lacks nuance. Nevertheless, for our purposes - we are looking simply at the forms that certain suspicions about designers have take - it is sufficient. This new narrative is profoundly different from the understanding of design housed under *métis*, which it has largely displaced. *Métis* has even disappeared from most *historical* perspectives on design. Most histories of design and technology, even if they attempt to reach back before the Industrial Revolution, remain shaped, to an extraordinary degree, by the politics of technology that it spawned. That is to say, in their search for the origins of their present environment, critics of technology often transplant their current position, in a culture pervaded with machines, to the past they survey for insight that might inform current predicaments.

Siegfried Giedion, for example, approvingly cites the prescience of the fourth-century BCE Chinese Daoist anthology named the *Chuang-Tzu* after one philosopher who appears to have written at least some of it. Early in the *Chuang-Tzu*'s thirty-three chapters, there is a comment, albeit brief, on the relationship between machines and people; an old man, a gardener, is asked why he does not use mechanical tools to lighten his work:

The gardener made an ugly face, then said with a laugh, 'I've heard my teacher say, 'Where there are machines, there will be machine problems; the mechanical will find entry into the hearts and minds of the people; when people's hearts and minds become mechanical, what's pure and simple is spoiled. Without the pure and simple, the spirit knows no rest'... I'd be ashamed to use such a thing.'

Hamill & Seaton, 1998: 81-82

Giedion salutes the prescience and earthy wisdom of this technological critique. After citing an extended version of the above passage, he writes that 'the wisdom of the old man's vision is beyond dispute'. The old man seems to glimpse some sort of fundamental, *essential* problem with technology, specifically its ability to apparently 'make things easier', a sort of corrupting influence that modern-day Westerners, not so wise as he, have forgotten. Exactly what is 'wise' about the old man's statement, Giedion implies, is that it anticipates, and attempts to stave off, 'the transition from craft to factory production, the exchange of rural communities for urban sprawl, the general degradation of the environment, and the assault of rationalism upon the human spirit' (Giedion, 1975: 12).

It is, indeed, remarkable that a passage written so long ago and far away from the context in which Giedion writes lends itself so readily to his argument. But at the same time, it is *only* used to bolster his argument. The Daoist origin of the text isn't considered; the idea that 'the mechanical will find entry into the hearts and minds of the people', and generate corresponding 'machine problems', might mean something quite different in the cultural context of the *Chuang-Tzu* than it does for us today goes unmentioned (cf. Jullien, 2004) - the kind of trickster-effects indexed by *métis*, for example, rather than something 'authoritarian'. (The text itself is not clear what 'machine problems' are supposed to be.)

We are picking on this rather short passage of Giedion's not because his own philosophy is outstandingly deficient, or particularly egregious in its de-historicising, but because it represents a general tendency that pervades twentieth-century accounts of technology. Examples aplenty can be found: consider, to pick a recent one, Konrad Becker's appropriation of the similarly ancient myth of the Golem to describe 'runaway' technological development as 'a Golem; a blind autonomous nightmare that roams the planet, driven by the operation system of a hostile, alien agenda' (Becker, 2009: 70). Sounding history, many critics turn up echoes from other cultures that chime with their own context, and often ignore or downplay how these cultures themselves understood their own technologies. Even very serious, extensive, and indeed seminal commentaries on technology back-project in this way. An example might be, in a rehearsal of an argument that we have seen in various forms over the course of the last two chapters, the eminent historian of technology and cities Lewis Mumford's oft-cited assertion that 'from late neolithic times in the Near East, right down to our own day, *two technologies have recurrently existed side by side*: one authoritarian, the other democratic, the first system-centred, immensely powerful, but inherently unstable, the other man-centred, relatively weak, but resourceful and durable' (see Winner, 1980: 121; emphasis added). This is, as we've seen, the acme of a post-industrial view of people and machines, craft and high-technology, is very much

an industrial-revolution-era point of view; as in Mumford's 1934 *Technics and Civilisation*, we are given to understand that there are - as the aforementioned quote from Mumford implies - only two technologies. Not three, five, or ten ways of grasping machines (and corresponding ways of figuring how people are, and are not, 'machinelike'), but two: the obedient tool of craft, which places technology squarely in the role of functional servant of human beings and is 'democratic', and the overarching capital-M Machine, which turns people 'into machines', and is 'authoritarian'. We have two, opposed, visions of technology; this is our conceptual lot.

But while we might expect any history to import as much of the context in which it is written as of the time it describes, we have lost the *mêtic* perspective, and what it might teach us. The association it makes between *craft* and *craftiness* might offer a powerful perspective on the kinds of issues that design now faces. In the first case, *mêtis* speaks of an age when the tools of craft - obedient servants of human beings - and The Machine - which renders human beings its slave - were not opposed. As we saw in section 05.02, it is possible to look back and identify precursors to the factory - moments where human beings were apprehended as physical, geometric structures to be organised. But Montaigne's thrill at the ingenuity of the technical systems he discovered was not one that contrasted craft and machines: machines were *the finest instance* of craft. While, as we have seen, it has become the habit of Western philosophical thought to contrast, as we saw Mumford do above, a deeply human 'craft' with an inhuman 'machine', consider the difficulty of *crafting a machine*. Far that differing from craft, in this context complex machines had a position at the very apex of craft accomplishment. As Jessica Wolfe (2004) shows, in Renaissance Europe machines that actually *functioned* were treated with a certain degree of veneration. They operated at the outermost limits of humans' ability to coax new forms from the material world. A mark of considerable skill as a craftsman is achievement of *consistency* with one's materials; wood, hand-smithed metal, or clay are both stubborn materials and unforgiving of error, both requiring considerable force to

work them and easy to damage irreparably. Being able to turn out very similar pots or axes is an extraordinary feat (and the very ability of craftsmen that industrial production renders largely irrelevant). Even if the basic principles of the gear-set, for example, are known, great skill is required to compose of even the most basic gear-set, whose wheels must be made with tremendous precision if they are to mesh; or consider the degree of skill that goes into grinding a lens by hand, or shaping a screw. And, for the most part lacking standardised units until the nineteenth century - Jonathan Sawday (2007: 72) estimates that in *ancien régime* France there were some 250,000 local units of weight and measurement - the process of making many moving parts cohere into a complex machine was a dazzling feat, requiring either an individual of extraordinary skill, or, perhaps no less impressive, the careful co-ordination of small armies of the same.

In this context, to compare people to machines did not necessarily imply anything generic, anonymous, or reductive about them; sometimes, quite the reverse. While we might look back to, for example, images of a mechanical cosmos as harbingers of the factory to come - with the possibility of 'dehumanisation' by machine-logic that attended it - perspectives of the time do 'not necessarily behave in ways sympathetic to a post-Cartesian understanding of what it means for a human being or an animal to be 'like a machine'' (Wolfe, 2004: 240). To categorise these examples purely in terms of what they portended for the future, the sinister apparatus of disciplined labour that they anticipate, is to take a markedly reductive approach to them. They also exhibit an admiration for the machine as something that exists far from equilibrium, a precarious achievement at best, that demonstrates how the inertias of the material world can, with effort, be overcome. This sense of *ingenuity*, of subtle work with the tendencies obtaining in a given environment, does not oppose 'good' and 'bad' technology, but the creation of very complex and surprising technical system that reformats our environment in new ways.

As a final example, let us consider Martin Heidegger's influential essay *The Question Concerning Technology* (1954). *The Question...* returns, as was Heidegger's wont, to Greek thinking on being, and specifically in this essay to *poesis* and *techne*, and presses them into the service of critiquing twentieth-century CE technology. Although it is a sophisticated instance of philosophising, its conclusions are familiar: modern technology is a bad thing, an unruly insurgent force that corrodes the 'good' life: the 'monstrous that reigns here' (*ibid.* 15). He argues that *poesis*, the act of making, 'reveals a world'. The world revealed by craft tools is one of human harmony with the environment, taking no more from it than is needed. The windmill and the wooden footbridge do not seek to dominate their environment, but sit within it, minimally perturbing the systems they are nested within. In contrast, 'modern' technology 'reveals' the world as a 'standing reserve' to be *ordered*, in the double sense of catalogued and commanded; the wooden footbridge is contrasted with the hydroelectric dam. But what, we might ask, of *mêtis* - the third term, alongside *poesis* and *techne*, that Heidegger - like his principle sources, Plato and Aristotle - roundly ignores? *Mêtis* does not 'reveal' the world as humble and humane, nor as the object of inhuman project of full-spectrum domination, on the side of The Machine. *Mêtis* 'reveals' the world in a different way: as a shifting, enigmatic context, at once a world of snares, and one full of opportunity for action. Perhaps this, then, is something we might pursue: a very old perspective that constitutes, for us, a new one.

05.07 Conclusion

In this chapter, we have seen the emergence of a new understanding of human behaviour as the object of design, one forged in the Industrial Revolution and summarised in the phrase 'treating people like machines'. We have also seen how these ideas help to precipitate a kind of 'right

story' about the relationship between people and things: people should not be treated as things; things should be the accomplices of people's action. Machines are no longer seen, at least in formal discourse, as truly marvellous instances of ingenuity: during the Industrial Revolution, '[w]hat had once been true working magic... degenerated into mere machinery' (Pynchon, 1984). They are seen as images of the repetitive, generic, and tightly controlled. But, while we shouldn't discount this narrative of alienating technical oppression, and the attempts to address it by 'putting people first', the avoidance of 'treating people like machines' does not immunise against the operations of less overt forms of power - indeed, perhaps an over-commitment to these well-intentioned ideas distracts from them. There is no inconsistency between acknowledging that the narrative of *The Machine* does index a valid and prevalent form of domination, and the suggestion that perhaps this, alone, is not the end of the matter. There are older ideas, if now obscured, that we might bring to bear - specifically *métis* - that would seem in theory to speak to this concern. And so perhaps we might speculate about the restoration, in all or part, of an older *season of suspicion* about how designers might extend their palette to include people alongside 'things'.

In the next chapter, we will consider what perspective a restored *métis* might offer us in addressing the landscape that new forms of design - like service design - have entered into, if inadvertently. We will look at some more *ambiguous* instances of participatory practices, stories and events, in which 'participation' is not something quite so clean-cut as the 'ideal programme' might have us believe. We have already noted that *métis* does not fit our customary political scripts; perhaps it gives us traction on situations that *also* do not fit them. The idea of re-installing *métis* as a project of design is an ambivalent one, not a solution to our problems. But it might refocus our view, pointing to other possibilities, if we at least speculatively entertain the idea that service design might not so much be a radical break in past understandings of design, but *the re-instatement of an old one*, returning after two centuries; a

brief hiatus, considering the period of time beforehand when it was widely understood to be in operation.

NOTES

1. This is complex, that is to say, even before we broach the much more vexed question of *why* it happened - a topic too broad to summarise here, where we will focus on a new understanding of the relationship between people and machines born of the factory. The interested reader is referred to Delanda (2000), for one well-thought-through account of the factors involved.
2. And this process has continued. Tailoring, for example, was not 'industrialised' until the early 1900s, and, since then - as in the several centuries before - ways have repeatedly found to industrialise 'craft-like' practices thought to be immune to the possibility - for example, the sudden appearance of factory-made prepackaged meals ('TV dinners') in the 1950s.
3. In a letter dated July 6th, 1799, French diplomat Louis-Guillaume Otto spoke of a *révolution industrielle*, the first recorded use of that specific term; it became more common in the 1830s, entered into radical political circles' vocabulary via Friedrich Engels' *The Condition of the Working Class in England in 1844*, and was fully popularised by a series of lectures by Arnold Toynbee in 1881. See Crump (2010).
4. Including by people who would vehemently deny any specifically *Marxist* influence on their work.
5. Very few commentators on technology depart from this position. Those that despondently maintain that 'technological progress' cannot be checked subscribe to a generally similar position, but without hope. That is, they argue that it would be better - in the deepest and broadest possible sense of 'better' - for human beings if The Machine could be halted, but don't believe it can. A perhaps more extreme position is that of philosopher Nick Land who, in his gleefully misanthropic books like *Fanged Noumena* (Land, 2011b), argues that human beings will definitely be wiped out, or - in a sense much the same thing - transformed beyond recognition by technological developments, but that this shrugging-off of 'anthropological characteristics' is *something to be welcomed*.
6. See Miller & Rose's *Governing the Present* (2008) for further background on the European debates about democracy in the workplace at the time, although they do not mention PD directly.

06 Architectures of acumen

06.01 Introduction

In the last chapter, we saw how the idea of designing human behaviour became entangled with the idea of treating people as machines. The understanding of the machine - or, given its prominence as a menacing figure of thought, The Machine - that was forged on the factory floor has proven remarkably persistent. The language to describe it has barely changed, and neither have the political response to it. The Machine still underpins prevailing ideas about how technological systems - whether embodied in the artefacts we habitually associate with the design disciplines or in the shape of services and organisations - *should* be developed: we must *start with people, put people first*, and so on. While we should not dismiss this, the last chapter ended on a note of doubt. The Machine furnishes advocates of 'participatory' practices and systems with arguments about the forms of power based on *excluding* people from processes of technological development, but it says little about those that might be based on *including* them. And the force of The Machine scours from design discourses older associations of craft with *craftiness*. Craft now appears as something shorn of *mêtis*, giving the image of tools that are obedient servants to human beings (rather than, as with The Machine, the other way around). This is not at all - as we saw in Chapter 04 - how craft *used to be* understood.

At the end of the last chapter, I suggested that perhaps the link between craft and being crafty that *mêtis* encodes might offer us a different approach to contemporary design's grasp on human behaviour as the object of design. We saw, in Chapter 03, how the approach to human behaviour as a horizon of contemporary design takes shape at present in the project of service design - focussing on participatory practices that construct services, which in turn are interactive objects 'like products', but more complex. In this chapter, we interrogate some areas of recent and contemporary *mêtic* practice. These are examples largely pursued *outside the* design disciplines, and not consciously identified as such by those involved; nonetheless, *mêtis*

allows us to see them as instances of a *form of design that takes human behaviour as its object*, insofar as *mêtis* is, firstly, associated with design's deep history, and secondly, allows us to grasp the operations at work as exemplary of it. Each of our examples displays an *architecture of acumen*, the fabrication of a sometimes nebulous or fleeting arrangement of materials (always including people as the principle actors) which demonstrate cunning, guile, and the qualities of *mêtic* action in general. The chapter thus narrates the operations of fringe commercial services, characterised by extreme ingenuity and sometimes murky - or at the very least complex - moral status; marketing, and its origins in propaganda and psychological operations; and various instances of ingenious political activism. All of these fields contain richly *mêtic* tendencies. They involve not 'commodity-like' organisations of people and things, set up to produce a repeatable effect, but rather original and highly contextual schemes, plots and gambits. They involve participation - but not as an *a priori* gesture of openness and peaceable democracy. Through our descriptions of them, we can come to understand something of the relevance and value of *mêtis* in apprehending situations that are politically potent but evade the logic to which 'the ideal programme of technological development', as I have called it, subscribes.

Structure of the chapter

In the next section (06.02), we will explore Keller Easterling's concept of *the wrong story*. All the examples of *mêtic* operations in the later sections of the chapter are examples of 'wrong stories', the kinds of situations, practices and events that do not easily fit established narratives about 'how the world should work' - narratives, that is, like the pro-participation logic that found its birth in design in the Industrial Revolution, as we saw in the last chapter. The following sections describe a range of 'wrong stories' in which the protagonists are psyops units, marketing mavens, and political dissenters (06.03-06.06). They tutor us about both the power of 'involving people' in the fabrication of designed situations and the ambivalence that

can come with doing so, scrambling reflexive differences we might place between calculation and conviction, or honesty and manipulation. These ‘wrong stories’ help to cultivate, I suggest, an alternative view of how design might approach the horizon of human activity to that in the current design discourse (archetypally, service design), and a powerful, if ambiguous, resource; and in section 06.07, I construct an explicit sketch of a contemporary *mêtic* form of design practice and what it involves, in contradistinction to practices like service design. We end with a brief conclusion that sets the stage for the next, and final, main chapter of the thesis (06.08).

06.02 The wrong story

The vision of ‘participatory’ design practice, and of convivial tools more generally, as victory of human beings over The Machine, of self-organisation over control from ‘above’, is compelling. But the very *fact* that it is so compelling has become an object of scrutiny in the social sciences, particularly in the fields of international development and the sociology of management, which have a history of participatory practices - rhetorically opposed to The Machine. In these fields, a great deal of critique has *begun* from the point of observing the extraordinary enthusiasm that ‘participatory practice’ attract. The international development theorist Bill Cooke, for example, has noted that ethnographic accounts of participatory practices of the type now being experimented with in service design have often made a point of observing the sheer *excitement* they seem capable of generating: ‘Studies of some of the earliest versions of organised participatory face-to-face groups... from the 1950s onwards have shown how they generate euphoria in both participants and facilitators... [as though it had] some magical power capable of engendering profound personal transformation’ (Cooke, 2004: 44-45).

We might call this a kind of *tactical rush* induced by the prospect of participatory practices' potential power, a rush both in the sense of exhilaration and a limited view that is perhaps both hasty and myopic. Indeed Cooke, like many others in his field, suggest that the two are linked. The enthusiasm with which the prospect of participatory practices is greeted, for Cooke and his peers, derives in large part from a *very simplistic view of power* to which 'participatory' rhetoric can tend: 'power' is domination, of the kind associated with The Machine, while 'participation' is, not just possibly but *a priori* and *necessarily*, a counterweight to domination. Face-to-face, collaborative working is its antithesis, and will overcome entrenched interests, opening them to critique, and produce radically democratic solutions. But where 'domination' or 'exploitation' is only seen in terms of The Machine, its less overt forms - those that *rely* on 'involving people in the process' - are obscured (see Cooke & Kothari, 2001a, 2001b). This, of course, does not apply to *all* 'participatory' processes; it applies to what Frances Cleaver calls 'naive participation', in which the belief arises that face-to-face, 'participatory' processes contact will dismiss the influence of larger power structures, which are considered the 'problem' to which participation is the 'solution' (Cleaver, 2001). But this naivety is perhaps best understood as a *tendency*, not a zero-sum state: that is, the advocacy of participation is not *either* 'naive' or 'not naive', but, understandably because it is often so strongly based on a particular image of power - in various guises, The Machine - that it tends towards valuing itself using that metric.

Consider, for example, the opinion recently offered by the service designer Jennie Winhall, who, in her 2006 essay *Is Design Political?* ventures an answer to this self-addressed question. Yes, is the gist of her response; but with certain caveats attached to this affirmation. '[T]he good news', she writes, 'is that there's a growing breed of designers who are political with a small 'p'. They're not campaigning, but problem-solvers; they're not 'master-designers', but democratic in approach' (Winhall, 2006a). The most important thing, according to Winhall's essay, is to focus on the here-and-now, not be derailed by broader concerns. As one recent paper on service design has it: 'the citizens are the protagonists, providing entrepreneurial answers to specific

social demands by relying on their energy, passion, creativity and mutual trust', and this 'will engender a sense of democracy that helps to achieve equal opportunities for all' (Un, Rocchi & Green, 2008: 149); and Manzini speaks of the 'collaborative services' performed by members of 'creative communities' to one another as being will be 'democratic' purely because they are (assumed inevitably to be) 'non-hierarchical, network based organisations' (Jegou & Manzini, 2008: 40).

This sentiment even slips into de Carlo's classic essay *Architecture's Public*, in which he writes that participation is particularly important because the face-to-face contact on which it is based renders technical development processes 'therefore independent, by definition, of all the alienating automatisms of the productive systems and the power structure' (2005: 19). But why should these face-to-face encounters be 'independent, by definition' or 'alienating automatisms'? De Carlo presumes that they are not, as it were, carried into the room with the various parties who convene in it to partake of 'participatory' approaches - 'the productive systems and the power structure' are left outside of it. 'Service design projects', observes Stefan Holmlid, 'seem to embrace the figure of thought that co-operation between actors' shared capacities and resources will leverage every actor, in the process, and toward their own and shared goals' (Holmlid, 2009: 9). Everyone will work together, and this will overcome inequalities or other 'alienating' dimensions of contemporary power structures.

The idea that 'participation' is a generic 'solution' to the problematic machinations of power trades off an idea that the human life is diminished by The Machine, which takes a reductive view of human beings. But perhaps this argument against being reductive can *itself* be reductive, a technological prescription for a 'better world' that gains much of its appeal, as Cooke notes, from presenting a simplified view of the world. While the Machine narrative is compelling, it is in large part because it 'elides so much in order to produce a gripping account... [I]t makes a compelling story, and you can see why people are attracted to it, because in a way it's so all-encompassing it gives you the answers you need so that you don't

need to think too much more, or your function is simply to elaborate what's already there, applying the same theoretical template over and over again' (Thrift, 2010: 189-190). Thrift comes close to describing what Keller Easterling calls the 'right story'. The 'right story' is a kind of 'habit of mind' that deals badly with inevitable ambivalence that comes with complexity. Easterling describes its operation thus:

One must fight for the right, choose up sides, declare principles, and decide who is not sympathetic. It is a very narrow but a very well-rehearsed habit of mind that has organised most of our classic political thought and established epistemic frameworks for huge bodies of knowledge. The right story is often a tragic, totalising narrative in which global forces naturally part into symmetrical duelling forces that must conquer the other for total revolution. Anything less would constitute collusion. Righteousness intensifies such combative dispositions. Even those theories that admit to complicities and mixtures somehow still drift toward epic heraldry and the theme music of enemies and innocents.

Easterling, 2008c: 19

The right story describes what is *supposed* to happen, how the world is *supposed* to be. This does not mean that it is unsophisticated, but its righteousness makes it completely unresponsive to much of what actually transpires in the world. It is a simplification, as it must inevitably be in order to capture a grand, totalising narrative; but it inevitably produces 'false oppositions and category mistakes', a multiplying panorama of 'wrong stories' when faced with the ambiguity and contradictions of actual, 'real world' practice: 'most of what happens in the world might be considered part of the wrong story - the things that are not supposed to happen' (Easterling, 2008c: 19).

The wrong story is in evidence when we witness backfires, roundabout successes, last-minute thefts of victory; cases where sure things are derailed, ambitious projects crumble, and relations of power and authority are suddenly reversed. Events that occur at critical moments, where the rules expected to obtain in a situation are flummoxed, clearly draw attention: they are literally *remarkable*, even if, because they call into question the comprehensiveness of the *right* story, they are rejected out of hand, or written out of the official record of events. A striking example of how the ‘right story’ about ‘participation’ encodes tacit expectations is found in the following anecdote, related by Jamais Cascio, co-founder of *Worldchanging.com*, who here describes the reception of certain speculations he made in a presentation at Mobile Monday in Amsterdam on June 1st, 2009 (Cascio, 2009). In his lecture, Cascio touched on the various political uses to which point-to-many microblogging tool Twitter might be put:

In noting the potential power of social networking tools for organising mass change, I thought out loud for a moment about what kinds of dangers might emerge. It struck me, as I spoke, that there is a terrible analogy that might be applicable: the use of radio as a way of coordinating bloody attacks on rival ethnic communities during the Rwandan genocide in the early 1990s. I asked, out loud, whether Twitter could ever be used to trigger a genocide. The audience was understandably stunned by the question, and after a few seconds someone shouted, "No!"

Cascio, 2009

Why ‘no’? wonders Cascio. After all, ‘the same kinds of dynamics that have allowed for a potential democratic revolution in Iran could emerge just as readily in support of something far darker’ (*ibid.*). We do not have to plumb the dark depths of genocide or terrorism (cf. Knorr

Cetina, 2005; Robb, 2007) to find instances of heavily 'participatory' practices that are extremely controversial, and on which the narrative of fighting The Machine gives little purchase. These *wrong stories*, writes Easterling, are often found attending 'seemingly unlikely political events' which 'excite feelings of resourcefulness', because they suggest a repertoire of overlooked cultural mechanisms that might be pressed into action (Easterling, 2008c).

They constitute outlying evidence and category leftovers - the butterflies that do not get pinned to the board because they do not reinforce expectations. These 'wrong stories' exceed prevailing logics or conventional wisdom and reset our accustomed narratives... [T]heir instrumentality and logic are simply underexplored. Many such phantom turning points and fulcrums are not easily taxonomised or moralised... Yet however invisible to our political orthodoxies, they may be the real cause of shifts in sentiment, changes in economic fortune, an escalation or suspension of violence, or a swift epidemic of change. While not sanctioned by a recognised form of polity, these events reside in a more extensive parallel polity with fickle or unexpressed logics.

Easterling, 2008c: 19

It is to some examples of these *wrong stories* that we now turn.

06.03 Mêtic services

In the first case, we might consider services and organisations that embody *mêtis* within their operations. Consider *alibi agencies*, services that provide their clients with tailored ‘excuses’ for absences. Accounts of alibi agencies’ emergence indicate that they spread to Europe and America in the last decade from Japan (Malkin, 2007). There, they appear to have existed for some time, originally tailored to providing the appearance of licit employment for nightclub hostesses, who may not want family or friends to know the real source of their income. Later, they seem to have extended their service to those who are out of work but wish to appear employed. Perhaps the most successful, and sophisticated, example is the US-based firm Alibi Network,⁸ a ‘full service discrete agency’ that provides bespoke ‘alibis and excuses as well as assistance with a variety of sensitive issues... Whether you are interested in a doctor’s excuse note to skip work, a virtual seminar to hide your discrete affair or need us to place a discreet phone call on your behalf, we’ll provide the support you are looking for’.

With the pressures of modern life many of us have occasion to stray from our commitments. This is often a short-term encounter, unrelated to our long-term plans, but with modern technology, it has become increasingly difficult to carry on such temporary activity without being detected. The surfacing of such an encounter in any way whatsoever can put an incredible strain on all parties concerned. Family life, friendship and business’s well-being can all be jeopardised for what may indeed have been a totally inconsequential short-term objective.

Alibi Network was established to provide a way out of this situation. We offer a service which can help protect your loved ones from undue anxiety,

and help ensure the stability of long-term relationships and financial security.

Alibi Network, 2009

This support is rendered through all kinds of operations, including 'rescue calls', a call planned for a specific time that purports to notify the recipient of a (feigned) emergency, easing their extraction from difficult situations; a 'virtual hotel service', with a 24hr operator that will route a call ostensibly to your room number but actually to a number you choose, often a mobile phone; fabricated plane tickets, travel itineraries, conference programmes, hotel receipts, and so on.

Alibi Network undoubtedly 'starts with people', in that it is responsive to a particular desire, rather than being predicated on a new technology or an existing institutional format. The organisation also, as the above examples show, structures itself around the involvement of 'the user' and attends closely to the latter's 'experience'; although it offers 'generic packages' to its clients, it relies heavily on customisation in order to fulfil its goals. The existence of such services raise questions, not about making 'user experience' better, but their social function and implications - that is, the moral, ethical, political etc. perspective on one person - an alibi agent - assisting another with something clearly socially contentious - lying. And yet alibi agencies are, quite self-consciously, projects of empowerment. Indeed, Alibi Network specifically presents itself as such: its corporate catchline is *Empowering Real People in a Real World*, and its website offers up as the organisation's 'mission statement' as '[t]o invent, create and provide personalised virtual alibis for people wishing to anticipate and justify absences' but, *also*, '[t]o develop a comprehensive, balanced and integrated approach to privacy - one that protects and safeguards your personal information'.

The reader of this text may consider the organisation's efforts at self-justification to strain credibility. The libertarian-individualist worldview the service embodies may jar, and its insistent 'pragmatism' might plausibly be judged cynical, exploitative, and insincere. Nonetheless, it is *a response* to contemporary phenomena that serve to erode traditional modes of personal privacy. While perhaps not the *best* response, to this situation, and certainly not the *only* plausible one, the efforts of alibi agencies are nonetheless, on some level, valid. If service design tasks itself as 'enabling' and 'facilitating' 'what people want', it seems clear that some people, at least, *do want this*. Indeed, while Alibi Network is a formal institution, from the late '90s, 'alibi clubs' began to appear spontaneously on the internet, organised through message boards and making particular use of the spread of mobile phones, as this journalistic account relays (Richtel, 2004).

Alibi services, as this shows, are largely immune to pleas to 'design around the user', because they already do so. They cannot be made 'more participatory', because they exist in forms that already are. The questions they raise are not of 'participation', or its absence. They pose a challenge to the marriage, and other relationships, conceived idealistically; they raise questions about how we understand privacy, its limits, and their contemporary transformation by lengthening working hours, domestic expectations, the network of traces left by the use of mobile phones, email and other digital systems. 'Participatory' narratives, at least in simplistic form, have little traction here; yet alibi services and 'clubs' possess an undoubtable cultural force, morally ambiguous as they may be.

06.04 Practices of suasion

Alibi agencies, as intriguing as they are as designed propositions that complexly respond to cultural concerns about privacy as well as, perhaps, less salubrious inclinations, are far from the only instance of a 'wrong story' about 'participation' - one that simply does not fit dominant narratives. We can introduce another excellent example of what Easterling calls a 'parallel polity with fickle or unexpressed logics' with the following anecdote. Between summer 1944 and the following spring, 257,232 near-identical letters were received by German soldiers serving on the European front lines. 'Dear frontline soldier! When will you have leave again?' the letters began (Friedman, 2004). 'When will you be able to forget your arduous soldier's duties for a while, for a few days of joy, happiness and love? We at home know of your heroic struggle. We understand that even the bravest gets tired sometime and need a soft pillow, tenderness and healthy enjoyment' (*ibid.*). The letters continued:

WE ARE WAITING FOR YOU: For you who must spend your leave in a foreign town; for you whom the war has deprived of a home; for you who is alone in the world without a wife, fiancée or a flirt.

WE ARE WAITING FOR YOU: Cut our symbol from this letter. In every coffee shop, in every bar near a railway station, place it on your glass so that it can be clearly seen. A member of our [organisation] will soon contact you. The dreams you had at the front, and the longings of your lonely nights, will be fulfilled... We want you, not your money. Therefore, you should always show our membership card (to anyone who may approach you). There are members everywhere, because we women understand our duties to the homeland and to its defenders.

Translated by Friedman, 2004

And the nub of the letter and its project of temptation is contained in the sign-off. 'We, of course, are selfish too - we have been separated from our men for many years' write the fictitious members of the fraudulent league. 'With all those foreigners around us, we would like once more to press a real German youth to our bosom. No inhibitions now: Your wife, sister, or lover is one of us as well' (ibid.)

The author of the letters, which purported to be sent on behalf of an organisation called 'The League of Lonely Women', was Corporal Barbara Lauwers, staff member of the innocuously titled Morale Operations unit, a subdivision of the even more innocuously titled Office of Strategic Services (later to mutate into the CIA). Trained as a lawyer, Lauwers was one of the Allied forces' most gifted propagandists. Although the effectiveness of the above letter is not known, her ploys were highly successful; one of her gambits alone encouraged 600 enemy soldiers to give themselves up (see Macdonald, 2007).

The 'League' was an instance of *black propaganda*, the most potent of a colour scheme that includes *grey* and *white*. *White* propaganda declares its source, which is usually an official body; most contemporary advertising would be considered 'white' propaganda. In the case of *grey* propaganda, the source is usually obscured; for example, much graffiti would be 'grey'. *Black* propaganda, the most potent flavour, is camouflaged: the *actual* source is concealed, and a *false* source is suggested - that is, it is a forgery, either masquerading as coming from somewhere that it has not (as in a faked letter from an important person or organisation), or apparently emanating from a source that is, in fact, entirely invented. Psychological operation (*psyops*) groups have found propaganda most effective in its darkest colours - when its intention to change minds, so that one comes away from it believing X or Y to be the case, is not obvious. 'A source is more effective if the target audience appears to be an unintended

recipient of information directed at a different audience. In such a situation, the source does not appear to be seeking to persuade the target audience and [therefore] appears to be more credible' (Macdonald, 2007: 34).²

Psyops is an interesting, very subtle and profoundly cynical (and also deeply *mêtic*) practice of 'design' in its own right. Propaganda had been an effective and well-funded practice in the First World War, but it had also been a relatively improvised affair, learning by rapid trial-and-error about the use of new media - especially radio. By the Second World War, in contrast, propaganda was refined into an art form. Scot Macdonald reports that psyops departments in WWII, as they came to be known, were staffed by a collaborative mix of journalists, PR and advertising agents, missionaries, artists, authors, screenwriters, teachers, as well as subject specialists - mechanics, farmers, people of various religious groups, etc. (Macdonald, 2007: 38). The propaganda these interdisciplinary organisations produced was highly honed: they were able to draw on the successes and failures of propaganda efforts in the previous World War, and the various (relatively) minor international scuffles after it. They could also employ a host of techniques and ploys honed in commercial industry over the course of the interim decades, especially with new technologies that had become widespread (especially radio and film) - a point to which we will presently return.

Psyops aims to tweak existing patterns of behaviour, building on contemporary beliefs and twisting them into a plot. To do so, it must be *credible*, and the credibility of propaganda, writes Scot Macdonald, 'resides in the minds of the audience'; in turn, it is in the minds of its intended audience that psyops finds its chief inspiration (Macdonald, 2007: 37). The centrality of this kind of thinking - which we might call *hacking beliefs* - is often made explicit. For example, considered the following 'undated WWII Office of Strategic Services Moral Operations report

entitled 'Superstitions and Black Magic' excerpted by Herbert Friedman (2004). In this document, we find, unambiguously stated, the OSS's intention to

[e]xploit local superstitions in Italy to arouse apprehensions about the future and to create defeatism and demoralisation. Artificially produce omens predicting Nazi defeat, interpret various events as omens, and spread rumours about omens having taken place. Stir up old superstitions about strangers appearing in the land (Germans). Disseminate rumours that a sibyl or astrologer has predicted that the streets of Italy will run in blood [sic]... if the strangers (Germans) stay in the land.

quoted by Friedman, 2004

Witness the bluntness of another, later and more general document, that Friedman disinters from the archives: 'Policy Number 36', produced by the Joint United States Public Affairs Office dated May 10th 1967:

A strong superstition or a deeply-held belief shared by a substantial number of the enemy target audience can be used as a psychological weapon because it permits with some degree of probability the prediction of individual or group behaviour under a given set of conditions...

The first step in the manipulation of a superstition as an enemy vulnerability is its exact identification and detailed definition of its spread and intensity among the target audience. The second is to insure friendly control of the stimuli and the capability to create a situation that will trigger the desired superstitious behaviour.

quoted by Friedman, 2004

Of course, 'superstition' here is a quite prejudicial term, implying that the belief (of someone else) is ungrounded. But in theory, any 'belief' can be *utilised* in this way. From this position, a belief is simply a set of tendencies to act in a particular way. This creates strange warps in our customary scripts about *authenticity*. Richard Crossman, who during the Second World War bore the ornate title of British Deputy Director of the Political Warfare Department for the Supreme Allied Expeditionary Force, once remarked that it precisely a contempt for the troubling nature of 'suasion' (as Miller, 2005, calls this kind of behaviour) that tutors one to be its effective practitioner: 'One must hate propaganda to do it well' (quoted by Macdonald, 2007: 34). In his wartime propaganda efforts, Crossman was deeply concerned with the truth and trustworthiness - and these were not, he observed, synonymous. There was a moral and political demand, Crossman felt, for his work to be *authentic*, to be *virtuous* from a more than 'ends ultimately justify means'-type position. (That is to say, rather than justifying lying because 'we are at war'.) But, for all that he was a passionate advocate of the truth, he recognised that in the situation he found himself, *honesty was not separate from manipulation*: indeed, honesty could be *a weapon in itself*. In the following excerpt, Crossman observes that 'truth pays':

It is a complete delusion to think of the brilliant propagandist as being a professional liar. The brilliant propagandist is the man who tells the truth, or that selection of the truth which is requisite for his purpose, and tells it in such a way that the recipient does not think that he is receiving any propaganda... If you give a man the correct information for seven years, he may believe the incorrect information on the first day of the eighth year when it is necessary, from your point of view, that he should do so. Your first job is to build the credibility and the authenticity of your propaganda, and

persuade the enemy to trust you although you are his enemy. . . . The art of propaganda is not telling lies, but rather selecting the truth you require and giving it mixed up with some truths the audience wants to hear.

Richard Crossman,
quoted by Macdonald, 2007: 35-36

In this way, even a military defeat 'is a great opportunity, especially if you... say that your defeat is worse than it is. You must be frank about it, *franker than the facts*' (quoted *ibid.* 36, emphasis added). The concession of defeat both builds trust with your enemies and fosters in them confidence that might lead them into blunders useful to you. But you also have to *not* repeat things, accounts of startling victories, for instance, if the enemy will not believe them - *even if they are true* (*ibid.* 36-38). This puts the practitioner of suasion in a very unusual space, which Mark Crispin Miller describes as a 'mental borderland, where one can never clearly see conviction as distinct from calculation' (Miller, 2005: 22). Where honesty becomes weaponised, instinctive oppositions of 'authenticity' and 'artifice', 'truths' and 'lies', 'conviction' and 'calculation' have very little traction.

Psyops is an engaging field of *mêtic* design practice in its own right, but all the more so because it is a pivotal chapter in the history of marketing, while also being a chapter that even otherwise thorough and balanced histories - like Martin Kornberger's *Brand Society* (2010) omit. The professionalisation of marketing, around the time of the turn of the century before the last one, was dogged with serious problems of credibility. In the opening decades of the twentieth century, when advertising and marketing began to emerge as distinct fields, their principle opponent was a European and American culture that largely saw the actions of the salesman as that of the illusionist: purveyors of deceitful tricks and stage-craft, operating at a trivial scale, and preying on the gullible - essentially, the practice of conning fools out of money

for rubbish (see During, 2004). In narratives like Kornberger's, a popular conception of marketing as, effectively, a cunning form of salesmanship was eventually overcome by marketing's efficacy as a business tool, on the one hand, and on the other by its incorporation of prevailing scientific theories, often either economic or psychological (especially Freudian psychoanalysis, in its early decades). Miller (2005) persuasively argues an alternative view: it was not a framing in the abstractions of economics or a status as 'applied psychology' that cemented marketing's reputation and promoted it as a specific field, Miller suggests; it was not even a recognition of the efficacy of its operations in a commercial environment. These were, undoubtedly, operative factors in achieving widespread credibility for marketing, as a field. But at least as important, Miller writes, was the involvement of marketing in the vast military campaigns of the early twentieth century, as propagandists.

Although propaganda, as we understand that word today, had been a feature of military campaigns *in perpetuum*, 'it was not until 1915 that governments first systematically deployed the entire range of modern media to rouse their populations to fanatical assent. Here was an extraordinary state accomplishment: mass enthusiasm for a global brawl that otherwise would mystify those very masses, and shattered most of those who actually took part in it' (Miller, 2005: 11). Miller observes just how much WWI improved the social standing of a certain kind of salesman:

Formerly, the lords of industry had often seen the advertising agent as a charlatan, associated with the tawdry bunkum used to peddle patent medicines and cigarettes, and trying to sell a service that any boss with half a brain could surely manage on his own... [The] sort of work... necessary only on the vaudeville circuit and on Broadway. The great Allied campaign to celebrate (or sell) Democracy, etc., was a venture so

successful, and, it seemed, so noble, that it suddenly legitimised such propagandists, who, once the war had ended, went right to work massaging or exciting various publics on behalf of entities like General Motors, Proctor & Gamble, John D. Rockefeller, General Electric.

Miller, 2005: 12

06.05 The impresario

This chapter of marketing's history and dimensions of its practice - drawing on existing beliefs and 'tweaking' them, often covertly, to make a certain kind of behaviour more likely - have been largely written out of marketing's account of itself, despite its historical importance to the field. It simply introduces too much ambivalence, shades the practice too darkly - in short, causes too many *problems*. Certainly, descriptions of marketing by marketers themselves often take shape in a language which completely avoids any sense that their practice is *manipulative* or, if it is acknowledged, is always accompanied by assertions of the rightness of their approach. There is a particular tendency in contemporary marketing theory for its practice to be framed in economic language: marketers, they say, 'create value' and 'facilitate' the 'exchange' thereof, always guided by 'giving people what they want'. For example, in the following (literally) textbook definition, marketing

is a social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others... Marketing involves building profitable, value-laden

relationships... [Marketing is] the process by which companies create value for customers and build strong customer relationships in order to capture value from customers in return.

Kotler & Armstrong, 2010: 7

This all seems perfectly *above board*, as it were. But at the same time, marketing is an intellectually difficult proposition, a 'monstrous' practice, as Don Slater puts it (2011). Marketing can be understood to entangle art, commerce, and the regulation and direction of human behaviour, troubling commonplace distinctions between these fields (and perhaps revealing that these distinctions are, themselves, less stable than one might think) around a *mêtic* core. Marketing is often asserted to be 'creative', for example, but at the same time it is thoroughly disparaged by many artists, journalists, critics, and other commentators who are given credence on matters creativity; they see its ambitions as limited both aesthetically and conceptually by a basis in unfettered commerce. And many descriptions of marketing are keen to stress its striving for 'authenticity', aiming to ensure that industrial production is calibrated to produce 'a world with, well, some depth' (Isenstadt, 2001: 120). But at the same time, it is largely held up (in a popular culture that eagerly purchases its wares) as a vain and vaguely deceitful practice, a marker of *inauthenticity* (Slater, 2011). Marketers frequently present their role - as in the definition above - as that of the 'champion of the consumer'. Marketing theory (e.g Spohrer, et al. 2008) often assumes that people are *already* consumers, and marketing practice merely recognises and responds to this fact. But academic commentators have sternly pointed to marketing's *creation* of 'consumers': persuading people to *act* according to the terms of consumption that marketers promote, a particular form of possessive individualism (Graeber, 2010). Moreover, despite marketers' reliance on a technical terminology drawn from economics, framing their practice in terms of production, consumption, exchange, *et cetera*, this neutral, economic language conceals the political ambivalence of its physical

machinations. To give but one example, during the course of their intellectual campaign to move the focus of marketing from static, inert products to the more dynamic realm of services, the marketing theorists Stephen Vargo and Robert Lusch espouse 'service' as the foundation of all economic exchange. 'Service', they hold, is a disembodied flow of 'value', based on the application of knowledge or skills for someone else (Vargo & Lusch, 2008c: 35). Needless to say, when applied to the encounter between a prostitute and his or her john or jane, this language seems to, at best, miss the point; at worst, to euphemise and sanitise exploitation in bland, generic, vaguely positive-sounding terms.

Much as was the case with twentieth-century commercial design practices (cf. Dunne & Raby, 2001), there is a tendency in the marketing literature to present its operations as 'above board': neutral, useful, democratic, and 'creative' but in ways that are both reliable and unthreatening. A distance is maintained from an ambivalent, manipulative dimension of marketing practice which is made so evident in psyops - and which was the source, Miller persuasively contends, of marketing's acceptance into polite society on the grounds that it was so *efficacious*. But if these practices are very *visible* in psyops (at least, one might say, when one is not the intended target), where they are shorn of explicitly commercial content, they persist in the typical professional practice of marketing that is prevalent today - indeed has been placed at the heart of large organisations, both private- and public-sector (cf. Lury, 2004). In commercial circumstances, the subtle working on tendencies to behave in particular ways takes on a more refined objective: in the words of one of marketing's early mavens - one might even say 'impresario' - Edward Bernays, '[m]arketing's purpose is to weave a web of enchantment and transform vague positive responses into an *impulse of possession*' (Bernays, quoted by Becker, 2009: 20, emphasis added). Bernays, nephew to Sigmund Freud, was one of the arch-publicists of the early twentieth century, present in the days when marketing was beginning to form as a distinctive field - a process that he, and contemporaries like Walter Lippmann, played no small

part in. By today's standards, Bernays was outstandingly forward about what marketing practice *actually involved*: 'The conscious and intelligent manipulation of the organised habits and opinions of the masses is an important element in democratic society', he wrote in his seminal book of 1928, *Propaganda* (which proudly retains the wartime name for his practice); '[t]hose who manipulate this unseen mechanism of society constitute an invisible government which is the true ruling power of country...[It] is they who pull the wires which control the public mind, who harness old social forces and contrive new ways to bind and guide the world' (Bernays, 2005: 37-38).

It is on this dimension of marketing practice, an aspect about which its proponents and theorists are largely silent or at least tactfully hazy, on which its most voracious critics have seized. An account of marketing-as-trick forms the substance of books like Vince Packard's bestselling *The Hidden Persuaders* (1958), which are often themselves marketed not in terms of their academic or scholarly worth, but in the guise of scandalous, shocking popular exposés. One such exposé is the social psychologist Robert Cialdini's study *Influence* (1993), which documents and analyses many stories where skilled selling acts of selling (and buying) are on display. In language that is almost identical to that of *mêtis*, Cialdini writes that the ploys involved are reminiscent of the Japanese martial art *jujitsu*, whose practitioners study how to use their 'own strength only minimally against an opponent... exploit[ing] the power inherent in such naturally present principles as gravity, leverage, momentum, and inertia' (Cialdini, 1993: 11). A typical story is this, Cialdini's account of a practice developed by two American brothers, Sid and Harry Drubeck, who together owned and ran a men's tailor shop in the 1930s:

Whenever Sid had a new customer trying on suits... he would admit to a hearing problem and repeatedly request that the man speak more loudly to him. Once the customer had found a suit he liked and asked for the price,

Sid would call to his brother, the head tailor, at the back of the room, 'Harry, how much for this suit?' Looking up from his work - and greatly exaggerating the suit's true price - Harry would call back, 'For that beautiful, all wool suit, forty-two dollars.' Pretending not to have heard and cupping his hand to his ear, Sid would ask again. Once more Harry would reply, 'Forty-two dollars'. At this point, Sid would turn to the customer and report, 'He says twenty-two dollars.' Many a man would hurry to buy the suit and scramble out of the shop... before poor Sid discovered the 'mistake'.

Cialdini, 1993: 11

Cialdini's book is a veritable compendium of such ploys. He spends many pages, for example, describing how *contrast effects* can be exploited to ramp up a customer's expenditure. While 'common sense might suggest... [that if] a man has just spent a lot of money to purchase a suit, he may be reluctant to spend much more on the purchase of a sweater, but the clothiers know better... Sell the suit first, because when it comes time to look at sweaters, their prices will not seem as high in comparison' (*ibid.* 13). While 'a man might balk at spending \$90 for a sweater... if he has just bought a \$475 suit a \$90 sweater does not seem excessive' (*ibid.*). A different version of this is to begin negotiations by overstating what one wants - that is, to ask for something obviously unreasonable, and then to offer what one *really* wants as a 'concession'.³

Here, marketing is posed not as an 'exchange of value', or the act of 'champions of consumers', but as something more ambivalent: a seduction. The practice of *selling*, fundamental to commercial marketing and consistently discussed but almost never, today, in such raw terms as Bernays has used, is broadly focussed on constructing situations in which someone will act as you want them to. The central means of this is to persuade the mark, for as long as possible

or at least for long enough, that it is *they* who want to act this way, and you are merely *their* humble vessel; or, in extreme instances - as with Cialdini's tailors - you appear to be an innocent stooge in *their* ploy; they should walk away feeling that they have won, even though their behaviour has been modulated to effect someone else's ambitions. 'Commercial success, in other words', is not 'about making things, it [is] about framing things' so as to induce the desire to do something (Isenstadt, 2001: 117).

Perhaps Isenstadt's words are a little too strong; the salesman, and more broadly the impresario who embodies the acme of their craft, *does* 'frame things', but they do so to make them. They are *fabricators of situations*. The physical transformations they exert may be much less obvious than those of most designers, who fill the page or devise the wood-and-plastic table; indeed, in the case of Cialdini's tailors, what they assemble rapidly disappears. Vaporous these architectures of acumen may be, but they are real, effective, and in the hands of skilled practitioner of suasion, these architectures can be incredibly subtle and elaborate. Bernays, for instance, wrote extensively about the importance of *scanning the environment*, looking for current tendencies in how people act, and then 'work[ing] to create circumstances that will modify that custom' (Bernays, 2005: 77). Like the superstitions and suspicions on which the psyops agents of the OSS preyed (as we saw above), a custom seems nebulous indeed, but for Bernays this was the material his most ambitious projects worked. Relating one of his own (highly successful) projects, Bernays (who usually, as in this case, diplomatically spoke of his own projects in the neutral third-person as performed by 'a marketer'), writes the following:

[For example, the marketer] will endeavour to develop public acceptance of the idea of a music room in the home. This he may do, for example, by organising an exhibition of period music rooms designed by well-known

decorators... Then, in order to create dramatic interest in the exhibit, he stages an event or ceremony. To this ceremony key people, persons known to influence the buying habits of the public... are invited. These key people affect other groups, lifting the idea of the music room to a place in the public consciousness which it did not have before. The juxtaposition of these leaders, and the idea which they are dramatising, are then projected to the wider public through various publicity channels. Meanwhile, influential architects have been persuaded to make the music room an integral architectural part of their plans with perhaps a specially charming niche in one corner for the piano...

The music room will be accepted because it has been made the thing. And the man or woman who has a music room, or has arranged a corner of the parlour as a musical corner, will naturally think of buying a piano. It will come to him as his own idea.

Bernays, 2005: 78

This is a subtle process, then, of *giving people ideas that appear to be their own*, and it is at the very heart of the art of suasion. It is, at once, both an extraordinary instance of *mêtis* - setting a kind of trap, if not lethal or necessarily even harmful, that people are *happy to walk into* - and also the central practice in the repertoire of the *impresario*, a term that, as the reader may recall from Chapter 03, has been fixed to senior service designers, who have not been pleased at the label. This was, to refresh our minds, the phrase used by Mike Dempsey, at the time the Master of the Faculty of Royal Designers for Industry. Occasioned by Hilary Cottam's receipt of the Design of the Year Award from the UK's Design Museum, Dempsey opined that it was 'very worry that the term designer is now so abused', and described Cottam's work as that of an 'organisational impresario' rather than a 'designer' (quoted by Burns, et al. 2006: 25). As we

noted at the time, this is a conservative point of view, echoed by Deyan Sudjic's reproduction of comments that service designers are to 'proper' designers what a publishing agent or editor is to a novelist - complementary roles, to be sure, but not ones that it is helpful, or even plausible, to confuse (Sudjic, 2005).

As we saw in Chapter 03, the general character of Dempsey's and Sudjic's dismissals are somewhat offhand. They are based on a very conservative view of 'what design is', which service design contests. There is perhaps, however, a subtler story that might be unfolded from this acrimonious exchange. If Dempsey and Sudjic, on the one hand, and Cottam and her peers, on the other, deeply disagree about what counts as design, they have an unstated agreement about what it *shouldn't* be: the actions of an 'organisational impresario'. A post from November 2005 on the Observer news blog quotes Cottam's colleague Colin Burns, who asserts that he is 'fed up with the whole 'I went to art school so I'm a designer' view', and further claims, with some visible strength of feeling, that '[i]t's *insulting* to call people like Hilary Cottam an impresario when she is so obviously creative in all those aspects of design [learned at art school]' (Bedell, 2005, emphasis added).

Why is it *insulting* to call someone an 'impresario'? The word refers, in the strictest sense, to someone who organises, finances, and generally 'puts on' events, usually in the performing arts - a theatre manager, for example. Moreover, it connotes one who is successful, flamboyant, and a shark - a self-interested, charismatic manipulator. The figure of the impresario would seem deeply opposed to 'participatory' and 'democratic' values espoused in service design. As an insult, it does not call into question the efficacy of someone's action, but the means by which their ends are effected, and what they stand to gain from it. But at the same time, we should perhaps remember Crossman's words about having to hate propaganda to do it well, and Miller's comments on the commingling of conviction and calculation, belief and manipulation.

After all, someone can sell something they believe in. Service designers, for instance, have spoken of the need to make ‘participatory’ services attractive; to make people ‘less cynical’ (Currie, 2010) about their processes ‘encourage new norms of behaviour within society’ if their initiatives are to be successful (Cottam & Leadbetter, 2004: 5), and *mobilise* people (Stø & Strandbakken, 2008). Jennie Winhall, for example, writes that ‘you can’t actually force people to take part in these systems, so making them aspirational is very important’. ‘[O]f course’, she continues, ‘as designers we understand what is desirable to people[,] what triggers new behaviours and that’s what makes us really valuable in this space’ (2006b: 10). There is a strong tendency to characterise in ‘participatory’ rhetoric to characterise people as currently rendered powerless, for example inhabiting the status of ‘passive consumers’, who will be liberated through their ‘participation’. This assumption of passivity is one of, as Nigel Thrift writes, ‘a set of stock conclusions, taken off the shelf of standard laments about the modern world’, adding that ‘there is no evidence from what is now a shoal of studies’ that this is an entirely accurate depiction of consumption or production (Thrift, 2009: 126). Perhaps people do not *want* to be involved, in every case, in processes of technological development; for any number of reasons, perhaps they would rather leave it to someone else (Cleaver, 2001). But this is contrary to the general ‘participatory’ narrative, which, in fact, is reinforced by being contradicted on these terms: if people do not want to participate, then surely this is because they have been ‘reduced’ to the status of ‘passive consumers’; in which case they must be ‘persuaded’ afresh. Here, conviction and calculation align and agree; perhaps, in such cases, we should consider a form of *métis* not only of persuading other people, of setting a trap that harnesses their propensity to behave in certain ways, but of setting a trap for ourselves.

06.06 Ingenious dissent

It is noticeable in mainstream design discourses that, while there is a clear *political* import - 'small p' or otherwise - to their participatory efforts, they tend to be *conciliatory* in their focus. Amongst our instances of the 'wrong story', based on ambiguous forms of 'participation' in fabricated schemes, we might consider classically *mêtic* political actions in which the 'weak prevail over the strong' in more visible ways than making a participatory 'contribution' to a collaborative plan.

A clever, comical and recent instance of the 'wrong story' of this type concerns certain events that transpired at the Panthéon, the Parisian cultural landmark, where Léon Foucault first demonstrated the rotation of the Earth in 1851. Now a museum, the Panthéon played stage to some of the pivotal scenes in the development of the idea of human rights, and the mausoleum within it is the final resting place of many eminent figures, Jean Jacques Rousseau, Marie Curie, Victor Hugo and Alexandre Dumas amongst them. Suffice to say it is loaded with historical significance and great deeds commemorated. In September 2006, M. Bernard Jeannot, the Panthéon's administrator, was informed by a group not known to him that the antique clock in the Panthéon's tower, which for some five decades hadn't worked and was in a near-terminal state of disrepair, had been restored to full working order. The aghast administration discovered that, for over a year, the *Untergunther*, who describe themselves as the 'cultural heritage department' of a shadowy federation of activists called *les UX*, had been regularly smuggling expert clockmaker Jean-Baptiste Viot into the building after hours. In this, they were assisted by another wing of the UX called the *Mouse House*, an all-female infiltration team who disabled the alarms (Untergunther, 2008). A space in the clock tower had been converted into a fully functioning workshop with an attached lounge that they called the *Unter and Gunther Winter Kneipe*, roughly translating as the 'Unter and Gunther Winter Boozer'. This

retreat was wired up to the electric grid and equipped with Internet access (Boyer King, 2007); it was to all intents and purposes a fully-functioning kitchen-diner. Mildly concerned that their activities would be uncovered and interrupted by Panthéon staff, the Untergunther designed and built 'appropriate' furniture to fill the space, which could be folded up into innocuous-looking crates during the day.

Jeannot's administration proved unwilling to restart the clock or announce the Untergunther's work, not least, we can assume, because they would have had to explain the many lapses in security. On Christmas Eve, December 2006, the Mouse House once again broke in and set the clock to chime through Christmas Day. The furious Centre des Monuments Nationaux, the government department charged with operating the Panthéon, embarked on a series of ill-fated and increasingly farcical face-saving manoeuvres, including unsuccessful attempts to hire a clockmaker to *re-sabotage* the functioning clock, a move that quickly found its way into the headlines (Untergunther, 2008). Ultimately, the CMN sued the Untergunther for €48,000 Euros in 'damages'. The prosecutor, Anne Benejean, 'herself described the case as 'stupid'' (*ibid.*), and the case was thrown out on November 23rd 2007 by tribunal president Eric Meunier, who described the whole affair as 'absolutely incomprehensible' (Murray, 2008). Unable to find a clockmaker who would strategically sabotage the clock, the new administrator (M. Jeannot was no longer in the CMN's employ in his former capacity) removed several gears from it. Two days later, it is claimed, the Mouse House broke in and stole them from his desk, and have apparently offered to return them if asked (Murray, 2008).

This flip-flopping activity, in which it seems the Untergunther decidedly retained the upper hand in the public imagination, called into question the authority and capabilities of the Panthéon as a cultural institution. The absurd lengths to which an endeavour by agents acting (if uninvited) on behalf of the 'local community' had to go in order to achieve a relatively

mundane act of civic engineering opens the administration to ridicule; and the hapless attempts to contain the situation and resume the 'normal service' that the Untergunther believed inadequate only worsened things for the administration.

The case of the Untergunther resides firmly within an *infrapolitical* space that exists beneath the 'public transcript': that is, what it is acceptable to say (and do) in public: 'The undeclared ideological guerrilla war that rages in this political space', writes Scott, 'requires that we enter the world of rumour, gossip, disguises, linguistic tricks, metaphors, euphemisms, folktales, ritual gestures, anonymity. For good reason, nothing is entirely straightforward here'; the 'realities of power for subordinate groups' mean they cannot approach their targets head-on (Scott, 1990: 136). This kind of pressure often emerges in industrial unrest, which although is frequently understood in the confrontational language of downing tools and organising pickets and boycotts, has a history of more diverse and subtle approaches - forms of dissent which construct themselves entirely from their enemies' resources (Land, 2011b). For example, the Melbourne tram strikes of 1990 cleverly inverted the normal functioning of the transport system, rather than closing it down - and hence risking the loss of public support. In addition to striking, which occurred on and off throughout the early months of the 1990s, another ploy emerged (from whom, exactly, it is not clear). This was to continuing working, that is, running the tram service - but the conductors, whose jobs were at threat, would not collect any fares. This meant that from the public's perspective, the trams ran as they had. Even better, one could now ride for free. And when questioned, the conductors themselves, with the support of their co-workers, could simply shrug and state that no-one was getting on the trams. Everyone knew this was untrue, but organised *en masse*, it was difficult for the authorities to do much about it. That this ingenious plan *worked* ultimately resulted in the government cutting power to the tramlines, immobilising the public transport network - in response to which, the tram operators

could publicly point to the situation being out of their hands; it was now the authorities who had shut down the trams, not the 'strikers' (Radical Tradition, 2000).

Such an approach also characterises the activities of the decentralised protest group *UKUncut*, who target corporations that have paid few taxes at a time when many public institutions were facing extreme budget cutbacks, not least huge cuts in centralised government funding to universities, charities, and hospitals (UKUncut, 2011). These highly mediagenic protests have often taken the form of appropriating the commercial spaces whose owners are charged by the group with of treasury-draining 'tax avoidance' into temporary versions of the kinds of spaces being closed - for example, hosting impromptu university lectures in banks, or converting clothing retailers into libraries or children's crèches. The most common strategy deployed by the target sites against UKUncut has been to close the premises, often cordoning them off during larger protests behind lines of police or security guards in order to prevent entry; as the ultimate aim of UKUncut is to stop people shopping or banking in them, this defensive measure in fact directly secures UKUncut's objectives on their behalf.

Initiatives of this subversive kind are also beginning to be leant additional purchase by digital technology. In late 2010, around the same time as the emergence of *UKUncut*, a small team of London-based programmers began to develop a suite of online applications called *Sukey*. Its name comes from an old English children's rhyme, in which 'Polly put the kettle on' and 'Sukey took it off again'. 'Kettling' is the nickname for a practice, recently adopted by the national police force (in UK slang, often 'polly'), of 'pre-emptive containment' to prevent a 'breach of the peace'; it involves creating a cordon of police officers, often in full riot gear, around a group of protestors, who are often held in place for hours and restricted from without access to water, food, toilets, medical attention, and so on. *Sukey* attempts to inhibit the deployment of this tactic. The *Sukey* team monitor Twitter information during mass protests and, when they are

sure that an event is occurring or has occurred, overlay this information onto online maps, allowing protestors to avoid containment (Sukey, 2011).

06.07 **Mêtis and contemporary design**

The examples cited in the above sections are all of highly *mêtis* practices, occasions, or situations. In fact, and in a sense more significant than this alone, an understanding of *mêtis* allows us to grasp them firmly in the first place, and unite them around a theme; it is the net that catches the butterflies that don't get pinned to the board, as Easterling parses 'wrong stories' in general. The concept of *mêtis* allows us to recognise these practices, and what they have in common.

This is of value in its own right, as it gives traction a range of complex manoeuvres that have enormously potent effects within the contemporary world - as ingenious forms of marketing and activism, in particular, undoubtedly do. They *become visible* but *not* simply as 'deviations from the rule', rather as possessing *their own rules*; not as ways the world *shouldn't be*, but the ways in which it *actually is*.

The question that remains to us is what, in bringing together these examples of the wrong story, would a form of design that was self-consciously predicated as such might be like - and how this compares to contemporary approaches to human behaviour as the object of design, indexed, as in Chapter 03, by service design?

In the first case, all of these examples focus on extremes of ingenuity. They operate within their environment with extreme sophistication, effecting subtle changes in the dynamics at play in order to reap desired results, rather than attempting to impose their effects by force. Just as we saw in Chapter 04, it is through oblique and timely approaches to the environment that they exert their effects. But it is worth dwelling further on the observation that, in the style of classical *mêtis*, in these examples this ingenuity is expressed entirely within manipulations of highly *specific* situations. The psyops stratagems described above (to pick one example) would not work in other circumstances; they are not 'transferable'. Indeed, they are highly risky gambits even in the very particular circumstances of their deployment - they are ventures defined by risk, and operate far from equilibrium.

As we saw in Chapter 04, one of the problems ancient Greek philosophers had in apprehending *mêtis* as a concept was that it *is* so deeply situational. There is no idealised 'perfect instance of *mêtis*', nor can one really ask the question 'what would be *mêtis* in situation X?' If *mêtis* can be generalised across circumstances, it is as what Detienne and Vernant called *a spirit of approach* more than a specific set of strategies or tactics. Indeed, to some extent trying to deploy in one situation a tactical repertoire that worked in another is antithetical to *mêtis*.

This brings us to the question of the *persistence* of *mêtis*, given that it is archetypally found in the convergence of a specific set of circumstances. While introducing *mêtis*, we discussed how *mêtis* is visible in the moment of *production* rather than *reproduction* - the emergence of novelty in design. We might take, for example, the creation of a new object or system, and admire its ingenuity - much as, in Chapter 04, Tallis indicates the extraordinary sequence of ingenious steps that result in an object as banal as a plastic cup. But this stasis is the graveyard of *mêtis*, haunted by its spirit that graveyard may be. Yet in some instances detailed above, a degree of *mêtis* is applied to the project of *producing circumstances in which one can*

continue to act in mêtic ways. In the shape of Sukey's low-cost cunning (which enables others to build on in *mêtic* fashion on the platform they provide), the ingenious, potentially unending business model of alibi agencies, or the ability of impresarios to continue spinning their way out of trouble, we have systems in place that are notable in their capacity to blend a degree of structure with the highly situational demands of *mêtic* action. This allows them to *cultivate mêtis*, and they provide an object lesson in the importance of being able to sustain the *mêtic* moment rather than exhaust it - a lesson that often takes the form of *discretion*, as in the geographical remoteness from the effects of their actions and quiet subversion as their means that many of these examples take as a foundation to their operations.

This brings us back to the subject of the use of *deception* in these examples. Given that our principle subject is, in this case, design's approach toward the horizon of human behaviour as a material to which it is applied, we should pay attention to how strikingly elements of these organisational set-ups is, of course, that this is applied to human behaviour - but in a very particular way. There are elements of deception in some of the practices, alibi agencies in particular; but the ultimately more sophisticated operations of propagandists and impresarios trade in something that aren't quite lies but half-truths, edited veracity, indeed the taking of what is held to be true by some people and reshaping it slightly - the relationship between fact and fiction here being strikingly like the account we gave in Chapter 04 of artifice as something that does not override 'the natural' or challenge it to single combat, but rather manipulates it into a new form. And we should also observe that, in this grey area, a lie of any form is not necessarily the best means. As in the case of Sukey, where the 'real situation on the ground' is not visible, one of the most *mêtic* of enterprises is finding a simple, straightforward way to make it so.

In sum, this is a very different approach to human behaviour as the object of design to that which prevails in formal design discourse at present. In lieu of a view of 'participation' as an unalloyed good, it would work on the hard complexities of real-world action - 'how to get things done' through seduction, suasion, the manipulation of expectations, and so forth - rather than obscuring them (or, perhaps, letting them unfold unattended). Indeed, it emphasises an appreciation of ingenuous and resourceful means of dealing with complex situations rather than participation, environmental sustainability, or other high level ideals. In fact, it would encourage deviously clever and original means of addressing such situations, rather than seeking to lock down the means - like participation or 'servicisation' - to the ends - like democracy or environmental sustainability. In sum, this yields a very different understanding of 'good design' in the space of a movement towards the design of human behaviour than one that foreswears the possibility of 'designing human behaviour', and not least in that it so closely allies the quality of the 'good design' of an artefact - in the sense of ingenious composition or use - with that of a less well-defined, more distributed and partial system, like a service, an organisation, a business model or other way of configuring the operations of a group.

But perhaps the most important element of such practices, considered in general, is that they incite a radically different form of imagination about how human relations can be but and held together which no other field, at present, lays claim to in a coherent way. Without doubt, there are complex moral, ethical and political dimensions to such a practice, in part of course because conventional Western habits of thought are frequently unable to entertain them *as what they are* rather than see them as simply deviations from 'how things should be'. But at once a *mêtic* practice suggests itself that it is in operation in the hands of sophisticated actors - it is, after all, almost by definition a vector of success - and one can imagine not only the most unsavoury manipulations within the sphere of *mêtis*, but also the ability to hedge them in, defuse, or reverse them. 'Whatever the claims of dominant logics or optimised procedures',

writes Easterling, 'it is this inevitable field of comedy and fallout that presents a huge surface area for manipulation and plunder' (Easterling, 2005: 195).

Put another way, stories like this one are something like *jokes*, in a deeper way than merely being, on some level at least possibly, amusing. Jokes, for Italian political philosopher Paolo Virno (2008), are familiar logics somehow gone curiously awry. In jokes, Virno writes, what is important is how the joke 'reveals in a flash a different way of applying the rules of the game: contrary to the way it seemed before, it is entirely possible to embark on a side path' (*ibid.* 163). In line with the particular reaction to *The Machine* we saw in the preceding sections, here is one: A robot goes into a bar, and orders a drink. The barman refuses: 'We don't serve robots', he tells the visiting android. 'Ah', says the robot, 'but one day you will'. Virno sees a similar, and explicitly politicised, logic to the joke in the case of the Biblical story of the Israelites' flight from their condition of slavery in Egypt. Here, '[i]nstead of submitting to the pharaoh or openly rebelling against his rule (A or not-A), the Israelites identify another possibility, one which evades the number of alternatives that could be counted at the beginning: that of fleeing Egypt. Neither A, nor not-A, neither resigned acquiescence nor struggle to seize power in a predetermined territory, but an eccentric B...' a kind of *way out of prevailing logic* 'that takes place in the precise moment in which *a side road*, uncharted on sociopolitical maps, is identified' (*ibid.* 148). It is in *mêtis*'s ability, as a concept, to grasp this *crooked logic* that is its pre-eminent value to design; and it is in the capacity not only to effect but to *sustain* the application of such a logic that a genuinely *mêtic* practice of design might reside.

06.08 Conclusion

In this chapter, we have reviewed examples of practices, situations, and events that are *immune* to the prescriptions of contemporary design around ‘designing human behaviour’. *Métis*, on the other hand, provides a powerful conceptual resource that allows us to identify ‘the wrong story’, not just because ‘it doesn’t fit the right story’, but because it enables us to grasp what Easterling, above, called the wrong story’s ‘fickle or unexpressed logics’. That is, *métis*, operating according to the dynamic of the trap, *comprises* this logic. In the actions of services operating in the shadowy fringes of the everyday, in the practices of salesmen and hucksters, in the craft of propaganda and the resourcefulness of dissidents, we can glimpse the qualities such a practice might have. Certainly, all these are different; there is no escaping the deep particularity of *métis* as an embodied practice, rather than a general idea, an attitude or - as Detienne and Vernant dubbed it - a spirit of approach. Yet at the same time, all of these sources might be brought together under a single banner and shown to evince a common logic, and this is testament to the power of *métis* as a contemporary concept useful to revive.

Importantly, *métis* allows us to see these various practices as species of *design*. Where marketing, for instance, has found it very difficult to address the logic that substantially underpins - historically disavowing its moral complexity and seeking to secure its legitimacy on the basis of appeals to the virtues of exchange, to its status as a form of applied science (specifically, psychology), and so on - design might be more overt in its embrace of these practices. Linked deeply to its history, *métis* becomes a way for design to lay its own claim on these practices, its own disciplinary understanding of what is at stake in their operation, and the reasons why they might be appreciated and perhaps encouraged. It is to be hoped that the moral complexity of such practices, really a product of a *very different way* of estimating the ‘rightness’ of action, might, too, be acknowledged rather than a cause for their dismissal. The

alternative, I would suggest, is - without wishing to be melodramatic - rather stark: such practices would continue, and continue to exert their rarified grasp of efficacy, outside of design discourse, not only depriving that very discourse of a valuable asset by of stymying the efforts of its adherents to further, counter, or in whatever way engage with such practices.

Our next chapter functions to extend this argument, by looking at the place of *mêtis* in our contemporary context - one characterised by the increasing pressure of philosophy and techno-scientific practices, acting in concert, to undermine conventional ideas of 'the human' in a time that has come to be dubbed the Anthropocene. Where service design, in common with much of contemporary design practice, has emphasised the importance of a reading of *ecology* that highlights the need to 'lighten' the human impact on planetary systems (as we saw in the example of *servicisation* in Chapter 3), this is only one response to the influx of contemporary ecological thinking. What might be broadly characterised as 'the ecological sciences' are, as we will see, corroding the very concept of 'the human' - i.e., 'what it is we think we are'. If our ideas about what being human are changing, then so does our conception of what it means to take 'human behaviour' as the object of design. *Mêtis*, I suggest, attunes our attention to ecology in particular ways, and specifically ways which synchronise, to a perhaps surprising degree, some recent critiques of mainstream ecological approaches.

NOTES

1. Consider, for example, the following statements: Participation is 'a move away from top-down approaches towards decentralisation, open communications, sharing knowledge and expertise coupled with 'empowerment' and diversity"; 'starting with people [is] a reversal because it proposes another starting point in the planning and design of projects than that taken by current technology-centred approaches'. These are not quotes from the service design discourse, although they could be. The first is from an essay describing the 'managerial' forms of participation in the workplace that have arisen since the 1960s (Taylor, 2001: 125). The second is a quote from Michael Cernea of the World Bank, speaking in the early 1990s (quoted by Francis, 2001: 75).

2. The peacetime acme of this gambit is the political past-time of 'leaking' memos to journalists.

3. This practice, far more widespread than a sales trick, is exemplified for Cialdini in the following anecdote: 'In a candid interview with *TV Guide*... [television producers Grant Tinker and Garry Marshall] admitted to 'deliberately inserting lines into scripts that censor's sure to axe', so that they could then retreat to the lines they really wanted to include' (Cialdini, 1993: 37). In one episode of a series on which they were working (in a world of televisual production considerably more innocent than today, it would seem), 'the biggest censorship fight was over the word *virgin*'. Marshall reveals: 'I knew we'd have trouble, so we put the word in seven times, hoping they'd cut six and keep one. It worked' (*ibid.* 38).

07 Anthropocene nights

07.01 Introduction

We are used to thinking of ‘the world’ - its scale, its laws, its duration - as a given. We presume that whatever we do and build takes place in the world as if it were a fixed container. But that doesn’t work anymore (it never did really). Whether we intend it or not, the world itself is what we are making and unmaking.

Bratton, 2010b

In the last chapter, we saw how the ancient concept of *mêtis* attunes us to the prospect of ‘human behaviour as the object of design’ in ways that do not imply a forceful ‘determination from above’ that reduces people to the status of ‘mere machines’ - generic, anonymous, interchangeable and so on. In what I described (in Chapter 05) as ‘the ideal programme of technological development’, designing human behaviour means *excluding* people from decisions about what they do, and *including* them is therefore both the necessary and sufficient condition of moral, ethical or political enfranchisement. Necessary it may be, but sufficient it is not - as we see when *mêtis* draws our attention to the kinds of ‘wrong story’ in which this simplified political schema is revealed not to work because some forms of power *require* people’s active involvement to take effect. We saw how, in the face of this contradiction, *mêtis* allows us to apprehend a certain category of situation, practice and event in which the ‘ideal programme’ falls down or is shown as incomplete; but which - through *mêtis* - we can understand as participating in a different kind of logic. In turn, the concept shapes a vision of ‘designing human behaviour’ that foregrounds crafty ingenuity, a subversive imagination and a moral complexity that is all the more relevant for its association with a form of highly *effective* action.

In this chapter, we will continue and extend our examination of the relevance that a renewed attention to *mêtis* might have for understanding human behaviour as the object of design. Our subject here is designing human behaviour in the *Anthropocene*, the recently advanced, and widely accepted, term for our current planetary epoch. The Anthropocene, as we will see, is most familiarly associated with the project of *environmentalism*, the attempt to mitigate the impact of human activity on the broader planetary environment. Environmentalism has had a strong impact on contemporary design practices in the West. This is in part, no doubt, because environmental concerns have become familiar in Western popular culture more generally. But for many designers, the issue is made particularly piquant by design's industrial heritage. It seems undeniable that design practices have often played the role of handmaiden to a factory-driven consumerism, facilitating material processes that - it now appears - have had a strikingly belligerent orientation to the global environment. And as we saw in Chapter 03, this realisation has in some sense degree *raised* the problem of 'human behaviour as the object of design' under investigation in this thesis; specifically, it has played a formative role in the formation of service design - strongly motivating Manzini's early work, for example, and manifest in the project to 'servicise' various product categories to lighten their environmental impact.

But if the advent of the Anthropocene, and the *ecological thinking* that has revealed it as a phenomenon, have fostered an environmental agenda in design, the problem does not end with attempting to reduce the burden that industrial processes place on the planet. The very same ecological approaches to the world that issue new imperatives to take action, as when they reveal the possibility of anthropogenic shifts in the Earth's climate, also serve to scramble traditional ideas about how that action might take place. They do this because the world as lensed through contemporary ecological science and philosophy reveals new categories of problem, to which no response readily offers itself; the world is glimpsed as a space with an

unforeseen depth of interconnectedness, in which actions ramify in ways that had not previously been suspected. Indeed, in tracing the patterns of these connections, 'designing human behaviour' comes to take on a strange new aspect, as human beings are seen as increasingly as *part of* circuits of activity that mix the 'artificial' and the 'natural', and design comes to work on human behaviour in new ways.

In this situation, the world comes to appear as something of an uninviting place: a place in which the links between actions and their consequences are not always straightforward or readily apparent, and the clarity of a problem at hand may be matched by the obscurity of possible ways to address it. But, as we saw in Chapter 04, *mêtis* is precisely the form of intelligence that flourishes in 'situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic' (Detienne & Vernant, 1991: 4). In this chapter, therefore, we will explore in outline in general terms the challenge the Anthropocene poses for a contemporary philosophy of design, its relation to the prospect of 'designing human behaviour', and what light a revived concept of *mêtis* might shine on it.

Structure of the chapter

In the next section of the chapter (07.02), I begin with a brief discussion of the origins of the idea of the Anthropocene, and expand on the brief comments above about how mainstream design discourse has reckoned with the ecological ideas that have allowed us to perceive ourselves as residents of this new epoch. While acknowledging that these ideas are, in their way, perfectly worthy ones to pursue, I will then introduce (in 07.03) a view of the counterpoint provided by some of their contemporary critics, who challenge us to go further. Specifically,

they enjoin us to consider the damage done to our habitual ways of *thinking* about the planet and humans' place within it in an ecological age.

In section 07.04, we will develop an understanding of these ideas through looking at how 'the ecological thought' changes our understanding of 'human behaviour as the object of design'. As we will see, the problem relates to seeing humans as embedded within circuits of wider activity, and how this affects our understanding of 'the design of human behaviour' has a double aspect: on the one hand, construction, configuration, or other modes of governance of these material networks to address the problems that are recognised in them; and on the other, the change in what we consider 'human beings' to be and how design acts on them. This section is not intended to provide an exhaustive account of the ways in which ecology poses new obstacles to thought about how and what we design. Its purpose is instead to illuminate the scope and general character of the challenge that the Anthropocene places on us to think about designing and its relation to human beings. And while I levy a series of examples to make this argument more tangible, I do not presume or propose to solve the specific issues these examples raise. The aim is, rather, to highlight how they necessitate new thinking around what 'designing human behaviour' entails at the present juncture.

The two sections that follow posit that a reactivated understanding of *mêtis*, as an explicitly acknowledged and encouraged dimension of design, might comprise at least one aspect of this new thinking. This ancient concept becomes freshly pertinent in an environment that is newly revealed by the operations of scientists and philosophers are forbiddingly complex, ambiguous, shifting and indeed hostile - precisely the kind of circumstances in which, as we saw in our discussion of *mêtis* in Chapter 04, it is at home. In the first of these two sections, 07.05, I discuss the relevance of *mêtis* as the quality of action able to take effect in complex, ambiguous environments, with specific references to ingenious responses that have been

mounted to two situations outlined in the previous section: the disposal of nuclear waste, and the impact of artificial reproductive technologies on interpersonal relationships. While these showcase the *practical* aspect of *mêtis* in addressing ‘Anthropocenic’ situations, in section 07.06 I argue that the relevance of *mêtis* to designing human behaviour is not confined to this, and it offers itself up as a particular way of understanding an ‘ecological world’ and how new knowledge might be gleaned from it. This is a contention explored with reference to the work of the philosophers Paul Virilio and Peter Sloterdijk. Neither have discussed *mêtis* explicitly, but their work on how the ‘latent background’ of our actions is revealed by accidents (Virilio) and technological development (Sloterdijk) gives us, as I will show, a sense of how *mêtis* might be deployed as much as an epistemological mode as a quality of practical action. On this note, the chapter ends with a brief conclusion (07.07).

07.03 The Anthropocene, ecology, and contemporary design

The term *Anthropocene*, as a label for what can be described in quite literal terms as our *global predicament*, is of quite recent provenance. At the turn of the century, considering the ‘major and still growing impacts of human activities on earth and atmosphere, and at all, including global, scales’ a group of senior environmental scientists determined that ‘it seems to us more than appropriate to emphasise the central role of mankind in geology and ecology by proposing to use the term ‘anthropocene’ for the current geological epoch’ (Crutzen & Stoermer, 2000).¹

Technically, the term *Anthropocene* is a way of encapsulating the view that

changes in the terrestrial biosphere made directly by human populations
and their use of land represent the emergence of a suite of novel geologic

processes in the Earth system comparable with those used to justify the major divisions of geologic time.

Ellis, 2011: 1010-1011

Points of view differ on when the Anthropocene *began* - that is, when human activity became a sufficiently substantial planetary process to have a notable impact on other ones. Dates of the first events to have left undeniable signatures of human artifice in rock strata have been suggested from the advent of wide-scale farming practices, around 8,000 years ago, to as recently as the first detonations of nuclear devices - the Trinity Test near Socorro, New Mexico on July 16th 1945 and the incinerations of Hiroshima and Nagasaki the following month. Most advocates of the term concur that the Industrial Revolution is the point at which the Anthropocene became a definite phenomenon - its programmes of mass urbanisation, long-range transport, proliferation of factories, and instantiation of a 'fossil fuel culture' all have had such large effects that something like 'the Anthropocene' becomes undeniable (see Steffen, et al. 2011).

The concept of the Anthropocene, therefore, is a way of understanding human activity on a global scale as the re-routing of biogeochemical systems, especial the carbon, nitrogen, phosphorous and sulphur cycles, modifying hydrological systems (by damming and diverting the flow of rivers to the ocean, and also changing the surface of the earth, through farming and urbanism, so that precipitation water vapour flows are altered), and so on (Steffen, et al. 2011: 843). The mention of a 'central role' for humans in planetary systems has attracted accusations of arrogant anthropocentrism against those espousing the term, but this is not its intention. One might counter that if the term elevates human beings to the status of planetary force, this honour is dubious at best; in itself, it implies no real sense of *mastery* whatsoever, only scale of effect. Certainly, the concept of the Anthropocene does not place the activities of human

beings 'over' that of otherwise pristinely 'natural' systems (*ibid.*). It emplaces human activity as *part* of a 'natural system' - indeed, human bodies are *themselves* parts of the carbon and phosphorous cycles, which hardly bespeaks an anthropocentric point of view of humans as a privileged elite, discontinuous from a 'Nature' over which they preside. (And as we will presently see, this is a first glimpse of the transformation in the idea of 'the human' in the Anthropocene that arrives simultaneously with an epoch that bears its name.)

The conception of the current age as 'the Anthropocene' is the product of *ecological thinking*, and it encourages more of the same. 'Ecological thinking', in the sense used here, is a feature of many different epistemological and ontological frameworks to have developed from the latter half of the twentieth century to the present day. In scientific circles, it is predominantly a feature of cybernetics and theories of emergence, complexity, catastrophe and, more generally, *networks* descended from it (see Pickering, 2010, for a review). In contemporary philosophy, ecological thinking is most widely represented by actor-network theory (e.g. Latour, 2007), assemblage theories (e.g. Deleuze & Guattari, 2004; Delanda, 2011) and, more recently, object-oriented ontology (e.g. Harman, 2009). There are, of course, differences in supposition and execution between each; they do not impinge on us here, however, as we are exclusively interested in the characteristic quality that they all share: that they are concerned with *relationships*, and in particular, complex relationships between many different objects or actors, interlinked by a wide array of processes, acting in federations that are more or less coherent over a given spatial scale and period of time. Put simply, ecological approaches point not to simple, linear relations between A and B, but between A, B, C, D, E (and so on), such that A might influence B and C, B reciprocally affect A but also D, changes in C only impact on E, *et cetera*.

It is this kind of logic that allows the Anthropocene, in which the planetary environment is considered as a singular whole comprising parts in differing (and dauntingly complex) relation, to be understood as a phenomenon in itself. And, of course, the ecological thinking behind the effort to correlate the behaviours, and reveal the interdependencies, of many different earth systems helped not only to foster the concept of the Anthropocene, but also to identify the processes at work that characterise it - processes that are not 'locally obvious' from any one set of data from a single site, such as, most famously, anthropogenic climate change.

How has the kind of ecological thinking that resulted in the positing of the Anthropocene made its presence felt in contemporary design? This has taken two primary forms: as an *environmentalist* impetus, and as a way to think about designing structures that involve multiple objects interacting over time rather than 'standalone' products. In the case of environmentalism, ecology manifests itself in the understanding that design, and the structures it produces, are set within broader contexts of activity - in relation to, for instance, current changes in the atmospheric concentration of carbon dioxide or the acidity of oceans, which are, at least in part, anthropogenic. 'Ecology' thus emerges as *a source of limits*, in particular a demand for constraints on the profligate use of fossil fuels, which are both a rapidly depleting resource and one that disrupts the broader environment with toxins and greenhouse gases. As we saw in Chapter 03, service design is one way in which this sense of ecology, as an imperative to do 'more with less', is brought together with the idea of 'designing an ecology' in the sense of designing the relationships between a cluster of people and things. For example, service designers live|work, whose early projects were discussed in Chapter 03, take ecology as what they call 'a language to speak about services' linked to the environmentalist sense of ecology:

A service ecology is a process we use to establish a systemic view of the service and the context it will operate in. We map service ecologies in order to map the actors affected by a service and the relationships between them, reveal new opportunities and inspire ideas, and to establish the overall service concept. Ultimately, we strive to create sustainable service ecologies...

Live|work, quoted in interview by

Moggridge, 2006: 421

As live|work go on to describe, 'sustainable', in this context, is meant to mean financially and socially sustainable, as well as environmentally 'sound' (*ibid.*). Ecology is posited here, then, as a tool within an 'exploratory process that aims to create new kinds of value relation between diverse actors within a socio-material configuration' (Kimbell, 2011), and is able to link distributed comparatively small fields of activity (like services) to relatively larger processes (like biospheric systems, global financial networks, or international political ones). This double sense of ecology as revealing a *horizon* of advisable limits to human operation, and a *working method* to address the imperative of working within these limits, is shared by other commentators who connect design 'beyond the object' and environmental concerns (e.g. Thackara 2005; Fry, 2008, 2010).

No doubt there is a great deal of work to be done if contemporary design is to be reconfigured as an 'environmentally responsible' mode of practice, and ecological approaches, in various guises (complex systems science, actor-network theory, *et cetera*) are integral to doing so, as well as more generally assisting designers' attempts to specify 'problems' and 'solutions' in ways richly responsive to the context in which they work. We are, needless to say, far from consensus about the *best way* to be 'more sustainable'; these ideas are new, and involve

addressing a very complex planetary scenario if we are not, to use Tony Fry's phrase, to persist in 'defuturing' - reducing the range of possible futures, both those that are desirable and those that are less so - for humanity (Fry, 2008).²

07.03 The challenge of the ecological thought

Without wishing to downplay the general importance of such ventures, we should note that, especially in philosophical circles, recent critiques have questioned to what extent of the deeper lessons of ecology have been genuinely acknowledged by the kinds of reasoning described above. Often, 'sustainability' appears as a problem to be *solved*: the optimisation of processes to minimise carbon footprints, energy requirements, release of pollutants, and so on. But critics argue that there is a marked difference between a general 'environmental awareness' and the adoption of an ecological 'working method', on the one hand, and on the other, a deeper engagement with the ultimate lessons of ecology that the Anthropocene poses. Sustainability, and even its slightly darker and more catastrophe-focussed twin 'resilience', present a very complex set of concerns in their own right, but can also hedge against a confrontation with the sheer *radicality* of ecological thinking.

Designers (including, as we saw in Chapter 03, many service designers) have adopted as a general environmentalist strategy the project of *lowering resource intensity*, through the 'dematerialisation' of objects into services that approximate their functions, coupled with an intensive localism - manifest as 'creative communities' that are locally based, that organise the sharing of resources, engage in urban forms of agriculture, *et cetera*. These strategies dovetail, as architectural historian Larry Busbea has observed, with a longer tradition of designers' 'visions of the future', developing from the 1960s onwards: highly rational, based on 'systems

models', predicated on technology; and yet simultaneously 'somehow pastoral' and 'picturesque' (2007: 3). As Ross Adams has put it, designers 'have cultivated what seems to be a curious nostalgia for the *present*', that 'seeks a kind of reconstitution of the present in imagining any future' (Adams, 2010: 2). Adams perceptively notes that there is a tendency to embrace 'a humanitarian ethics in regard to ecological catastrophe':

Avoiding at all costs the pomposity of a political position, such ethics are often conveyed by means of impressive data, statistics and impending notions of 'tipping points' quickly approaching. In this way the discourse on sustainability has given new life to an old humanist impulse, while raising the stakes with its implicit humanitarian call-to-duty. Not surprisingly, however, because such ideals feed off an economy of good intentions, they remain beyond scrutiny since the survival of our species seems to depend on their promise. Yet... the rhetoric of sustainability at once deflects criticism while guaranteeing support for its virtuous cause.

Adams, 2010: 3

Adams's point is not that 'sustainability' is somehow 'bad' or 'wrong'. It is that it seems immunised from critique by its worthy ambitions. In *Bataille's Peak* (2007), Allan Stoekl develops the same point further; he notes, in particular, the *character* of 'sustainable solutions' as deeply inflected by a certain puritan aesthetic, often presented in secular terms but with strong Christian roots; specifically, the disavowal of *excess* and *wastefulness* in favour of *moderation* and *humility*. With heavy sarcasm, he writes that the rhetoric of a 'less stuff' world of globally connected 'local communities' finds its appeal on

the virtuous sense of renunciation one gets from darning one's socks of writing on the back of envelopes. The world is small, small is beautiful, it is a prosperous way down, and we will be content, we will be superior in our lowered expectations. [We] will be sober, clear-headed, modest. The wildness, the irrationality, the aggressive ecstasy of James Dean in his Porsche - heedless, death-driven, glorious - will be, thankfully, discarded.

Stoekl, 2007: 133

Stoekl calls his desire for the exploration of more radical alternatives to this homely narrative, the implementation of which he thinks at the very least would mean an impoverishment of the range of human experience, the pursuit of 'postsustainable' ideas - literally, those that incorporate, but exceed the range of, 'sustainability' as it tends to be conceived at present (Stoekl, 2007). Although he is principally interested in the cultural status of adventurous excess at a time when much discussion is concerned with placing new limits, he is particularly struck by a particular *strangeness* of considering the world 'ecologically', revealing as it does new and hitherto relationship of influence and dependency. This is a point developed much further by Timothy Morton, whose work is principally motivated by the Anthropocene's demand that we think what he dubs *the ecological thought* in the book of that name (Morton, 2010a).

The Ecological Thought builds on Morton's previous work *Ecology without Nature* (2007), developing the earlier book's critique of the longstanding Western cultural conception of a 'nature' that is 'out there' and from which 'we' - humans - are implied to be somehow separate. (That is, as the reader will recall, a difference emplaced between the humans and the rest of 'nature' that is called into question by the very idea of the Anthropocene, in which human beings are seen *in toto* as part of planetary cycles of materials.) Like Stoekl, Morton observes that '[e]cology seems earthy, pedestrian. It's something to do with global warming, recycling,

and solar power; something to do with quotidian relationships between humans and nonhumans'. 'But', he asks, 'what would an ecological society look like? What would an ecological mind think?' (Morton, 2010a: 1). Morton is critical indeed of any idea that the ecological thought has, *per se*, anything to do with harmony, balance, purity, or 'naturalness' seen as a virtue. The image of the world we are given by two centuries of scientific investigations - of the type we now call 'ecological' - does not fit these romantic images (cf. Morton, 2007), and a truly 'ecological mind' would not align itself to them. If we are to conceive of an 'ecological mind' as embodying and intensifying the lessons we have learned from ecological science, what it would engage in is, Morton writes, 'the thinking of interconnectedness' to its absolute limit (*ibid.* 7).

This is not a trivial task, as the pursuit of this thought runs firmly and consistently against the grain of much that (we think that) we know. Our activities are set into vast networks of interaction, operating at scales far above and below 'the individual human' as we think of it, and amongst their ramifying consequences are effects that operate at timescales too fast or too slow to be identifiable in everyday experience. This undermines habits of thought developed over many generations, and which have come to underpin everything from our legal structures to our politics to our practices of making. For Morton, as with many others working to develop new philosophical perspectives suitable to the Anthropocene, the principle import of the ecological thought is that it 'has torn a giant hole in the fabric of our understanding' (Morton, 2010a: 14; see also Bennett, 2010; Coole & Frost, 2010; Bratton, 2011). In the next section, we will explore how this this 'thinking of interconnectedness' does damage to habitual ways of thinking, through the impact it can be understood to have the idea of human behaviour taken as the object of design.

07.04 Designing human behaviour in the Anthropocene

What does it mean to take the Anthropocene as the source of an imperative, as per Morton, to think in new ways - and more specifically, what does this mean for 'designing human behaviour'? To outline the argument in advance, I will suggest two closely related ways in which the former impacts on the latter: in the design of new institutions capable of attending to problems of a historically unprecedented nature that arrive under the auspices of the Anthropocene; and at the same time, the implication of human beings in ecological networks as elements thereof. The latter point is particularly emphasised when, as we will presently see, it combines a disorientation of our everyday conceptions about 'what humans are' with the ongoing elaboration of new ways in which human behaviour might be actively subjected to design. These ideas, and importantly their interrelations, will be described in what follows.

To begin, let us consider in general the constituent gesture of any investigation we have labelled, above, as 'ecological' - the tracing-out of networks of material action, and the identification of (sometimes unexpected or counter-intuitive) relations that are thus revealed. From this perspective, even the most mundane, everyday activity becomes a switching-point in an extended circuit, the ultimate remit of which may be vast. Even an act as routine as grocery shopping is transformed when it is understood that the personal behaviours involved constitute a micro-system that is nested within processes that can stretch out to a planetary scale.

From this perspective, the shelves of a contemporary supermarket, in the design theorist Benjamin Bratton's example, operate as an interface to

a network of supply-chain, demand-chain and customer-relationship
management softwares, steel containers, offshore factories, inter-modal

exchange protocols - all forming an unimaginably complex, robust and nimble assembly of everyday purchase commands with vast economies of production and distribution.

Bratton, 2006: 13

As of yet, we have difficulty even visualising the myriad 'occluded, sprawling webs of interconnectedness' (Nixon, 2009: 443) that are involved in this situation alone, which comprises trade routes, production chains, millions of miles' worth of electroconductive wire, undersea fibre-optic pipelines, satellite links, prevailing winds and ocean currents, and so on. This act of visualisation, already difficult to perform in detail, is in turn only the first step toward comprehending the whole sufficiently well to act upon it in a reasoned way. As this example demonstrates, it would seem that for even the most basic human action, an ecological approach simultaneously illuminates the situation while obscuring how to respond to it: 'answerability turns into a bewildering transnational maze' (*ibid.* 444).

It is clear that positing the question of human behaviour as the object of design under such conditions requires the re-conception of the kinds of bodies (in both literal and figurative senses) that might actively attempt not only to passively participate in it, but actively (re)configure it. As Bratton observes, the materiality of the ecological network thus identified means that its *governance* in practice means control over this process of active reconfiguration. This equation of governance with design operates not just metaphorically, nor indexes a broadly comparable process of planning, but with the specification of material structures that includes, albeit partially, the behaviour of human beings (e.g. see Bratton & Jeremijenko, 2008). We will return to this point about the *incorporation* of human beings into an ecological network presently; in the interim, there is a point to be made about the *challenges* of contemporary governance within a worldview that attends to and accounts for the dense and

distributed networks like that in the example of supermarket shopping. Bratton, whose work is primarily animated by the corrosion of traditional political ideas by just this realisation, makes with elegance the point that

we have no idea what the terms and limits of a cloud-based citizenship of the 'Google Caliphate' will entail and curtail; some amalgam of post-secular cosmopolitanism, agonistic radical democracy, and post-rational actor microeconomics, largely driven by intersecting petabyte-at-hand datasets and mutant strains of Abrahamic monotheism. But specifically, what is governance (let alone government) within this?

Bratton, 2009c

Addressing this question is at least one way to state a general task towards which 'designing human behaviour' might be oriented at present. Clearly this does not mean 'the end of politics', but the reconfiguration of how democracy, or some other treasured value, might be performed under these circumstances. Nor does this mean simply conserving, at all costs, their familiar forms, but instead, where necessary, experimenting with what new shape they might take, or indeed what might come to supersede and supplant them. It may be, at least in some cases, that existing institutions like national governments or international governmental assemblies might be able to deal with many impending issues without major recalibration of their powers or remit (let alone their entire replacement). It is not implausible that existing sociopolitical frameworks might create and implement effective measures to mitigate climatic changes, or even religious or political behaviour transformed, as above, by 'intersecting petabyte-at-hand data sets'. But at the same time, ecological thinking about the ramifications of present action reveals situations in which there is very little in the way of meaningful precedent.

Consider, for instance, an example given by Morton (2010a): the problem of plutonium disposal. In addition to its qualities as an profoundly toxic heavy metal contaminant, plutonium's radioactive half-life is around 24,000 years. There is no known way of *disposing* of plutonium, only tactics to temporarily secure it, and half the world's existing stocks will therefore still exist in 26000 CE. Assuming the continuation of the human race to that point and beyond, a moral imperative not to knowingly endanger future generations of human beings runs up against the requirement to think in scales of time on the level of the *geological*, rather than the historical. It is completely unclear what kind of institution might manage this - an institution of some kind that must guide the behaviour of human beings far in the future. Certainly, any kind of 'consumerist' design perspective cannot be employed, as plutonium presents no 'positive experience' to be 'consumed', only a risk - and a risk, at that, which is posed to people we *will never and can never* meet, and to whom we must address our designs. 24,000 years hence, the Earth will be inhabited by cultures to which it would be hubristic in the extreme to automatically assume we can meaningfully relate - given that they will exist approximately four times farther into the future than we are in relation to the earliest nomadic colonisations of the Sumer valley, or twice the distance from the time of writing to the creation of the cave paintings at Lascaux. This renders to pieces any kind of familiar economic logic of self-interest, as well, even if we consider it in selfish-gene form - that is, as something that will effect our descendants; assuming there are human beings alive in two dozen millennia, none of us, individually, will have a meaningful familial relationship with them. The question of how we are to design the behaviour of groups this far in the future - such that they do not come into contact, even (or especially) accidentally with our nuclear waste, is as of yet an open one.

But in some senses a more immediate problem than designing the behaviour of people that we can never meet is that the ecological thought renders us, in the most capacious sense - as 'human beings' - *already* unfamiliar. This returns us, as promised, to the observation that within

the purview of the ecological thought, human beings are seen as immersed in distended networks of activity - indeed, are understood as a constitutive part of them, and are in part constituted by them. In plainer language, the perception of human beings is changed, as it is revealed that they are bound up, in ways that could not have been suspected before the Enlightenment, with the world more deeply than could have been imagined.

'[Y]ou personally are not the design problem', Bratton (2011) writes, and neither is 'humanity', conceived as the sum of individual humans. He positions the problem rather as 'the *detritorialisation* of the human animal, and the specific diagram of the Human as a format that has been shuttled forward from the Enlightenment' (*ibid.*). But why should the 'specific diagram of the Human as a format' be considered an issue that concerns - specifically - design? Indeed, why is it a problem at all? The ecological thought points to the immersion of human beings in dilated circuits of activity of the kind described in the passages above. But at the same time, it is not the case that thinking ecologically points to individual humans, or groups thereof, as discrete 'nodes' in a network. We might say that although it is intuitively obvious that contemporary ecological approaches to human behaviour situate it as working in networks at scales *above* the level of the individual human (in the shape of, in the previous examples, circuits of trade, etc.), our participation in these networks also happens at a level *below* the level of the individual human being. The relational perspective of the ecological thought reveals that humans are not quite the autonomous, self-determining actors they have often - especially in the contemporary West - been taken to be. This developing understanding of the constitution of the human has its corollary, as we will see, in emerging modes in which human behaviour is taken as the object of design because *humans* are increasingly the object of design.

A useful concept to deploy at this juncture is Wilfred Sellars' distinction between the *manifest* and the *scientific* images of human beings (Sellars, 1963). The 'manifest image', approximately corresponding to (but more general than) Bratton's Enlightenment-era 'diagram of the Human', relates to 'how people appear to people': a perspective acquired through lived social experience, and incorporated - differently in different cultures - into such things as laws, morals, ethics and religion, which consolidate particular views of 'the human'. The manifest image is contrasted with a series of images of the human produced by procedures of scientific investigation, from the observations of social psychologists to DNA analysis to functional magnetic resonance imaging (fMRI) of the brain as it performs task. The *scientific* image of human beings, then, 'is conspicuously unlike the manifest image, but can be distilled from various scientific discourses, including physics, neuro-physiology, evolutionary biology, and, more recently, cognitive science' (Brassier, 2007b: 3). It is a composite of 'readings' of the human body, as a field of forces - a 'nodal intersection in the electromagnetic and gravitational field' or a dense point in 'the genetic and ecological fields' (Flusser, 1999: 104-105), a porous 'compartment of the biosphere' (Morton, 2010a: 35).

The results of these investigations lie at odds with our what is accessible to intuition, and what, previous to these various technologies, we are therefore to make - individually and collectively - of 'the human'. Proceeding on the evidence of our unaided senses alone, human beings (and other organic lifeforms) appear to be perfectly individuated, fully detached from the surrounding environment. But scientific images of human beings shows them to be organisms that are inextricably parts of their environment. The pioneering cybernetician Norbert Wiener, for example, was fascinated by how the idea that human beings were self-perpetuating twists or knots of materials more widely distributed in the environment (the results of inserting coloured chemical markers into functioning physiological systems - which vividly revealed how to the experimenters how our

tissues change as we live: the food we eat and the air we breathe become flesh of our flesh and bone of our bone, and the momentary elements of our flesh and bone pass out of our body every day with our excreta. We are but whirlpools in a river of ever-flowing water. We are not stuff that abides, but patterns that perpetuate themselves.

Wiener, 1950: 86

Indeed, the emerging scientific image of the human being has only grown more remote from the apparent evidence of our unaided senses since the time of Wiener's writing. To give but one example: what appears to us to be a single, individual human being has come to be understood as a dense habitat, something like an ambulant coral reef, that contains *ten times as many* (numbering approximately 10^{14}) bacterial cells as human ones (roughly 10^{13} ; see Seiler, 2007: 11). What is more, we depend for our survival on these microscopic guests, which 'break down otherwise undigestible plant polysaccharides (fiber) in our digestive tracts; boost our immune systems; produce the vitamins thiamine, pyroxidine, and K; and ward off illness by out-competing their harmful prokaryote cousins' (*ibid.*). And, in a further turn of the screw, even those one-tenth of cells that are 'human' are evolutionary patchworks, containing sequences adopted incorporated wholesale through lateral gene transfer from viruses and bacteria in our evolutionary past (see Morton, 2010a: 34-35, for an overview).

At least at a cognitive level, this throws into disarray deep-seated assumptions that underlie a great many of the social institutions with which we are presently familiar. In most cultures we know of, the 'physical boundaries of the human body have historically served as both a theoretical and practical means of distinguishing one person from another', as Gail Weiss writes. "One body, one identity' is a basic legal, ethical, political and social presupposition that

we both implicitly and explicitly rely upon in our everyday dealings with others' (Weiss, 2009: 22). (This phenomena, it bears remarking, seems particularly prevalent in the West, where there is a widespread social pressure to treat, and act, as an 'individual'. See Seiler, 2007.) But the problem does not only obtain at a conceptual level. The revelation of these extraordinary systemic intimacies directly contests the manifest image of human beings, even as it opens new possibilities to make designed interventions in *the human being itself*.

Recent medical science, in particular, has produced all kinds of quandaries where technoscientific developments void habitual moral, ethical and political prescriptions, demanding the development of new ones. Anthropologist Nancy Scheper-Hughes, for instance, considers in her account of the international organ trade the 'ethical slippery slope' that beings 'the first time one ailing human being looks at another living human and realises that inside that other body is something capable of prolonging or enhancing his or her life' (Scheper-Hughes, 2005: 161). Scheper-Hughes directs our attention to something largely ignored in mainstream bioethics: how 'the spread of advanced medical procedures and biotechnologies to all corners of the world', she writes, produces 'strange markets and 'occult economies'' that 'have incited new tastes and desires for the skin, bone, blood, organs, tissue and reproductive and genetic material of others' (*ibid.* 149). Nowhere, perhaps, is the production of these curious economies more visible than in the case of artificial reproductive technologies (ARTs), like those that allow *gestational surrogacy* - a procedure in which an in-vitro fertilised embryo from an 'intended mother' is implanted in the womb of a 'surrogate mother', who carries the pregnancy (hopefully) to term. The interaction between the parties involves is, as one might expect, a charged and complex one, for which there is little in the way of direct meaningful historical precedent. The paradigm of adoption only partially intersects the largely *new* interpersonal relationships produced, predicated entirely on the advent of a new set of

technologies, in which previously (literally) incorporated aspects of motherhood (carrying one's own child to term, and raising it) are rendered separable (see Teman, 2009, 2010).

Even more directly, Ray Brassier alerts us to how contemporary pharmaceuticals and other technologies have become recently both prevalent and sophisticated enough that we cannot pretend they are not becoming 'an invasive component of agency' itself. Extrapolating from the trajectory of already-existing technologies, Brassier writes:

Neurotechnologies, including cognitive enhancers such as modafinil, brain fingerprinting, neural lie-detectors, and nascent brain-computer interfaces, are giving rise to phenotechnologies ['technologies of phenomenology'] which will eventually usher in the literal manufacturing of consciousness in a way that promises to redraw existing boundaries between personal and collective experience and recast not only extant categories of personal and collective identity, but personal and collective agency.

Brassier, 2007a: 5

One does not have to entertain speculations about the rise of novel phenotechnologies, however, to find examples of new social forms predicated on invasive design interventions. For example, in *The Soul at Work* (2009), Franco Berardi points out that the promotion of intensive co-operation amongst shifting alliances of people who regard each other simultaneously as friends, colleagues and collaborators, in concert with demands for the demonstration of 'innovation' and 'creativity', is intensely corrosive to 'traditional' patterns of Euro-American sociality. While its lack of direct empirical support renders his work best treated as hypothetical, his contentions are intriguing: for example, that we should recognise that the so-

called 'service', 'knowledge' or 'post-industrial' economy is buoyed by pharmacological developments, without which it would collapse: 'The other side of the *new economy* is naturally the use of psychostimulant or anti-depressive substances. This is a hidden, negated, removed side, but absolutely decisive. How many, among new economy operators, survive without Prozac, Zoloft or even cocaine?' (Berardi, 2009: 131).

In these cases - presented as indicative examples to connote the scale of a wider field - we see something of how 'human behaviour as the object of design' is opening up new fronts in the Anthropocene. On the one hand, human behaviour becomes recognised as a constituent part of large-scale networks of elaborate artifice; on the other, the human being itself becomes increasingly laid open to intervention by design. In both cases, new demands are placed on us to consider how we reckon with, have agency with regards to, and insofar as is possible might govern this double situation - even as they exceed in scale, and alter in type, from situations with which our current institutions have been crafted to deal.

07.04 **Métis as recourse and resource**

In the cases outlined above, design enters the Anthropocene charged with effecting its projects while at the same time hemmed in by the close complicity of many different systems, operating across scales which are often very far removed from anything that can enter direct human sense perception. In general, we can see that, pushed to the limits of the 'thinking of interconnectedness', we experience a moment of - to apply Paolo Virno's (2009) phrase - 'cultural apocalypse'. Virno uses the term to describe what happens when a group, on any scale, confronts a situation that exceeds their ability to address it: when, that is, it exhausts their

cultural scripts. This could be a tumultuous natural disaster (earthquake, volcano, tsunami, epidemic, unprecedented drought, and so on), or something more subtle - like the appearance of the first European sails over North America's Atlantic horizon. These are *catastrophic events*, even if they lack the bombast of Hollywood disaster movies: their appearance 'destroys the time of work and reason,' writes Alphonso Lingis, 'and opens upon the empty endurance of the void' (Lingis, 2000: 121). At least initially it seems that '[n]o human project could take hold' here in this 'uninhabitable mountainscape... you could form no project here, not even an exploratory hike' (*ibid.* 129). Global climatic changes, radioactive waste, neurophysiology, collaboratively produced 'high' technology, *et alia*, are in a sense not just potential *causes* of catastrophic events: they *are* catastrophic events, raising questions that cannot be answered by recourse to our customary scripts of ethics, morality, or politics. Unable to cope with this exceptional situation, 'we witness a progressive indetermination of speech' as reference points slip, alongside an 'abnormal fluidity of states of affairs and the growing uncertainty of behaviours' (Virno, 2009: 99). 'No longer selectively filtered by a complex of cultural habits', Virno writes, 'the world shows itself to be an amorphous and enigmatic context' (*ibid.*).

As the reader has no doubt realised for themselves, the landscape revealed by the ecological thought has a deep correspondence to what we've come to understand as *mêtis*. These links are very close to the surface, even if anthropological commentaries on traps, studies of the relation between ancient artisans and magic, and obscure Hellenist treatises on terms long passed out of use seem, in disciplinary terms, very distant to it. But perhaps *mêtis*, if anything the very *art* of operating in 'an amorphous and enigmatic context', and it might return here as an operative mode. Its lessons of cunning ingenuity expressed in oblique approaches to the situation at hand may provide a ready resource with which to address them.

Let us take, as points to develop, two ideas from the preceding section, loosely corresponding to the two halves of our double question: how to reckon the consequences of our action at very large scales, and new technological means to transform the capacities of the body. For the first, we will revisit the disposal of plutonium, and see an ingenious ploy to design the behaviour of a future group that we can never meet. In the second, we will further explore the advent of gestational surrogacy through the work of anthropologist Elly Teman, and the clever, thoughtful, and in some ways surprising means she identifies by which people are coming to accommodate the technologisation of the body by ARTs, and the embrace of the technological body to articulate and cement a novel kind of relationship between people.

Firstly, the issue of plutonium, specifically at and around the Yucca Mountain waste depository in the USA. During site planning and construction, the authorities involved felt that they could not answer the question 'what do you do with the radioactive waste?' with 'sweep it under the Yucca Mountain carpet and hope nobody notices', in case it is one day stumbled upon (Morton, 2010a: 132). It might be stored 'ideally above ground in monitored retrievable storage, for thousands of years' (*ibid.*). But territories and cultures shift; there is no guarantee security will be maintained. In response to this, a series of highly indirect strategies have been developed. In the first case, as Kelli Anderson reports in her 2005 essay *Designing for Deep Time*, in the early 1980s the US Department of Energy established the *Human Interference Task Force* (HITF) to look at the problem of 'communicating across 300 generations' - only 10,000 years, but a formidable enough challenge (Anderson, 2005: 3). Language - in the shape of warning signs - was considered inappropriate, given our contemporary difficulties deciphering (for example) Sumerian scripts, lexicon and syntax; a similar problem was associated with relatively abstract symbology, in the case of, for example, the familiar (to us) three-triangle radiation sign. Proceeding from a minimum of assumptions about the socio-technical environment in the far future, the HITF examined a series of visual strategies to influence the behaviour of future

visitors to area. The first of two that predominated in the project was to eradicate all reference to what was hidden in the area, although this seems problematic given that mining, especially, might conceivably chance on the toxic horde. An alternative strategy, proposed by Michael Brill, was to develop a long-lasting landscape that appeared entirely inhospitable - indeed, evoked dread. The designers were briefed to design an architectural vista that communicated '[t]his is poisoned, destroyed, and dead land', and that should not 'suggest shelter, protection, or nurture', conveying its message through 'sharp points, darkness and dislocation' (quoted by Anderson, 2005: 56). The intention was to create a *psychologically unnerving landscape* that conflicted with deep-set human preferences, including forms 'such as thorns and spike, inspired by forms threatening to the human body... Non-geometric elements and an erratic scattering of elements [to] conflict with the human attraction to symmetry and order in space', and skulls (*ibid.*) (Fig 07.01)



Fig. 07.01 Michael Brill, *Spike Fields*, c.1991. One exemplary design from the Human Interference Task Force project, which attempts to render a specific environment 'undesirable' for a timeframe approaching perpetuity.

In this case, the designs attempted to locate a particular set of behaviour propensities and manipulate them, in the style with which *mêtis* fashions a trap - but not to ensnare in space, rather to discourage approaching it, and with security, not harm as the product of its operation. Although the designs are yet to be built (and it is not clear whether they, or something similar, will be), we see here a powerful example of how *mêtis* finds in an apparently unnavigable space the ability to operate through creative utilisation of the most minimal material palette possible. Alternatively, a perhaps even more *mêtic* solution is, as Morton reports, a way to sidestep the problem of a waste dump entirely and find other - highly lateral - means of disposing of the waste, as in 'the recent plan to dispose of nuclear materials by putting small amounts in regular household silverware' (Morton, 2010a: 132).

Our second example, concerning ARTs and specifically gestational surrogacy, also involves ingenious strategies levelled in complex and ambiguous circumstances, but does not apply a technology to indirectly inform a behaviour - rather, relates to the development of behaviour around a new technology. As briefly discussed in the previous section, gestational surrogacy creates a new and morally, politically and ethically difficult space in the shape of interpersonal relations between 'surrogate mothers', 'intended mothers', partners and children (Teman, 2008, 2010). In many countries contact between the intended and surrogate mothers is strictly patrolled both by national law and the conditions of medical professionalism, mediated by contractual agreements, often involving payment, that specify 'whose child it is'. Elly Teman's ethnographic work around gestational surrogacy was pursued in Israel, a site unusual in legal and cultural terms in that contact between intended and surrogate mothers is both legal and encouraged, to the point that they are expected not only to attend appointments together but keep in regular contact (Teman, 2010).

This provides a fitting context for Teman to pursue her interest in 'how people make sense of the cultural anomalies that surrogacy produces: how do participants in this process make sense of the question of who is the 'mom' when there are two (or more) potential mothers?... How does the intended mother make sense of her own role when there is another woman carrying her baby? How do each of them relate to one another[?]' (Elly Teman, personal communication, November 2nd 2010). Surrogates, Teman writes, 'while physically pregnant', are (as one might expect) 'interested in distancing themselves from any and all emotional, social and identity transitions that might accompany their pregnancy experience; intended mothers, oppositely, are interested in accessing these transitional aspects beyond the limitations of their non-pregnant bodies' (Teman, 2009: 50-51).

Yet this has played out in unanticipated ways, as the 'intended' and 'gestational' mothers have tried to accommodate the situation they are in. The intended mothers often saw the surrogate as a 'living, breathing, active extension of her [i.e. the intended mother's] body', imagining 'the pregnancy existing in a distanced-yet-connected space', 'a kind of satellite site of their own reproductive efforts'. 'I see her as the part of me that is missing', says one of Teman's informants: 'She is my uterus' (*ibid.* 54-55). The surrogates, for their part, developed strategies to emotionally neutralise the bodily experience of pregnancy, frequently comparing their wombs to machines with which they were able to provide a kind of gift to a comparative stranger (Teman, 2010: Ch. 1). These senses of 'disembodiment and vicarious embodiment' (Teman, 2009: 66) give rise to a sense of a 'shifting body', a body whose 'compartments' are temporarily divided between multiple people.

The idea of 'people as machines' discussed in Chapter 05 returns in Teman's analysis, but is now rendered far stranger than can be addressed by any political sentiment that simply - whatever its other merits - opposes the 'reduction' of people to 'mere' machines. In Teman's

case, while sometimes her informants reported that the process was highly disturbing, it has also been the forge of a new *kind* of relationship, one that many intended and gestational mothers come to treasure: 'there is no category that describes this situation, which is neither kinship nor friendship but is also not exactly a cold business transaction' (Teman, personal communication, November 2nd 2010). They are, as Rayna Rapp (2000) phrases it, 'moral pioneers', ingeniously dealing with a cascade of possibilities about how this new relationship should be understood, working to transform existing social relationships into new and idiomatic forms; the *mêtic* element, perhaps less immediately evident than in the previous example, can be seen as embedded in the many micro-interactions it takes to build this new social role, in a daunting ethical, legal and political context.

In both of these examples, the behaviour of human beings is the object of design. In the former case, a minimal, abstracted view of humans, concerned with little more detail than vehicles of a deep set of *dispositions*, is configured in order to design the behaviour of people we (any of us) can never meet, but in the interests of their safety (or at least, an attempt to divest ourselves of the moral compunction to address it). In the latter, a group of human beings come to understand *themselves* as partly 'technological', artefactual. This is recovered not as something to be avoided, but rather to find a way of articulating, and developing, a new typology of social relationship. In both, 'human behaviour as the object of design' proceeds in ways more piecemeal and less deterministic than a 'top-down' process that 'reduces people to mere machines' - they involve carefully considered stratagems, rather than parades of force. And in both, *mêtis* is exhibited in the considered, intelligent, and creative ways in which a seemingly chartless territory can be mapped.

They are also *highly particular*, a quality of *mêtis* that we first saw when introducing the history of the concept in Chapter 04. That is, they use *the materials to hand*, and thus do not readily

lend themselves to *generalisation* about how *mêtis* might be specifically *deployed* to the project of designing human behaviour in the Anthropocene. There is, however, a different way in which *mêtis* can be conceived of more general utility than its specific application within a highly determined context, one that we have not broached previously in this thesis. Therefore, in the next and final main section of this chapter, we will consider *mêtis* more generally in relation to the ecological thought - and in particular its role not just as a quality of design practice, but as a related *way of understanding* in the Anthropocene.

07.06 Mêtis and knowledge

As we saw in Chapter 04, the anthropologist Mary Helms (1993) identified a persistent historical suspicion about designers concerning how their *mêtis* connects them with a 'beyond' - a space that is not necessarily *literally* 'distant' from society, but appears to lie just beyond the facade of everyday life: a realm of unexpected possibilities lurking behind the surface of things-as-they-are (see section 04.06). This was a space that was omnipresent but imperceptible; 'remote', because how to access it was not obvious; and traversed by 'supernatural energetics'. It was from the beyond that the purest instances of *mêtis* seem to emanate, so lateral in how they harness the tendencies of the environment that their origin is rendered obscure. Smelting ore into gleaming rivulets of molten iron was one example. The beyond is, we might say, a kind *latent background* into which the act of design intervenes.

Of course, today we would understand this radical physical transmutation not as supernatural but in terms of physical science - a secularisation, we might say. Yet in a curious near-reversal of this secularising effect, a worldview informed by scientific practices in the Anthropocene

can indeed be seen as suggestive of a realm 'out there' which practices of design must engage with. This has not gone unrecognised in contemporary philosophy - Reza Negarestani, for example, writes that delving into previously unknown scientific and technological territories are, like the plot twists of film noir, instances where the everyday world is revealed to be, just below the surface, a deeply, inhumanly weird space (Negarestani, 2008, 2010), a world full of secret happenings with which, now that they are revealed, we must contend - all the while remaining aware that there is more that may reveal itself. But how does a contemporary restoration of *métis* relate to, and help us navigate, this space - as way of producing new thought *about* acts of design, not just expressed *in* them?

We might turn here to the writing of two other philosophers, Peter Sloterdijk and Paul Virilio, both of whom have written at length about what kinds of relationship we might have with a world that has been revealed as so complex and shifting that it resists our control. In the first case, Virilio posits the concept of the *accident* as the single most important lesson of ecology. At the outset of the book devoted in its entirety to the subject, *The Original Accident* (2007), Virilio observes that "[t]here is no science of the accident", Aristotle cautioned a long time ago', and that this remains the case, because an accident is precisely what is unpredictable - when the unknown makes itself known by disrupting human projects (2007: 10). Virilio's central theme is that the invention of a new technology is, simultaneously, *the invention of a new accident*. An invention involves 'uncovering what was hidden, just waiting to happen'; and so the invention of a new material technique, product or system is also the 'indirect invention' (*ibid.* 9) of its corresponding catastrophic effects. 'To invent the sailing ship or steamer is *to invent the shipwreck*. To invent the train is to *invent the rail accident* of derailment. To invent the family automobile is to produce the *pile-up* on the highway' (*ibid.* 10) And the list goes on: the air-crash follows in the wake of the aeroplane, nuclear power creates the possibility of the Chernobyl incident, and suddenly, with the stockmarket crash, 'the hidden

face of the economic sciences and technologies of automated dealing in values rears up, like the iceberg before the *Titanic*, only on Wall Street, in Tokyo and in London' (*ibid.*)

As this list of examples might connote, Virilio's perspective is pessimistic one, although it must be said that as a philosopher, he is concerned with description and conceptualisation; he is excused, one might say, from the imperative to furnish us with a positive model for action. Nonetheless, we can recover from Virilio's observations on the accident as the definitive Modern 'oeuvre' of event (*ibid.* 9) two things of use to us here. Firstly, he notes that if a new invention produces a new accident, then inventions are themselves also often 'accidents'; an 'accident' is *not necessarily* a 'disaster', or, perhaps better, a disaster is but one particular species of accident, with the characteristic property of being one that negates - temporarily, or terminally - the human capacity to flourish. Accidents are, more generally, moments of 'creation or collapse' (Virilio, 2007: 9), and we need to cultivate a sensitivity to these situations so as to make the accident 'habitable', as he puts it (*ibid.* 47). And what is more, secondly, the accident has a specific kind of positive *value* for thought: '[t]he accident reveals the substance', because 'WHAT CROPS UP (*accidens*) is a sort of analysis... of WHAT IS BENEATH (*substare*) any knowledge' (*ibid.* 10; capitalisation and italicisation in the original). That is, the accident *tells us something* that we did not know before, laying bare relationships that may have been only suspected, if at all. The *dynamics* of the accident are, as it were, *educational*.

The intricacy of this link between design and the *latent background* is made clearer in the work of the philosopher Peter Sloterdijk, who conceptualises their relation at length in *Terror from the Air* (2009d). The book opens with a discussion of what Sloterdijk pinpoints, with near-comic exactitude, as the dawn of 'modernity' itself: April 22nd, 1915, at 'exactly 6pm' (*ibid.* 10). This was the moment when a newly created and highly specialised German military unit, based in northern Ypres, 'opened 1600 large (40 kg) and 4130 small (20 kg) chlorine-filled cylinders to a

prevailing north-northeast wind', which would carry the gas towards their target, a French-Canadian regiment. This was the first large-scale use of gas warfare, and for Sloterdijk, it is a pivotal moment because it makes obvious that human beings need to breathe. This may seem a horrific way to fashion a banal point, but this a project to fashion a 'lethal trap of air' is an instance at which design serves to illuminate the broader environment through a process Sloterdijk dubs *explication* - the moment when the 'long concealed, the unknown, the unconscious, the never-known, the never-noticed and the imperceptible, [are] forthwith forced to the level of the manifest' (*ibid.* 58).

This is, for Sloterdijk, the *basic gesture of Modernity*, 'conceived', he writes, 'as the explication of background givens' of far more varied type than the air/breathing relationship (*ibid.* 79). We may disagree with Sloterdijk that militarisation has been the basic mode by which technoscientific practice developed in the twentieth century,³ and sometimes Sloterdijk's specific claims seem to exceed the available evidence.⁴ Nonetheless, we do not need to take on his idea that Modernity 'really began' with gas warfare to appreciate this conceptual innovation. That is to say, the historical significance of this particular episode aside, it seems true that in the moment of the gas attack, we find 'rudely awakened in witnesses and the wounded an awareness of a radically new dimension of latency' (*ibid.* 58), a moment of 'design-precipitated discovery of the obvious' (*ibid.* 92).

As the reader may have noticed, Sloterdijk's example is an almost paradigmatic instance of *mêtis*. He effectively speaks of what very old commentaries have associated with the *trap*, an object based on an observation of tendencies in the environment, and which effects their redirection or reprogramming, especially in the interests of their exploitation. *Mêtis* is here associated not just with expedient (infra)political action, as in our examples from the previous chapter, but the revelation of *new knowledge* as a by-product of the trap. The trap *makes clear*

the processes on, by and through which it works. And therefore, we might say that being apprised of the likelihood that our actions will bear unintended consequences, and the revelation of our complicity in systems extending far beyond us, we are in a position susceptible to *mêtic* logic not just in action but also in thought. *Mêtis* might be seen to serve as a kind of orientation to for general investigation within an 'ecological' worldview: at any given point, in any given circumstance, with what are we, or might we be, embroiled? And - through material experimentation - how might we extricate ourselves? In the Anthropocene, attached to an ecological perspective that invites us to *presuppose* the world is densely riven with interconnections, we are faced afresh with, as Detienne and Vernant would have it in their description of the world as seen through the filters of *mêtis*, an environment 'full of snares' (1991: 30). Some of these snares are, of course, of our construction, albeit unwitting, as per Virilio's comments on the accident. The adoption of a *mêtic* perspective entices us to *presume* that we surrounded by traps, not all of which we are, as of yet, aware. But importantly, *mêtis* is not a logic of inaction but of active exploration of these hostile circumstances. If we encountered Hyde's maxim, *a propos* the mythological figure of the trickster, that 'nothing counters cunning but more cunning' (1998: 20) in Chapter 04, that same sentiment is deployed with redoubled force in the Anthropocene.

07.07 Conclusion

In this chapter, we have seen how the Anthropocene, and the ecological thought that underlies it, exceeds the idea of 'ecology' simply as a source of limits or a useful working method for contemporary designers. But where the ecological thought consistently leads us, today, to a 'void' in which it initially seems that 'no project' could be formed, then we might turn to *mêtis*

as a guide, which, as a 'cultivated art of reversal' where the lesser overcomes the greater, is the mode of action which excels in rendering the void pliable for at least a moment. This chapter has explored what traction *mêtis* gives us in this new space, which is at once practical and intellectual - a quality of successful action in the 'amorphous' environs of the Anthropocene, and simultaneously as a way of seeing the world and our action in it as productive of knowledge in a particular way.

As human behaviour becomes recoded as part of overlapping ecological networks, *mêtis* offers a conceptual resource to think about 'human behaviour as the object of design' from a perspective whose novelty is ironic, given the antiquity of the concept. Indeed, *mêtis* thoroughly intuits the kinds of phenomena revealed by recent technoscientific practices to have *always been* the context in which human life is lived. The 'ecological thought is the Trickster', Morton recognises (2010a: 82), but he travels no further down the line of thought his statement opens up for us. To this, we might respond that *mêtis*, the practical orientation of the trickster, is an appropriate rejoinder at least from a perspective within design. We might think, too, about how *mêtis* renders a picture of the environment that rewards not conservative assays in sustainability - often tending toward a preservation of living as we know know it, but more humble, in every sense less *energetic*, as Stoekl points out - but a full engagement with the Anthropocene, a 'world of snares' and a fund of opportunity, equally promising and threatening but above all *present* and *ongoing*. We have discovered that we are imperilled by current trajectories in the environment, including - perhaps especially - those we have unwittingly created for ourselves. If, as in Lewis Hyde's observation that cunning must be levied to outmatch cunning, then we will have to be very cunning *indeed* to address the Anthropocene; and addressing the Anthropocene is, as Bratton writes, the 'first truly post-Industrial assignment' for the design disciplines (Bratton, 2008b).

NOTES

1. The concept itself is older, attracting less media-friendly names like the 'anthropozoic' or 'homogenocenic' era, but only recently has it emerged as a mainstream term - and, indeed, as a scientifically viable position. See Steffen, et al. (2011) for a history of these ideas.

2. A contemporary statement of the ideal is to maintain human activity within limits that will not induce catastrophic runaway processes, a concept recently developed into the idea of a matrix of 'planetary boundaries' within which the global environment should remain - an atmospheric carbon dioxide concentration of less than 350ppm (already exceeded by around 37ppm), an annual removal of less than 35m tonnes of nitrogen from the atmosphere (currently around 121m), less than 4000 cubic km of freshwater consumed by humans per year (today, approximately 2600km³), and so on. See Steffen, et al. (2011).

3. On the other hand, historians of military design like Konrad Becker (2009) demonstrate the extraordinary range of technologies that were developed, or given their definitive applications, within military settings and are now features of everyday, domestic consumer artefacts.

4. For example, consider Sloterdijk's claim that, in gas warfare, '[b]y using violence against the very air that groups breathe, the human being's immediate atmospheric envelope is transformed into something whose intactness or non-intactness is called into question. In other words: air and atmosphere - the primary media for life, in both the physical and metaphorical sense - only become an object of explicit consideration and monitoring in domains such as aero-technics, medicine, law, politics, aesthetics and cultural theory in response to their terrorist deprivation' (Sloterdijk, 2009d: 25). There is a substantial history of medical, legal, political, etc. consideration of the qualities of air, dating back centuries, that had nothing to do with terrorism, in Sloterdijk's definition of it or otherwise. See Gissen (2009) for a review of this history.

08 Conclusion

08.01 A recap of the argument

The question that initiated this thesis was an apparently simple one: *how might human behaviour be understood as the object of contemporary design?* Over the course of the five chapters that comprise the main body of this thesis, we have discussed this at length, and as a concluding gesture we would profit from a brief recapitulation, an outline of what we have found.

We began, in Chapter 03, by looking at *service design* as a site in which this question becomes contemporarily pertinent. In service design, we see a practice that approaches the horizon of human behaviour; although advocates of service design themselves, when they acknowledge this at all, view it as a problem - a claim to be avoided. Nonetheless, as we saw, there is nothing *in principle* to state the impossibility of design approaching human behaviour as a material; it is quite plausible to consider human behaviour as 'designed', and develop an understanding of what we mean. By casting a wide geographical and historical net for examples of *suspensions* that designers might engage in such a project, we discovered two main complexes of thought. As we saw in Chapter 04, the oldest set of suspensions to this effect have tended *not* to take the form which contemporary designers react so viscerally against - i.e., that 'designing behaviour' equates to issuing orders from a position of mastery, a manoeuvre of domination. Instead, across many cultures and at many times, these suspensions have been articulated in terms of subtle manipulation, secrecy, and twisting plots. Connecting the ideas of craft and craftiness, plot and plotting, scheme and scheming, and so on, the disinterment and revitalisation of these ideas creates - as we saw through much of the rest of the thesis - the restoration and development of way to connect the design of nonliving artefacts with that of human behaviour. Finding expression in the ancient Greek concept of *mêtis*, the emphasis on the dimension of design implied when the weak prevail over the strong, through the elicitation of extraordinary

effects from unpromising materials, is a powerful intellectual (as well as practical) resource, even if (as the Greeks themselves found) - these ideas are strangely resistant to the Western habits of thought governing the 'ethical' or 'political'.

These ideas, as we saw in Chapter 05, disappeared in what it is convenient to label the Industrial Revolution. Indeed, the force of the factory's arrival displaced them into the very margins of formal discussion of design, even as they linger on in popular culture and the experience of everyday life. A normative stance which opines that human beings and 'things' *must* be seen as different, and the latter the obedient servants of the former, took and holds sway as the dominant mode of articulating the relationship between design and human behaviour. This view is pervasive, extending far beyond design, and not only creates the problem service designers have with their own work (in that it is 'design' but somehow 'must not be design'), but causes huge distortions in our view of the history of technology. As Jessica Wolfe (2004) observes, to deplore Descartes (for instance) as a naive originator of the treatment of human beings as machines is to transpose our current point of view on the human/machine relationship to a place and time in which it did not prevail - indeed, was thought of quite differently.

Chapter 06 drew on a range of more recent *mêtic* practices - from the twentieth and twenty first centuries. This, in the first instance, showed the power of *mêtis* as a means to pull together wildly disparate examples of potent sociopolitical action by demonstrating the logic they share: without *mêtis* at our conceptual disposal, this logic is implicit to the point of near-invisibility. It also allowed us to consider what might be some features of a contemporary, self-consciously *mêtic* form of design practice. In the operations of, *inter alia*, alibi agents, marketing doyens, propagandists and clever political dissidents, we saw the potential potency of *mêtis* as such, today. Our understanding of the latter was both refined and developed in what we learned from

these examples - highly 'bespoke', as *mêtis* must be in its celebration of ingenuity expressed through drawing on the particularities of the circumstances in which it is displayed, but also careful not to produce situations that disrupted itself. We also saw how it offers a very different model to the idea of a practice that takes human behaviour as an object of design from that evinced by recent trends in design practice, namely service design. Morally and politically difficult due to its alien stance with regards traditional Western habits of thought regarding such, *mêtis* nonetheless offers such a potent resource that - I have suggested - we must reconcile to it, not least because without doing so in any kind of conscious or formal way, we remain at the mercy of those who do. In a kind of reprise of Lewis Hyde's observation that 'nothing counters cunning but more cunning', the way to address the complexities of *mêtis* is through the sophistication of our *mêtic* capacities, rather than their disavowal.

Lastly, in Chapter 07, I suggested that a restoration of *mêtis* is valuable for a further reason. If the mission of this thesis has been to explore human behaviour as the object of design, its termination without consideration of the present *unravelling* of the human by ecological perspectives would render it incomplete. As the sanctity of 'the human being' - Sellars' *manifest image* - becomes increasingly disrupted by scientific observation and technological progress, we need other ways of thinking about the world as it is revealed through these frameworks. It is difficult, given current developments, to persist with a model of 'sustainability' that privileges 'the harmony of nature', and advises human beings to 'tread softly on the earth', when the world is understood to be a hypercomplex nest of plots in which humans are implicated. *Mêtis* allows us a means of purchase on the world-as-such, labelling as the concept does a form of intelligent practice that attunes us to how small effects can yield outside changes, a sensibility key to address a world that more and more is revealed as characterised by webs of complicity to which many persisting ideas, such as that human

beings can solve global ecological problems - for thought as much as for survival - simply by using less resources, make no persuasive address.

We might say that the concerns of a very particular time and sociopolitical situation - the Industrial Revolution - and the exportation of these ideas from the West to the rest of the world - have not so much consigned *mêtis* and its ilk to history, *but to oblivion*. Indeed, the disappearance of these ideas during the Industrial Revolution represents a general impoverishment of design discourse, in which it is no longer possible to speak of (for example) ingenuity or cunning cleverness in an 'official' way, despite their arguable centrality to processes of design. Through its exploration of how design might be applied to human behaviour, rescuing *mêtis* - as a concept - from obscurity is a principle accomplishment of this thesis. In *mêtis*, we have located a quite 'other' view of design and designing than provided by perspectives that have popular currency in the discipline today; but *mêtis* can hardly be assigned the status of a historical curio. The concept furnishes us with a new set of resources that allow us to conceive of 'designing human behaviour' where the prevailing narratives attached to such a project give little traction - but, importantly, *few other perspectives provide purchase*, as well. As we have seen, phenomena as pressing yet diverse as the operation of propaganda, the projects of political dissident groups, and the challenges posed to thought and action by the emergence of ecological philosophical and scientific approaches attest to the importance of *mêtis* as a means to grasp those situations from *within* design - and also, through *mêtis*, give design something new to say to other disciplines about them.

08.02 Reflections on cunning

This work can be seen, then, as an opening gesture that allows the prospect of ‘designing human behaviour’ to be entertained from a new vantage point. It would be remiss not to note that, insofar as *mêtis* offers opportunities to think through the relation of design and human behaviour in new (to us) ways, it is nonetheless a disturbing concept on many levels. Perhaps the most unnerving aspect of *mêtis* is that the concern for *efficacy* it indexes is not readily compatible to addressing human activity in the registers of politics or ethics. This is not to say that it is definitely *incompatible*, but the kinds of action to which *mêtis* makes us sensitive suggest no immediate and unproblematic fit with with grand ideals or general principles about what makes the good life, good.

Mêtis does not fit with the concepts we habitually use to describe forms of governance - democracy, plutocracy, oligarchy, and so on. That these words have Greek roots, given the difficulty that Greek philosophy had with *mêtis*, might draw our attention. If *mêtis* has a specific and persistent relationship to what we understand as ‘politics’, then it is, to use James C. Scott’s word, that it is *infrapolitical*; it operates *beneath* political programmes, promiscuously in its relationships with different ones, sometimes supportive, sometimes antagonistic to them (Scott, 1990). *Mêtis* bridges a kind of error in our political scripts, a blind spot in ethics, law, and so on. Indeed, as we have seen, the deeply *amoral* nature of *mêtis* has often been categorised as *immorality*, and it is not hard to see that in cultures that value democratic action, openness and authenticity, *mêtis*, with its aesthetic of concealment and manipulation, is not readily embraced as a virtue. But then, to discount the most effective weapon of the weak against the strong, we would also have to admit that the strong should rule by virtue of being so - which would seem to be, at the very least, an equally hypocritical gesture.

If *mêtis* is an insurrectionary tool, it is as useful in the hands of a democratic majority as it is to the countervailing actions of a self-elected elite.

So perhaps we might admit *mêtis*'s ambivalence, and rather than attempt to purge suspicions that design is not a natural bedfellow to any particular political programme (other than, perhaps, a form of generalised insurrection against the strong), pay more attention to its implication in projects that undermine the ones we, ourselves, choose to pursue. 'This is not a brief for cynicism or immorality, nor a justification of winning 'by any means necessary', let alone an exhortation to give up entirely the desire to know what is the truth' (Jay, 2010: 180), but a serious reckoning of the gap between how we might like the world to be and how it is - which, *insofar as design is a projective discipline, would seem to be integral to its practice*. We might agree on this count with the legal theorist Don Herzog, one of the very few recent commentators to have addressed the (infra)politics of cunning directly, when he opines of a non-trivial need to

sharpen our grasp of cunning, to reckon with its twists and turns, allures and horrors, insights and blindnesses... I tend to worry about focussing on what's good. It makes it too easy to sound syrupy, high-minded, like a bad Sunday school sermon or an inspirational greeting card. The sheer nastiness of the cunning will keep me honest. It will force [us] to give the devil his due, every step of the way.

Herzog, 2006: 9

This is not least because, as Herzog notes, lauded abstractions like democracy, freedom, authenticity and fairness are blind to the complexities of actual, situated, embodied practice, and the inevitable contradictions those complexities entail. But a perilous road indeed begins

with the idea that 'reality' fails these abstractions, rather than the other way around (cf. Meyer, 2009).

Herzog proceeds to observe that, in the personifications of human qualities that made up the pantheon of Greek deities, Mêtis, goddess of cunning, was related to Athena, goddess of wisdom. But Athena was the daughter of Mêtis. That is, the myths 'don't cast cunning as wisdom's bitch daughter. They cast wisdom as cunning's bitch daughter. What then?' (Herzog, 2006: 184). 'What then' is an acknowledgment that, rather than taking cunning as a deviation from or corruption of wisdom, wisdom should be acknowledged as a function of cunning, familiar with its sensibility and methods, even if it self-consciously avoids adopting them. I would suggest, then, that the ideas expounded upon in this thesis might be seen as 'productively problematic'. With this in mind, and to conclude this thesis, we might ask how the ideas contained in it might be developed in the future: that is, if these ideas are productively problematic, what is it they might help to *produce in future*?

08.03 Future directions

We already saw, in Chapter 05, how *mêtis* provides a vocabulary to understand the operations of marketers, political dissidents, *et cetera*. *Mêtis*, as a concept, is doubtless of value to such enterprises, to which we might add commercial companies and government agencies of a rather more familiar type, shot through with *mêtis* as they are - but perhaps only internally, and informally. It also, of course, offers us a means to understand the operations of *mêtic* projects, which we would do well to recall are oppositional in structure and in fact, despite their commonalities on conceptual and practical levels, the groups mentioned above tend to have

objectives - for example as with the capitalist-commercial world vs. many existing politically dissident groups - that are mutually incompatible, to say the least.

This sense of antagonism is something that has begun to draw notice in design, for for instance, Carl DiSalvo's recent volume *Adversarial Design* (2012), which attempts to move away from somewhat sentimental views of participation, recognise power dynamics and the need for sometime urgent offensive strategies and tactical defenses - in this case drawing on theories of agonistic democracy to consider a more rigorous approach to participatory design practice than we have seen previously. The (re)introduction of *mêtis* to design discourse might provide a substantial sophistication of these arguments, moving away from what it reveals as a persisting shortfall in arguments like DiSalvo's - which is certainly commendable in its attempt to take the relationship between design and politics seriously - in which human behaviour is still not seen as a medium of design, despite the positive valuation of projects that effect specific political results, i.e. whose goal is to fashion human behaviour. It is to be hoped that, in future, the work contained in this thesis might come into productive relation with such movements.

Indeed, in some senses this occurring, in the tangible compatibilities between this work and the leading edge of political-philosophical theory. Before discussing this interdisciplinary engagement further, however, we might detour briefly to consider the resonance of this research work within the design disciplines themselves. A more expedient (if not necessarily more ambitious, in some sense) avenue for developing the practical implications of these ideas is found in more 'artistic' fringes of design. The forms of design practice to which this work has its most obvious and overt relation are experimental, and share (or, some detractors might argue, 'ape'); others, of a more optimistic bent, use 'colonise' or 'parasitise' the circuits of publication and exhibition typical to fine art.

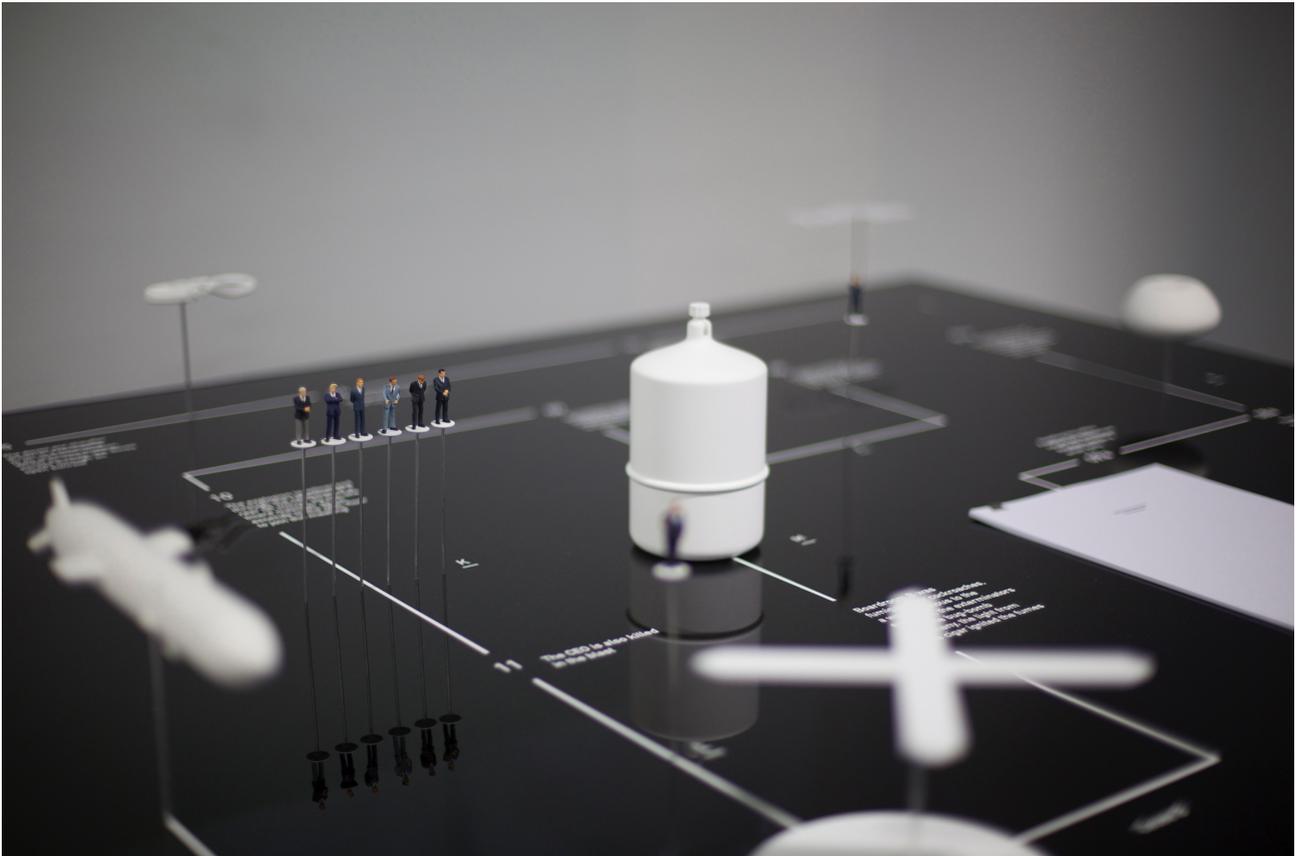


Fig. 08.01 Part of the mixed-media installation *Everything Ends in Chaos* by Ilona Gaynor, 2011, an attempt to design an elaborate plot in which an insurance company seeks to assassinate its board while not paying compensation to their families; tricky, given that their board are insured against an-almost exhaustive list of fatal scenarios). The image above shows a physical model of the interrelations between various actors embroiled in converging plots, and marks the points where their paths disastrously cross.

The ideas unfolded in this thesis could certainly be seen as carving a written, discursive companion to the work of some of the most experimental artist-designers working at present, such as Michael Burton and Ilona Gaynor (figs. 08.01, 08.02). In a sense, *mêtis* calls designers to attend to ‘what is not supposed to happen’, a phrase that encapsulates confer both the ethical quandaries of *mêtic* action and its relation to the solicitation of ‘extraordinary effects’ from everyday situations.¹

While this thesis offers a language, a philosophical basis and a set of resources for such work, perhaps its most interesting implication - especially from an academic perspective - is its relation to work occurring in other disciplines, as was briefly mentioned in the preceding section. It is comfortable for us to consider interpersonal affairs within understood certain registers: political, economic, legal, theological, ethical, and so on. All take some aspect of the governance of human activity by other humans (the 'conduct of conduct') as integral to their traditional disciplinary purview. These overlap, of course - indeed, are deeply entwined; after all, human knowledge has not always been nor everywhere is partitioned according to, simply, divisions of discourse along the lines of different university departments. New ones emerge, older ones are displaced or fade. There is currently no coherent 'design' point of view on human affairs; what I have suggested here is that there might be one, and - through sketching out what it might look like - why this might, in certain respects, be something desirable to develop. Indeed, from a certain angle, it might even be said that what is offered here is a first, provisional, and comparatively extremely crude but nonetheless compelling position of design as a *rival* to established likes of political, ethical, etc. thought - that is, in that it offers an alternative, consistent paradigm within which to apprehend worldly events.

But these fields are, of course, in continuous transition themselves, and the possibilities for *new connections* between design and its neighbouring branches of thought. In particular, as contemporary philosophy and political science grapple with the kinds of technoscientific developments that we saw in Chapter 07, it is perhaps no surprise that commonalities can be found between this work and the more progressive edges of a wide variety of fields, from 'pure' philosophy (e.g. Negarestani, 2008) to war theory (e.g. Guha, 2010).

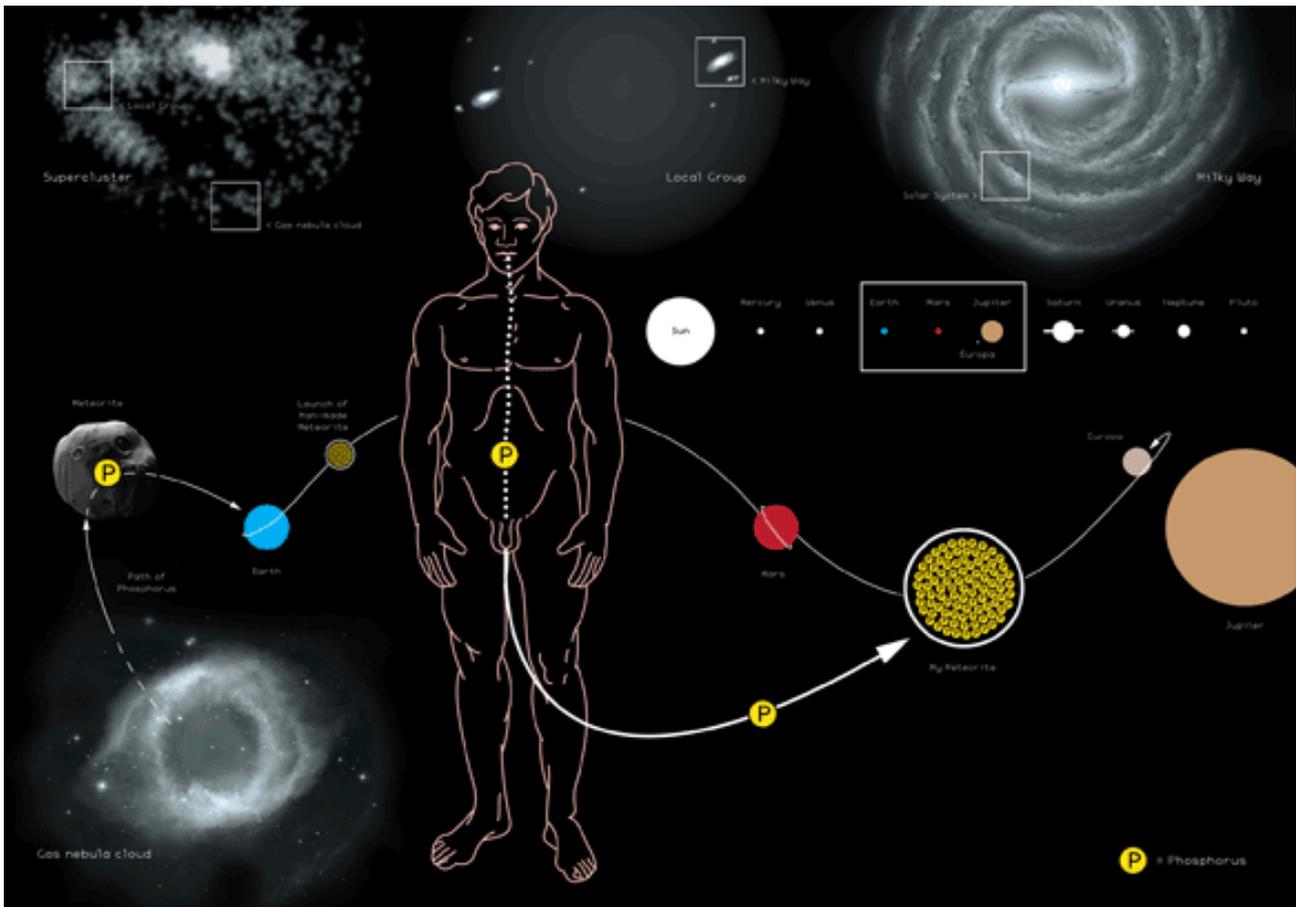


Fig. 08.02 Image from Michael Burton's project *Astronomical Bodies*, 2010. *AB* is a collaboration with planetary scientists who are working on abiogenesis, i.e. the emergence of DNA-based life from nonliving precursors; Burton's project is a series of speculative takes on perceiving the human body as the contingent byproduct of processes of galactic formation.

Such work looks *not* to adjust (i.e. preserve centrally, while updating superficially) cherished idea(l)s like 'democracy' or indeed 'humanity' in light of the complexities that planetary-scale politics, micro- and astrophysics, evolutionary biology, *et cetera*, pose to Western habits of thought, but to construct new navigational equipment with which to grapple with the abyss they open. What is promising about the ideas developed in this thesis is the possibility not of seeing design's relation to these emerging ideas as a *tool* to be used by them, 'the application step', but as an active companion that is able to furnish them with new connections, both in practice and theory. That is, it opens a space of possibility for engagements with other fields that go well beyond the remit of this thesis.

For example, in the opening chapters of *The Subtle Ruse*, René Khawam's (1980) translation of an anonymous 13th-century Arabic text on cunning, the unnamed author suggests that human beings often attribute intelligence to animals when they do something *cunning* - the spider's manufacture of a web, for example. (The link between cunning and traps that was discussed in Chapter 04, should be clear.) However, the writer suggests, while animals display cunning, they do so in limited, inflexible ways; we should see them as instances of divine generosity, that is, blessings variously conferred on different species of animal to ease their travails in the mortal world. Human beings, on the other hand, are more like god than are (other) animals, because *they are more cunning* - they are more flexibly able to twist the environment in their (not necessarily collective) favour. The author here anticipates what, stripped of religiosity, has become a common trope of 20th-century CE history and philosophy of technology: the relative functional *indeterminacy* of human beings, an indeterminacy that is predicted on their ability to engage with their environment in an extraordinary variety of ways (cf. Stiegler, 1998, for a wide-ranging review). In fact, paleoarchaeological evidence suggests that what is today understood as technological action not only stemmed from, but reinforced and exaggerated human physiology to better enable it, influencing human physiology from the specific architecture of the hand (Tallis, 2003) to general properties of neoteny (the retention of physiological, especially cortical, flexibility well past childhood). That the specificity of human beings, amongst other great apes, hominims, and indeed animals more generally, should be understood as incarnated in a form of cunning technical facility as much as it is in verbal language or of cognitive reasoning capacities is striking, yet intuitively persuasive. The possibilities released when taking a synthetic position (in this case, linking design, evolutionary biology, and neuroscience), opening up ramifying trajectories for design's disciplinary development, is key to the future directions of this body of work. That is, beyond its relation to the specific question of 'human behaviour as the object of design', this research helps to sketch a very early, 'first-draft'

speculative position which might serve to inform a quite different history and philosophy of technological development in order to inform its future.²

In conclusion, then, this thesis's exploration of human behaviour as the object of design has presents a new - or renewed - concept into the design disciplines, one which enables human behaviour to be grasped in ways that are firstly unexpected (according to that field at present), secondly demonstrably potent, and lastly - but hardly of least relevance - deeply problematic. I would suggest that the combination of these elements is productive; at the present time, in what we can only hope is the dawn, not the dusk, of the Anthropocene, perhaps a very ancient set of suspicions about designers might come to us now as something new. They issue both a warning to the unwary, and act as a reservoir of potential - they offer resources to open up ways that design might be understood in its connection to human beings - and, indeed, they dovetail with emerging ideas in philosophy and in the sciences. As such, *métis* deserves our reconsideration; the days of design recognised as an ambivalent form of cunning are not yet done; and perhaps they should not be.

NOTES

1. To some extent, these projects can be seen as sitting beneath the overlapping banners of 'critical design', 'design noir' and 'design for debate' that finds its most popular avatar in the work of Tony Dunne and Fiona Raby (e.g., 2001). There are certainly commonalities between the work in this thesis and such efforts. However, these projects are often reduced to suggestively 'posing questions' about 'possible technological futures' (cf. Dunne's interest in Manzini's work, alluded to in Chapter 04), largely ignoring the historical context of their endeavour, and operate from a philosophical position that is, at best, underspecified by the standards of the humanities and social sciences. For example, Dunne positions this work as being 'provocative' and 'critical' of contemporary norms in a very general sense; and while we might appreciate Dunne's desire not to impose a strict normative programme of design practice, instead presenting resources that inspire the work of others - a position which I have likewise taken in this thesis - Dunne's work any articulation of the deeper relationship between design, politics, philosophy, the history of technology, etc. is lacking, a void to which this thesis is a partial redress. Ilona Gaynor, whose work comes very close to the expression of ideas similar to those in this thesis through a different medium, and I are currently collaborating on a series of events and publications that look to move beyond the claims of 'critical design'.

2. The parallels between this work and Reza Negarestani's are, indeed, striking, not least because they developed entirely independently, and were only discovered very late in the production of this thesis. For example, Negarestani's *Cyclonopedia* (2008) devotes an entire chapter to the concept of 'the plot' as a device that links spatio-temporal action with narrative and conspiracy, reaching extremely similar conclusions from a literary-philosophical perspective, rather than the etymological approach to design terms taken here. Given this compatibility, Negarestani and I are currently working to develop the early phases of this revisionist history of technology, marrying his philosophical interest in the roots and future trajectory of 'Modern technical rationality' from Archimedes through Oresme to Peirce and contemporary neuroscience to my own, design-focussed perspective on the same.

References

- Aaltonen, G. (2010a) *Community In, Commodity Out*. The Guardian, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/new-information-era> [last accessed May 23rd 2010]
- Aaltonen, G. (2010b) *Experience Matters*. The Guardian, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/introduction> [last accessed May 23rd 2010]
- Aaltonen, G. (2010c) *Polymorphs in the Making*. March 12th 2010. Available from <http://www.guardian.co.uk/service-design/introduction> [last accessed May 23rd 2010]
- Aaltonen, G. (2010d) 'A Powerful Case for Reform'. The Guardian, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/a-case-for-reform> [last accessed May 23rd 2010].
- Adams, R. (2010) *Longing for a Greener Present: Neoliberalism and the Eco-City*. *Radical Philosophy*, 163: 2-7.
- Agar, J. (2003) *The Government Machine: A Revolutionary History of the Computer*. Cambridge, MA: MIT Press.
- Agricola, G (1950) *De Re Metallica*. New York, NY: Dover Publications.
- Akama, Y. (2009) *Warts and All: the Real Practice of Service Design*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010].
- Akrich, M (1992) *The De-Description of Technical Objects*. In Bijker, W and Law, J (eds.) (1992: 205-224) *Shaping Technology/Building Society*. Cambridge, MA: MIT Press.
- Alibi Network (2009) www.alibinetwork.com [last accessed May 20th 2010].
- Allen, B. (2008) *Artifice and Design: Art and Technology in Human Experience*. Ithaca, NY: Cornell University Press.
- Allen, B. (2008) *Artifice and Design*. Ithaca, NY: Cornell University Press.
- Ambasz, E. (1972) *Italy: The New Domestic Landscape*. New York, NY: Museum of Modern Art.
- Anderson, K. (2005) *Designing for Deep Time: How Art History Is Used to Mark Nuclear Waste* [MSc thesis]. New York, NY: Pratt Institute.
- Aprile, W. (2009) *Sketching Web Service Backends with SERPE*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010].
- Armstrong, R. (2010) *Systems Architecture: A New Model for Sustainability and the Built Environment Using Nanotechnology, Biotechnology, Information Technology, and Cognitive Science with Living Technology*. *Artificial Life*, 16: 73-87.
- Ashby, R. (1981) *Mechanisms of Intelligence: Ashby's Writings on Cybernetics*. Seaside, CA: Intersystems Publications.
- Ashmore, M. (1989). *The Reflexive Thesis*. Chicago: University of Chicago Press.
- Ashworth, W. (2002) *England and the Machinery of Reason, 1780 to 1830*. In Morus (2002: 39-66).
- Bailey, S. (2009) *Service Design within a Product Design Teaching Programme: Generating Benefits to Education as Well as Service Organisations*. Available from http://radar.gsa.ac.uk/82/1/Service_Design_within_Product_Design_education-S_Bailey.pdf [last accessed October 10th 2013].

- Bailey, F. and Longo, G. (2011). *Mathematics and the natural sciences*. London: Imperial College Press.
- Ballard, J. (1966) *Notes from Nowhere: Comments on Work in Progress*. Available from http://www.jgballard.ca/non-fiction/jgb_notes_nowhere.html [last accessed August 20th 2010].
- Barry, A. & Slater, D. (Eds.) (2005) *The Technological Economy*. London: Routledge.
- Bate, P. & Robert, G. (2007) *Bringing User Experience to Healthcare Improvement: The Concepts, Methods and Practices of Experience-Based Design*. Oxford: Radcliffe Publishing.
- Bechtel, W. and Richardson, R. (2010). *Discovering Complexity*. Cambridge, Mass.: MIT Press.
- Becker, K. (2009) *The Strategic Reality Dictionary: Deep Infopolitics and Cultural Intelligence*. New York, NY: Autonomedia.
- Bedell, G. (2005) *The Politics of the Drawing Board*. <http://www.theguardian.com/theobserver/2005/nov/27/2> [last accessed October 10th 2013].
- Beesley, P. & Khan, O. (2009) *Responsive Architecture/Performing Instruments*. New York, NY: Architectural League of New York.
- Bennett, J. (2010). *Vibrant Matter: A Political Ecology of Things*. London: Duke University Press.
- Berardi, F. (2009) *The Soul at Work*. Los Angeles, CA: Semiotext(e).
- Bernays, E. (1928) *Propaganda*. Brooklyn, NY: IG Publishing.
- Bialasiewicz, L., Campbell D., Elden S., Graham S., Jeffrey, A. & Williams, A. (2007) *Performing Security: The Imaginative Geographies of Current US Strategy*. *Political Geography*, 26: 405-422.
- Binfield, K. (Ed.) (2004) *Writings of the Luddites*. Baltimore, MA: The Johns Hopkins University Press.
- Bishop, C. (2005) *Installation Art: A Critical History*. London: Tate Publishing.
- Bishop, C. (Ed.) (2006) *Participation*. London: Whitechapel Gallery.
- Black, E. (2002) *The IBM Link to Auschwitz*. Village Voice, October 8th 2002.
- Black, J. (2002) *Wanna See My Personal Data? Pay Up*. Bloomberg Businessweek, November 21st, 2002. Available from http://www.businessweek.com/technology/content/nov2002/tc20021121_8723.htm [last accessed April 23rd 2011].
- Blackmon, K. (2008) *Designing for Services: Design Thinking and Operations Management – Converging or Parallel Worlds?* In Kimbell & Seidel (2008: 27-30).
- Blomkvist, J. & Holmlid, S. (2009) *Exemplars in Service Design*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Blondel, J. (2006) *About Institutions, Mainly, But Not Exclusively, Political*. In Rhodes, R., Binder, S. & Rockman, B. (Eds.) (2006: 716-730) *The Oxford Handbook of Political Institutions*. Oxford: Oxford University Press.
- Blundell Jones, P., Petrescu, D. & Till, J. (2005) *Architecture and Participation*. Oxford: Spon Press.
- Borden, I. (2009). *Bartlett School of Architecture Catalogue 2009*. London: Bartlett School of Architecture, UCL.

- de la Boétie, E. (1975) *The Politics of Obedience: the Discourse of Voluntary Servitude*. Auburn: The Mises Institute.
- Bohm, D. (1983) *Wholeness and the Implicate Order*. London: Ark Paperbacks.
- Bök, C. (2001) *'Pataphysics: The Poetics of an Imaginary Science*. Evanston, IL: Northwestern University Press.
- de Boever, A., Murray, A., Roffe, J., & Woodward, A. (2013) *Gilbert Simondon: Being and Technology*. Edinburgh: Edinburgh University Press.
- Boland, R. & Collopy, F. (Eds.) (2004) *Managing as Designing*. Stanford, CA: Stanford University Press.
- Bourdieu, P. (1990) *The Logic of Practice*. Cambridge: Polity.
- Bousquine, A. (2009) *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*. New York, NY: Columbia University Press.
- Boyer King, E. (2007) *Undercover Restorers Fix Paris Landmark's Clock*. <http://www.theguardian.com/world/2007/nov/26/france.artnews> [last accessed October 10th 2013].
- Brachman, J. & McCants, W. (2006) *Stealing Al-Qa'ida's Playbook*. West Point, NY: United States Military Academy.
- Brassier, R. (2007a) *Genre is Obsolete*. *Multitudes*, 28 (no page). Available from <http://toliveandshaveinla.blogspot.com/2007/05/ray-brassier-genre-is-obsolete-from.html> [last accessed June 28th 2009].
- Brassier, R. (2007b) *Nihil Unbound: Enlightenment and Exinction*. London: Palgrave Macmillan.
- Brassier, R. (2010) *Concepts and Objects*. In Bryant, L., Srnicek, N. & Harman, G. (2010: 47-65).
- Bratton, B. (2006) *Logics of Habitable Circulation*. Available from <http://aaragan.blogspot.co.uk/2006/08/theory-essay.html> [last accessed October 10th 2013].
- Bratton, B. (2008a) *iPhone City* ['long' version]. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2008b) *What Do We Mean by Program?* Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009a) *Involving the Salk Institute, and the Rationale for Human Flesh-Flavored Tofu*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009b) *Notes on Habitat-Scale Robotics and its Constraints*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009c) *On Geoscapes & Google Caliphate: Except #Mumbai*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009d) *The Program Is Not on the Floor*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009e) *The Turing City*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2009f) *Undesigning the Emergency*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2010a) *Swarm What?* Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. (2010b) *"World, What World?"* Available from bratton.info [last accessed October 1st 2011].

- Bratton, B. (2011) *Rubbing the Clinamen Raw: Notes of Post-Humanism*. Available from bratton.info [last accessed October 1st 2011].
- Bratton, B. & Jeremijenko, N. (2008) *Suspicious Images, Latent Interfaces*. New York, NY: Architectural League of New York.
- Broome, J. (2005) *Mass Housing Cannot Be Sustained*. In Blundell Jones, et al. (2005: 65-76).
- Bryant, L., Srnicek, N. & Harman, G. (2010) *The Speculative Turn: Continental Materialism and Realism*. Available from http://www.re-press.org/book-files/OA_Version_Speculative_Turn_9780980668346.pdf [last accessed October 10th 2013].
- Buchanan, R. (2004) *Management and Design: Interaction Pathways in Organizational Life*. In Boland & Collopy (2004: 54-63).
- Bunde, A., Kropp, J. & Schellnhuber, H.-J. (2002) *The Science of Disaster: Climate Disruptions, Heart Attacks and Market Crashes*. London: Springer.
- Burke, P. (1996) *The Fortunes of the Courtier: The European Reception of Castiglione's Cortegiano*. Cambridge: Polity Press.
- Burns, C., Cottam, H., Vanstone, C. & Winhall, J. (2006) *RED Paper 02: Transformation Design*. London: Design Council.
- Burns, T. (1992) *Erving Goffman*. London: Routledge.
- Busbea, L. (2007). *Topologies*. Cambridge, Mass.: MIT Press.
- Busbea, L. (2009) *Metadesign: Object and Environment in France, c. 1970*. *Design Issues*, 25(4): 103-119.
- von Busch, O. (2008) *Fashion-able: Hactivism and Engaged Fashion Design*. PhD thesis. Available from https://gupea.ub.gu.se/bitstream/2077/17941/3/gupea_2077_17941_3.pdf [last accessed October 10th 2013].
- Butler, S. (1872) *Erewhon*. Available from <http://www.marxists.org/reference/archive/butler-samuel/1872/erewhon/> [last accessed December 24th 2013.]
- Buxton, P. (2010) 'Social Innovation Is My Motivation'. *The Guardian*, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/social-innovation> [last accessed May 23rd 2010]
- Calvert, J. (2008) The Commodification of Emergence: Systems Biology, Synthetic Biology and Intellectual Property. *BioSocieties*, 3: 383-398.
- Carr, V., Sangiorgi, D., Büscher, M., Cooper, R. & Junginger, S. (2009) *Clinicians as Service Designers? Reflections on Current Service Transformations in the UK Health Services*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Carreiro, J. (2006) *Organizational Narratives and the Construction of Resistance: Union Organizing at a 'Progressive' Company*. *Research in the Sociology of Work*, 16: 25-53.
- Carroll, J. & Rosson, M. (2007) *Participatory Design in Community Informatics*. *Design Studies*, 28: 243-261.
- Cascio, J. (2009) *The Dark Side of Twittering a Revolution*. <http://www.fastcompany.com/1296603/dark-side-twittering-revolution> [last accessed October 10th 2013].
- Castiglione, B. (1903) *The Book of the Courtier*. New York, NY: C. Scribner's Sons.

- Certeau, M. (1984) *The Practice of Everyday Life*. Berkeley, CA: University of California Press.
- Cheney, G. (2006) *Democracy at Work within the Market: Reconsidering the Potential*. *Research in the Sociology of Work*, 16: 179-203.
- Chesbrough, H. & Spohrer, J. (2006) *A Research Manifesto for Services Science*. *Communications of the ACM*, 49(7): 33-40.
- Chia, R. & Holt, R. (2009) *Strategy Without Design: The Silent Efficacy of Indirect Action*. Cambridge: Cambridge University Press.
- Christensen, C. (2007) *What is so Sustainable about Services? The Truth in Service and Flow*. *Design Philosophy Papers*, 3/4: 1-19.
- Cialdini, R. (1993) *Influence: Science and Practice* [3rd ed.]. New York, NY: HarperCollins.
- Cipolla, C. (2008) *Creative Communities as 'Relational Innovations': A Service Design*. In Jago & Manzini (2008: 153-156).
- Cleaver, F. (2001) *Institutions, Agency and the Limitations of Participatory Approaches to Development*. In Cooke & Kothari (2001b: 36-55).
- Cook, M. & Stanton, Z. (2010) *Tools to Encourage Behaviour Change*. Available from www.creativewaves-coten.com [last accessed November 22nd 2010].
- Cooke, B. (2001) *The Social Psychological Limits of Participation?* In Cooke & Kothari (Eds.) (2001b: 102-122).
- Cooke, B. (2004) *The Gathering of Infidels*. Amherst, NY: Prometheus Books.
- Cooke, B. & Kothari, U. (2001a) *The Case for Participation as Tyranny*. In Cooke & Kothari (Eds.) (2001b: 1-15).
- Cooke, B. & Kothari, U. (Eds.) (2001b) *Participation: The New Tyranny?* London: Zed Books.
- Coole, D. & Frost, S. (Eds.) (2010) *New Materialisms: Ontology, Agency and Politics*. Durham, NC: Duke University Press.
- Copenhagen Institute for Interaction Design (2008) *What Is Service Design?* Available from <http://www.ciid.dk/symposium/sds/index.php?p=introduction> [last accessed January 20th 2011].
- Cottam, H. (2010) *Participatory Systems*. Available from <http://hir.harvard.edu/big-ideas/participatory-systems> [last accessed October 10th 2013].
- Cottam, H. & Leadbetter, C. (2004) *RED Paper 01: HEALTH: Co-creating Services*. London: Design Council.
- Couliano, I. (1987) *Eros and Magic in the Renaissance*. Chicago: University of Chicago Press.
- Cregan, K. (2006) *The Sociology of the Body: Mapping the Abstraction of Embodiment*. London: SAGE.
- Crump, T. (2010) *A Brief History of How the Industrial Revolution Changed the World*. London: Robinson.
- Currie, L. (2010) *'We're Looking to Change the Way Services are Designed and Delivered in Scotland'* [interview with Service Design Hub]. Available from <http://www.servicedesignhub.com.au/service-design/interview-with-lauren-currie-were-looking-to-change-the-way-services-are-designed-and-delivered-in-scotland/%E2%80%9D> [last accessed September 17th 2010].

- Davis, E. (2004) *TechGnosis*. London: Serpent's Tail.
- de Carlo, G. (2005) *Architecture's Public*. In Blundell Jones, et al. (2005: 3-22).
- Delanda, M. (1991) *War in the Age of Intelligent Machines*. New York, NY: Zone Books.
- Delanda, M. (2000) *A Thousand Years of Nonlinear History*. New York, NY: Zone Books.
- Delanda, M. (2011) *Philosophy and Simulation*. London: Continuum.
- Deleuze, G. & Guattari, F. (2004) *A Thousand Plateaus: Capitalism and Schizophrenia*. London: Continuum.
- Deleuze, G. (2006) *Two Regimes of Madness*. Los Angeles, CA: Semiotext(e).
- Department of the Army (2010) *Field Manual 5-0: Operations Process*. Available from <http://www.fas.org/irp/doddir/army/fm5-0.pdf> [last accessed June 2nd 2010].
- Descartes, R. (2008) *Principles of Philosophy*. Available from <http://www.earlymoderntexts.com/pdfs/descartes1644.pdf> [last accessed December 24th 2013].
- Design Council (2004) *Touching the State: What Does it Mean to Be a Citizen in the 21st Century?* London: Design Council.
- Design Council (2010a) *Big Society Public Services: Revolution or Evolution?* Available from <http://www.designcouncil.org.uk/our-work/Insight/Public-services-revolution-or-evolution/Big-Society/Public-Services-Revolution-or-evolution/> [last accessed August 10th 2010].
- Design Council (2010b) *Design Industry Insights 2010*. London: Design Council.
- Design Council (2010c) *Dott Methods*. Available from <http://www.designcouncil.org.uk/our-work/challenges/Communities/Dott-Cornwall1/Dott-methods/> [last accessed August 10th 2010].
- Design Culture (2009) *Design versus Innovation? A Pointless Debate*. <http://www.blogger.com/comment.g?blogID=2408697355184950277&postID=2441990261696591019> [last accessed September 5th 2011].
- Detienne, M. & Vernant, J.-P. (1991) *Cunning Intelligence in Greek Culture and Society*. Chicago: University of Chicago Press.
- Diana, C., Pacenti, E. & Tassi, R. (2009) *Visualities: Communication Tools for (Service) Design*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- DiMaggio, P. & Powell, W. (1983) *The Iron Cage Revisted: Institutional Isomorphism and Collective Rationality in Organizational Fields*. *American Sociological Review*, 48(2): 147-160.
- DiMaggio, P. & Powell, W. (1991a) *Introduction*. In DiMaggio & Powell (1991: 1-38).
- DiMaggio, P. & Powell, W. (Eds.) (1991b) *The New Institutionalism in Organizational Analysis*. Chicago: University of Chicago Press.
- DiSalvo, C. (2009) *Design and the Construction of Publics*. *Design Issues*, 25(1): 48-63.
- DiSalvo, C. (2012) *Adversarial Design*. Cambridge, MA: MIT Press.

- Djellal, F. & Gallouj, F. (2010) *Beyond Productivity Strategies in Services*. Journal of Innovation Economics, 1: 89-104.
- Dubberly, H. & Pangaro, P. (2007) *Cybernetics and Service-Craft: Language for Behaviour-Focused Design*. Kybernetes, 36(9/10:): 1301-1307.
- Dunne, A. (2005) *Hertzian Tales*. London: Royal College of Art.
- Dunne, A. & Raby, F. (2001) *Design Noir: The Secret Life of Electronic Objects*. London: Birkhauser.
- During, S. (2004) *Modern Enchantments: The Cultural Power of Secular Magic*. Cambridge, MA: Harvard University Press.
- Easterling, K. (1999) *Organization Space: Landscapes, Highways, and Houses in America*. Cambridge, MA: MIT Press.
- Easterling, K. (2005) *Enduring Innocence: Global Architecture and its Political Masquerades*. Cambridge, MA: MIT Press.
- Easterling, K. (2007a) *The Knowledge*. Available from <http://c-lab.columbia.edu/0127.html> [last accessed October 10th 2013].
- Easterling, K. (2007b) *Petrodollar Caprice*. Available from http://slought.org/files/downloads/events/SF_1350-Easterling.pdf [last accessed October 10th 2013].
- Easterling, K. (2008a) *New Monuments*. Available from http://findarticles.com/p/articles/mi_m0268/is_10_46/ai_n32067537/ [last accessed June 14th 2010].
- Easterling, K. (2008b) *The Power of Political Phantoms: Leveraging Global Infrastructure*. Available from http://www.berlage-institute.nl/videos/watch/2008_06_03_the_power_of_political_phantoms_leveraging_global_infrastructure [last accessed October 10th 2013].
- Easterling, K. (2008c) *The Wrong Story*. Available from http://boo.mi2.hr/~tom/operacija_novine.pdf [last accessed October 10th 2013].
- Easterling, K. (2010) *Disposition*. Presentation at Columbia GSAPP, Avery Hall, Columbia University, New York, NY, 22nd March 2010. Available from <http://www.youtube.com/watch?v=CHYMAyuzSyk&feature=SeriesPlayList&p=D3D78782EB74B793> [last accessed October 10th 2013].
- Easterling, K. (2010c) *Some True Stories*. *Perspecta*, 42: 75-77.
- Ehn, P. (1993) *Scandinavian Design: On Participation and Skill*. In Schuler & Namioka (1993: 41-78).
- Eliade, M. (1979) *The Forge and the Crucible*. Chicago: University of Chicago Press.
- Ellis, E. (2008) *Anthropocene*. Available from <http://www.eoearth.org/article/Anthropocene> [last accessed August 1st].
- Ellis, E. (2009) Earth Science in the Anthropocene: New Epoch, New Paradigm, New Responsibilities. *EOS*, 90(49): 473.
- Ellis, E. (2011) *Anthropogenic Transformation of the Terrestrial Biosphere*. *Philosophical Transactions of the Royal Society*, 369: 1010-1035.
- Elkins, J. & DeLue, R. (2008) *Landscape Theory*. London: Routledge.

- Ellul, J. (1980) *The Technological System*. New York, NY: Continuum.
- Engels, F. (1892) *On the Conditions of the Working Class in 1844* [1892 Ed.]. Available from <http://www.gutenberg.org/files/17306/17306-h/17306-h.htm> [last accessed July 2nd 2011].
- Farino, A. (2010) *Ecology, Cognition and Landscape*. London: Springer Science & Business Media B.V. 2010.
- Flusser, F. (1999) *The Shape of Things: A Philosophy of Design*. London: Reaktion Books.
- Forlano, L. (2010) *What is Service Design?* <http://urbanomnibus.net/2010/10/what-is-service-design> [last accessed January 11th 2010].
- Foster, S. (1998) *Choreography and Narrative: Ballet's Staging of Story and Desire*. London: John Wiley & Sons.
- Foucault, M. (1991) *Discipline and Punish: The Birth of the Prison*. London: Penguin.
- Francastel, P. (2000) *Art & Technology in the Nineteenth and Twentieth Centuries*. New York, NY: Zone Books.
- Francis, P. (2001) *Participatory Development at the World Bank: The Primacy of Process*. In Cooke & Kothari (Eds.) (2001b: 72-88).
- Friedman, H. (2004) *Welcome to the Home of the Psywarrior*. <http://www.psywarrior.com/> [last accessed November 4th 2007].
- Friedman, H. (2009) *Superstition Psyop*. Available from <http://www.psywarrior.com/SuperstitionPSYOP.html> [last accessed July 2nd 2011].
- Fry, T. (2008) *Design Futuring: Sustainability, Ethics and New Practice*. New York, NY: BERG.
- Fry, T. (2010) *Design as Politics*. New York, NY: BERG.
- Galie, P. & Bopst, C. (2006) *Machiavelli & Modern Business: Realist Thought in Contemporary Leadership Manuals*. *Journal of Business Ethics*, 65: 235-250.
- Galloway, A. R. (2004) *Protocol: How Control Exists After Decentralisation*. Cambridge, MA: MIT Press.
- Galloway, A. R. (2006) *Gaming: Essays on Algorithmic Culture*. Minneapolis, MN: University of Minnesota Press.
- Gandy, M. (2005) *Cyborg Urbanisation: Complexity and Monstrosity in the Contemporary City*. *International Journal of Urban and Regional Research*, 29(1): 26-49.
- Gaver, W., Dunne, A. & Pacenti, E. (1999). *Design: Cultural probes*. *Interactions* 6(1): 21-29.
- Gell, A. (1998) *Art and Agency*. New York, NY: Berg.
- Gell, A. (1999) *The Art of Anthropology: Essays and Diagrams*. New York, NY: Berg.
- Gibson, J. (1979) *The Ecological Approach to Visual Perception*. Boston, MA: Houghton Mifflin.
- Gibson-Graham, J. (2006). *The End of Capitalism (As We Knew It)*. Minneapolis: University of Minnesota Press.
- Giedion, S. (1975) *Mechanisation Takes Command*. New York, NY: Berg.
- Gieryn, T. (2002) *What Buildings Do*. *Theory and Society*, 31: 35-74.

- Gies, F. & Gies, J. (1994) *Cathedral, Forge and Waterwheel*. New York, NY: HarperCollins.
- Gissen, D. (2009) *Subnature: Architecture's Other Environments*. Cambridge, MA: Princeton Architectural Press.
- Glanville, R. (2009) *A (Cybernetic) Musing: Design and Cybernetics*. *Cybernetics and Human Knowing*, 16(3-4): 175-186.
- Glenny, P. & Thrift, N. (2009) *Shaping the Day: A History of Timekeeping in England and Wales 1300-1800*. Oxford: Oxford University Press.
- Gloppen, J. (2009) *Service Design Leadership*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Goodman, S. (2010) *Sonic Warfare: Sound, Affect, and the Ecology of Fear*. Cambridge, MA: MIT Press.
- Goffman, E. (1956) *The Presentation of Self In Everyday Life*. Edinburgh: University of Edinburgh.
- Goffman, E. (1986) *Frame Analysis: An Essay on the Organisation of Experience* [2nd Ed.]. New York: Northeastern University Press.
- Goncalves, A. & Saco, R. (2009) *The New Wave of Innovation: Service Design*. *International Journal of Innovation Science*, 1(1): 51-59.
- Graeber, D. (2007a) *Army of Altruists: On the Alienated Right to Do Good*. Harper's, 1880: 31-38.
- Graeber, D. (2007b) *Possibilities: Essays on Hierarchy, Rebellion and Desire*. Edinburgh: AK Press.
- Graeber, D. (2010) *Debt: The First Five Thousand Years*. Pre-publication final manuscript, provided by the author.
- Grudin, J. (1993) *Obstacles to Participatory Design in Large Product Development Organizations*. In Schuler & Namioka (1993: 99-122).
- Grudin, J. & Pruitt (2002). *Personas, Participatory design, and Product Development: An Infrastructure for Engagement*. Proceedings of PDC 2002: 144-161.
- Guest, A. (1990) *Dance Notation*. *Perspecta*, 26: 203-214.
- Guha, M. (2010) *Reimagining War in the 21st century*. London: Routledge.
- Hailey, J. (2001) *Beyond the Formulaic: Process and Practice in South Asian NGOs*. In Cooke & Kothari (Eds.) (2001b: 88-102).
- Hall, A. & Harris, E. (2005) *Hire a Perfect Alibi*. London Evening Standard, July 13th 2004.
- Hamill, S. & Seaton, J. (1998) *The Essential Teachings of Chuang Tzu*. Boston, MA: Shambhala Publications.
- Handel, M. (2006) *The Effect of Participative Work Systems on Employee Earnings*. *Research in the Sociology of Work*, 16: 55-84.
- Harrison, P. (2000) *Making Sense: Embodiment and the Sensibilities of the Everyday*. *Environment and Planning D: Society and Space*, 18: 497-517.
- Harrison, P. (2008) *Corporeal Remains: Vulnerability, Proximity, and Living on After the End of the World*. *Environment and Planning A*, 40(2): 423-445.

- Harrison, P. (2009) *In the Absence of Practice*. Environment and Planning D: Society and Space, 27(6): 987-1009.
- Harman, G. (2009) *Prince of Networks: Bruno Latour and Metaphysics*. Prahan, Australia: re.press.
- Harvey, D. (2005) *A Brief History of Neoliberalism*. Oxford: Oxford University Press.
- Hawkins, M. (2002) 'A Great and Difficult Thing': *Understanding and Explaining the Human Machine in Restoration England*. In Morus (2002: 15-38).
- Heapy, J. (2012) *From Industrial Product to Service Design*. <http://www.hereatengine.co.uk/2012/02/from-industrial-product-to-service-design/> [last accessed October 10th 2013].
- Heidegger, M. (1958) *The Question Concerning Technology*. Available from http://lmc.gatech.edu/~xinwei/classes/readings/Heidegger/heidegger_techquestion2.pdf [last accessed October 1st 2013].
- Heller-Roazen, D. (2009) *The Enemy of All: Piracy and the Law of Nations*. New York, NY: Zone Books.
- Helms, M. (1993) *Craft and the Kingly Ideal*. Austin, TX: University of Texas Press.
- Hendrikse, R. & Sidaway, J. (2010) *Neoliberalism 3.0*. Environment and Planning A, 42(9): 2037-2042.
- Henkel, H. & Stirrat, R. (2001) *Participation as Spiritual Duty: Empowerment as Secular Subjection*. In Cooke & Kothari (Eds.) (2001b: 168-184).
- Herman, E. & Chomsky, N. (1988) *Manufacturing Consent: The Political Economy of the Mass Media*. London: Vintage Books.
- Herzog, D. (2006) *Cunning*. Princeton, NJ: Princeton University Press.
- Hildyard, N., Hegde, P., Wolvekamp, P., & Reddy, S. (2001) *Pluralism, Participation and Power*. In Cooke & Kothari (2001b: 56-71).
- Hill, J. (2006) *Immaterial Architecture*. London: Routledge.
- Holmlid, S. (2009) *Participative, Co-operative, Emancipatory: From Participatory Design to Service Design*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010].
- House of Commons (2008) *User Involvement in Public Services*. London: The Stationary Office.
- Howard, J. (2007) *On the Origin of Touchpoints*. <http://designforservice.wordpress.com/2007/11/07/on-the-origin-of-touchpoints> [last accessed June 9th 2010].
- Howard, J. (2009) *SDN Contest Boycott*. <http://designforservice.wordpress.com/2009/08/06/sdn-contest-boycott> [last accessed June 9th 2010].
- Howard, J. (2010) *Rock Stars Need Not Apply*. <http://designforservice.wordpress.com/2010/03/28/rock-stars-need-not-apply> [last accessed October 10th 2013].
- Hughes, J. & Sadler, S. (2000) *Non-plan: Essays on Freedom, Participation and Architecture*. Oxford: Architectural Press.

- Humphrey, J., Oleson, J. & Sherwood, N. (1998). *Greek and Roman Technology: A Sourcebook. Annotated Translations of Greek and Latin Texts and Documents*. London: Routledge.
- Hyde, L. (1998) *Trickster Makes This World: How Disruptive Imagination Creates Culture*. Edinburgh: Canongate.
- Ilde, D. (1998) *Bodies, Virtual Bodies and Technology*. In Welton, D. (Ed.) (1998: 349-355) *Body and Flesh: A Philosophical Reader*.
- Illich, I. (1973) *Tools for Conviviality*. Available from <http://www.preservenet.com/theory/Illich/IllichTools.html> [last accessed October 10th 2013].
- Illouz, E. (2007) *Cold Intimacies: The Making of Emotional Capitalism*. Cambridge: Polity Press.
- Ingold, T. (2000) *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- Isenstadt, S. (2001) *Recurring Surfaces: Architecture in the Experience Economy*. *Perspecta*, 32: 108-119.
- Jay, M. (2010) *The Virtues of Mendacity: On Lying in Politics*. Charlottesville, VA: University of Virginia Press.
- Jegou, F. & Manzini, E. (2008) *Collaborative Services: Social Innovation and Design for Sustainability*. Available from http://81.246.16.10/videos/publications/collaborative_services.pdf [last accessed October 10th 2013].
- Jensen, D. (2006) *Endgame*. New York, NY: Seven Stories Press.
- Jones, R. (2004). *Soft Machines*. Oxford: Oxford University Press.
- Jones, S. (2006) *Against Technology: From the Luddites to Neo-Luddism*. London: Routledge.
- Jullien, F. (1995) *The Propensity of Things: Towards a History of Efficacy in China*. New York, NY: Zone Books.
- Jullien, F. (2000) *Detour and Access: Strategies of Meaning in China and Greece*. New York, NY: Zone Books.
- Jullien, F. (2004) *A Treatise on Efficacy: Between Western and Chinese Thinking*. Honolulu: University of Hawaii Press.
- Kapp, E. (1877) *Grundlinien einer Philosophie der Technik*. Braunschweig: Westermann.
- Katz, J. (1990) *The Seductions of Crime: Moral and Sensual Attractions in Doing Evil*. New York, NY: Basic Books.
- Katz, J. (1999). *How Emotions Work*. Chicago, IL: University of Chicago Press.
- Kelly, K. (1995) *Out of Control*. Reading, MA: Addison-Wesley.
- Kensing, F. & Blomberg, J. (1998) *Participatory Design: Issues and Concerns*. *Computer Supported Cooperative Work*, 7: 167-185.
- Kern, S. (1983) *The Culture of Time and Space 1880-1918*. Cambridge, MA: Harvard University Press.
- Kester, G. (2004) *Conversation Pieces: Community and Communication in Modern Art*. London: California University Press.
- Kimbell, L. (2008) *Reassembling the Visual*. http://www.lucykimbell.com/stuff/EPIC_kimbell.pdf
- Kimbell, L. (2009a) *Beyond Design Thinking: Design-as-Practice and Designs-in-Practice*. http://www.lucykimbell.com/stuff/CRESC_Kimbell_v3.pdf [last accessed October 1st 2011].

- Kimbell, L. (2009b) *Design Practices in Design Thinking*. http://www.lucykimbell.com/stuff/EURAM09_designthinking_kimbell.pdf [last accessed October 1st 2011].
- Kimbell, L. (2009c) *Insights from Service Design Practice*. http://www.lucykimbell.com/stuff/EAD_kimbell_final.pdf [last accessed October 1st 2011].
- Kimbell, L. (2009d) *Service-Dominant Logic and Design for Service*. http://www.lucykimbell.com/stuff/SDN2009_kimbell.pdf [last accessed October 1st 2011].
- Kimbell, L. (2009e) *The Turn to Service Design*. http://www.lucykimbell.com/stuff/ServiceDesignKimbell_final.pdf [last accessed October 1st 2011].
- Kimbell, L. (2009f) *What If...? A Report on Service Design Network Conference 2009*. <http://designleadership.blogspot.com/2009/11/what-if-report-on-service-design.html>. [last accessed October 1st 2011].
- Kimbell, L. (2009g) *A Year in Designing for Service: 2009*. <http://designleadership.blogspot.com/2009/12/year-in-designing-for-service-2009.html> [last accessed October 1st 2011].
- Kimbell, L. (2010a) *The Limits of Design (Thinking)*. <http://designleadership.blogspot.com/2010/03/limits-of-design-thinking.html>. [last accessed October 1st 2011].
- Kimbell, L. (2010b) *From User-Centred Design to Designing for Service*. Available from http://www.lucykimbell.com/stuff/DMI2010_kimbell_draft.pdf [downloaded May 16th 2010].
- Kimbell, L. (2011) *Rethinking Design Thinking*. *Design and Culture*, 3(3): 285-306.
- Kimbell, L. & Seidel, V. (Eds.) (2008) *Designing for Services: Multidisciplinary Perspectives*. Available from http://www.sbs.ox.ac.uk/d4s/essayArchive/D4S_Publication.pdf [last accessed October 10th 2013].
- von Kleist, H. (1810) *On the Marionette Theatre*. *Southern Cross Review*. Available from <http://southerncrossreview.org/9/kleist.htm> [last accessed July 2nd 2011].
- Klingmann, A. (2007) *Brandscapes: Architecture in the Experience Economy*. Cambridge, MA: MIT Press.
- Kornberger, M. (2010) *Brand Society*. Cambridge: Cambridge University Press.
- Kotler, P. & Armstrong, G. (2010) *Principles of Marketing* [13th ed.]. Upper Saddle River, NJ: Pearson Prentice Hall.
- Knorr Cetina, K. (2000) *The Market as an Object of Attachment: Exploring Postsocial Relations in Financial Markets*. *Canadian Journal of Sociology*, 25(2): 141-168.
- Knorr Cetina, K. (2002) *Global Microstructures: the Virtual Societies of Financial Markets*. *American Journal of Sociology*, 107(4): 905-950.
- Knorr Cetina, K. (2005) *Complex Global Microstructures: the New Terrorist Societies*. *Theory, Culture & Society* 22(5): 213-234.
- Kothari, U. (2001) *Power, Knowledge and Social Control in Participatory Development*. In Cooke & Kothari (Eds.) (2001b: 139-152).
- Kuriyama, S. (1999) *The Expressiveness of the Body, and the Divergence of Greek and Chinese Medicine*. New York, NY: Zone Books.
- Land, N. (2011a) *Anthropocene*. Available from <http://www.thatsmags.com/shanghai/index.php/article/detail/658/anthropocene> [last accessed August 1st, 2011].

- Land, N. (2011b) *Fanged Noumena*. Falmouth: Urbanomic.
- Lash, S., Picon, A., Cupers, K., Doucet, I. & Crawford, M. (2009) *Agency and Architecture: How To Be Critical?* Footprint, 4: 7-19.
- Latour, B. (1999) *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge, MA: Harvard University Press.
- Latour, B. (2007) *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford: Oxford University Press.
- Latour, B. and Lépinay, V. (2009) *The Science of Passionate Interests*. Chicago, IL: Prickly Paradigm Press.
- Law, J. (1991) *A Sociology of Monsters: Essays on Power, Technology, and Domination*. London: Routledge.
- Lazzarato, M. (2004) From Capital-Labour to Capital-Life. *Ephemera*, 4(3): 187-208.
- Lazzarato, M. (2007a) From 'The Revolutions of Capitalism'. *Substance*, 112: 98-105.
- Lazzarato, M. (2007b) Strategies of the Political Entrepreneur. *Substance*, 112: 87-97.
- Leach, J. (2007) *Differentiation and Encompassment: A Critique of Alfred Gell's Theory of the Abduction of Creativity*. In Henare, A., Holbraad, M. & Wastel, S. (2007) *Thinking Through Things: Theorising Artefacts Ethnographically*. London: Routledge.
- Leapman, M. (2001) *The World for a Shilling: How the Great Exhibition of 1851 Shaped a Nation*. London: Headline Book Publishing.
- Lewis, M. (2006) *The Construction of Space in Early China*. Albany, NY: State University of New York Press.
- Linebaugh, P. & Rediker, M. (2000) *The Many-Headed Hydra: Sailors, Slaves, Commoners, and the Secret History of the Revolutionary Atlantic*. Boston, MA: Beacon Press.
- Lingis, A. (2000) *Dangerous Emotions*. Berkeley, CA: University of California Press.
- Live|work (2008) *Service Design Glossary*. www.servicedesign.org/glossary [last accessed June 13th 2010].
- Lloyd, S. (2007) *Programming the Universe: A Quantum Computer Scientists Takes on the Cosmos*. London: Vintage.
- Lockton, D., Harrison, D. & Stanton, N. (2009) *Design for Sustainable Behaviour: Investigating Design Methods for Influencing User Behaviour*. Available from http://bura.brunel.ac.uk/bitstream/2438/3664/1/Lockton_SI_paper_disclaimer_added.pdf [downloaded May 1st 2010].
- Longo, G. and Montévil, M. (forthcoming 2013). *Biological Time, Symmetries and Singularities*. [Pre-publication manuscript kindly provided by G. Longo.] New York, NY: Springer.
- Luke, T. (1997) *The Coevolution of Digital Beings*. Available from <http://www.altx.com/EBR/EBR4/luke2.htm> [last accessed September 14th 2011].
- Lury, C. (2004) *Brands: Logos of the Global Economy*. London: Routledge.
- Lusch, R. & Vargo, S. (2006) *Service-Dominant Logic: Reactions, Reflections & Refinements*. *Marketing Theory*, 6(3): 281-288.
- Macdonald, S. (2007) *Propaganda and Information Warfare in the Twenty-First Century: Altered Images and Deception Operations*. London: Routledge.

- MacDonald, S. (2008) *Design Thinking and Design Innovation Scotland*. <http://www.dmi.org/dmi/html/conference/academic08/papers/MacDonald/MacDonald%20paper.pdf...>
- Maisano, S. (2008) *Humanism, Machinery and Renaissance Literature*, by Jessica Wolfe [book review]. *Early Modern Literary Studies*, 14(2). Available from <http://extra.shu.ac.uk/emls/14-2/revwolfe.html> [last accessed July 9th 2010].
- Malabou, C. (2008) *What Should We Do with Our Brain?* New York, NY: Fordham University Press.
- Malkin, B. (2007) Agency Offers Cheaters £12 Alibi. <http://www.telegraph.co.uk/expat/4204756/Agency-offers-cheaters-12-alibi.html> [last accessed October 10th 2013].
- Manaugh, G. (2009) *Cities Gone Wild*. *Architectural Design*, 79(5): 55-61.
- Manovich, L. (2006) *After Effects, or, Velvet Revolution*. Available from http://ifsstech.files.wordpress.com/2008/06/velvet_revolution_p1.pdf [last accessed August 14th 2010].
- Manning, E. (2009) *Relationescapes: Movement, Art, Philosophy*. Cambridge, MA: MIT Press.
- Manovich, L. (2008) *The Practice of Everyday (Media) Life*. Available from http://www.manovich.net/DOCS/manovich_social_media.doc [last accessed August 14th 2010].
- Manzini, E. (1992) *Prometheus of the Everyday: The Ecology of the Artificial and the Designer's Responsibility*. *Design Issues* 9(1): 5-20.
- Manzini, E. & Pacenti, E. (1995) *Sustainability as a Scenario of Services. Environmental Quality, Social Quality, the Design of Services*. *Design Recherche* #7: no page numbers.
- Manzini, E. (2006) *Design, Ethics and Sustainability: Guidelines for a Transition Phase*. <http://designblog.uniandes.edu.co/blogs/desis/files/2009/06/060828-design-ethics-sustainability.pdf> [last accessed October 10th 2013].
- Manzini, E. (2007) *A Laboratory of Ideas: Diffuse Creativity and New Ways of Doing*. Available from <http://offdgrid.wordpress.com/research-methods-article-reading/> [last accessed October 10th 2013].
- Margulis, L. (1999) *The Symbiotic Planet: A New Look at Evolution*. London: Orion Books.
- Martin, R. L. (2009) *Design of Business: Why Design Thinking is the Next Competitive Advantage*. Cambridge, MA: Harvard Business School Press.
- Martin, R.L. (2010) *Design Thinking Comes to the US Army*. <http://changeobserver.designobserver.com/entry.html?entry=13478> [last accessed June 8th 2010].
- Marx, K. (1844) *Economic and Philosophical Manuscripts of 1844: Wages of Labour*. Available from <http://www.marxists.org/archive/marx/works/1844/manuscripts/wages.htm> [last accessed October 10th 2013].
- Marx, K. (1867) *Capital*. Available from <http://www.marxists.org/archive/marx/works/1867-c1/> [last accessed October 10th 2013].
- Massumi, B. (1992) *A User's Guide to Capitalism and Schizophrenia*. Cambridge, MA: MIT Press.
- Mathias, P. (2001) *The First Industrial Nation: The Economic History of Britain 1700-1914* [3rd. ed.]. London: Routledge.
- Maturana, H. & Varela, F. (1980) *Autopoiesis and Cognition: The Realisation of the Living*. London: D. Reidel Publishing Company.

- Mazé, R. (2007). *Occupying Time*. Malmö: Malmö University.
- McCarren, F. (2003) *Dancing Machines: Choreographies of the Age of Mechanical Reproduction*.: Stanford University Press.
- McKee, L. & Press, M. (2009) *Crafting Democracy: Towards a New Perspective on Design's Contribution to Community Development and Democracy*. 8th European Academy Of Design Conference, The Robert Gordon University, April 1st-3rd 2009. <http://ead09.org.uk/Papers/091.pdf>
- Meroni, A.(Ed.) (2007) *Creative Communities*. Milano: Edizioni POLI.design.
- Metahaven (2009) *Uncorporate Identity*. Baden: Lars Müller Publishers.
- Meyer, J. (2009) *World Society: The Writings of John W. Meyer*. Oxford: Oxford University Press.
- Michlewski, K. (2006) *Towards an Understanding of the Culture of Designers*. PhD thesis. Newcastle-upon-Tyne: Northumbria University.
- Miettinen, S. & Koivisto, M. (2009) *Designing Services with Innovative Methods*. Helsinki: University of Art and Design.
- Milestone, J. (2007a) *Design as Power: Paul Virilio and the Governmentality of Design Expertise*. *Culture, Theory and Critique*, 48(2), 175-198.
- Milestone, J. (2007b) *Universities, Cities, Design and Development: An Anthropology of Aesthetic Expertise*. PhD thesis. Philadelphia, PA: Temple University.
- Miller, M. (2005) *Introduction to 'Propaganda'*. In Bernays (1928: 10-33).
- Miller, P. & Rose, N. (2008) *Governing the Present*. Cambridge: Polity.
- Mittel, J. (2011) *All in the Game: The Wire, Serial Storytelling, and Procedural Logic*. Available from www.electronicbookreview.com/thread/firstperson/serial [last accessed October 10th 2013].
- Moggridge, B. (2007) *Designing Interactions*. Cambridge, MA: MIT Press.
- Mohan, G. (2001) *Beyond Participation: Strategies for Deeper Empowerment*. In Cooke & Kothari (Eds.) (2001b: 153-167).
- Montaigne, M. (2003) *The Complete Works*. New York, NY: A.A. Knopf.
- Moore, R. (2003) *From Genericide to Viral Marketing: on 'Brand'*. *Language & Communication*, 23: 331–357. Morozov, E. (2010) *Sharing Liberally: 'Cognitive Surplus: Creativity and Generosity in a Connected Age', by Clay Shirky*. Available from <http://bostonreview.net/BR35.4/morozov.php> [last accessed August 22nd, 2010].
- Morelli, N. (2002) *The Design of Product/Service Systems from a Designer's Perspective*. Available from http://www.score-network.org/files/825_15.pdf [last accessed October 10th 2013].
- Morton, T. (2007) *Ecology without Nature*. Cambridge, MA: Harvard University Press.
- Morton, T. (2010a) *The Ecological Thought*. Cambridge, MA: Harvard University Press.
- Morton, T. (2010b) *Materialism Expanded and Remixed*. Available from <http://www.scribd.com/doc/25830212/Materialism-Expanded-and-Remixed> [last accessed May 31st 2010].

- Morus, I. (Ed.) (2002) *Bodies/Machines*. Oxford: Berg.
- Mosse, D. (2001) 'People's Knowledge', *Participation and Patronage: Operations and Representations in Rural Development*. In Cooke & Kothari (2001b: 16-35).
- Mumford, L. (1934) *Technics and Civilisation*. London: Routledge & Kegan Paul.
- Murray, C. (2008) *Clandestine Encounter: the AJ Speaks to Guerilla Restoration Group, the Untergunther* <http://www.architectsjournal.co.uk/news/clandestine-encounter-the-aj-speaks-to-guerilla-restoration-group-the-untergunther/757766.article> [last accessed October 10th 2013].
- Musselman, E. (2002) *The Governor and the Telegraph: Mental Management in British Natural Philosophy*. In Morus (2002: 67-92).
- Myerson, J., Martin, H., Crampton-Smith, G. & Downs, C. (2007) *New Know-how in Service Design*. Available from <http://www.designcouncil.org.uk/resources-and-events/Designers/Intersections-071/Intersections07/Service-design/> [last accessed October 10th 2013].
- Negarestani, R. (2007) *The Militarisation of Peace*. *Collapse*, 1: 53-92.
- Negarestani, R. (2008) *Cyclonopedia: Complicity with Anonymous Materials*. Melbourne: Re-Press.
- Negarestani, R. (2010) *On the Revolutionary Earth*. Unpublished text, kindly provided by the author.
- Nixon, R. (2009) *Neoliberalism, Slow Violence, and the Environmental Picaresque*. *Modern Fiction Studies*, 55(3): 443-467.
- Norman, D. (2010) *Living With Complexity*. Cambridge, MA: MIT Press.
- O'Brien, P. & Quinault, R. (Eds.) (1993) *The Industrial Revolution and British Society*. Cambridge: Cambridge University Press.
- Ong, A. (2005) *(Re)articulations of Citizenship*. *Political Science & Politics*, 38(4):697-699.
- Ong, A. (2006) *Mutations in Citizenship*. *Theory, Culture and Society*, 23(2-3): 499-531.
- Ong, A. (2007) *Boundary Crossings: Neoliberalism as Mobile Technology*. *Transactions of the Institute of British Geographers*, 32: 3-8.
- Otis, L. (2001) *Networking: Communicating with Bodies and Machines in the Nineteenth Century*. Ann Arbor, MI: University of Michigan Press.
- Pacenti, E. & Sangiorgi, D. (2010) *Service Design Research Pioneers: An Overview of Service Design Research Developed in Italy Since the '90s*. Pre-publication manuscript, kindly provided by the authors. To appear in *Design Research Journal*, 1(10).
- Packard, V. (1957) *The Hidden Persuaders*. New York, NY: Simon & Schuster.
- Palmer, M. (2006) *Data is the New Oil*. Available from http://ana.blogs.com/maestros/2006/11/data_is_the_new.html [last accessed April 23rd 2011].
- Pannabecker, J. (1994) *Diderot, the Mechanical Arts, and the Encyclopédie: In Search of the Heritage of Technology Education*. *Journal of Technology Education*, Fall 1994. Available from <http://scholar.lib.vt.edu/ejournals/JTE/jte-v6n1/pannabecker.jte-v6n1.html> [last accessed May 1st 2011].

- Papanek, V. (1972) *Design for the Real World*. London: Thames and Hudson.
- Park, K. (2009) *Technological Developments in the Industrial Revolution*. Available from http://www.photographers-resource.co.uk/A_heritage/Industry/industrial_revolution_technology.htm [last accessed July 2nd 2011].
- Parker, S. & Heapy, J. (2006) *The Journey to the Interface*. London: Demos.
- Parinnello, S. (2003) *The Myth of the Service Economy*. Available from http://mpa.ub.uni-muenchen.de/30829/1/MPRA_paper_30829.pdf [last accessed October 10th 2013].
- Participle (2008) *Hilary Cottam*. Available from <http://www.participle.net/about/people/24/hilaryc> [last accessed December 24th 2014].
- Pearce, F. (2010) *What Can You Do On Four Wheels?* The Guardian, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/car-industry> [last accessed May 23rd 2010]
- Penin, L. & Tonkinwise, C. (2009) *The Politics and Theatre of Service Design*. Available from <http://www.ida.liu.se/~steho/iasdr/PeninTonkinwise2.pdf> [last accessed October 10th 2013].
- Pickering, A. (2010) *The Cybernetic Brain: Sketches of Another Future*. Chicago, IL: University of Chicago Press.
- Pires, G., Stanton, P. & Stanton, J. (2004) *The Role of Customer Experiences in the Development of Service Blueprints*. Australia and New Zealand Marketing Academy Proceedings.
- Plant, S. (1997) *Zeroes + Ones*. New York: Doubleday.
- Plato (1960) *The Laws*. Available from <http://bit.ly/qkH2VZ> [last accessed October 10th 2013].
- Poynor, R. (2008) *'It's the End of Graphic Design as We Know It'*. <http://blog.eyemagazine.com/?p=73> [last accessed June 14th 2010]/
- Prahalad, C. & Ramaswamy, V. (2000). *Co-opting Customer Competence*. Harvard Business Review, 78(1): 79-88.
- Prendiville, A. (2009) *'Love Lewisham', Improving Stakeholder Satisfaction in Local Government Service: a Case Study of Strategic Public Sector Service Innovation*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Protevi, J. (2001) *The Geophilosophies of Deleuze and Guattari*. Available from <http://www.protevi.com/john/SEDAAG.pdf> [last accessed September 14th 2011].
- Puett, M. (2001) *The Ambivalence of Creation*. Stanford, CA: Stanford University Press.
- Purcell, K. (2007) *Delightful Precipice at the Edge of Communicative Reality*. Eye Magazine, 63. Available from <http://www.eyemagazine.com/review.php?id=143&rid=683&set=751> [last accessed January 10th 2011].
- Pynchon, T. (1984) *Is It OK to Be a Luddite?* New York Times Book Review, October 28th 1984.
- Radical Tradition (2008) *Melbourne Tram Dispute and Lockout January February 1990: Anarcho-Syndicalism in Practice*. <http://www.takver.com/history/tram1990.htm> [last accessed October 10th 2013].
- Randall, A. (2002) *Before the Luddites: Custom, Community and Machinery in the English Woollen Industry, 1776-1809*. Cambridge: Cambridge University Press.
- Rankin, N. (2008) *Churchill's Wizards: The British Genius for Deception 1914-1945*. London: Faber and Faber.

- Raphals, L. (1992) *Knowing Words: Wisdom and Cunning in the Classical Traditions of Greece and China*. Ithaca, NY: Cornell University Press.
- Rapp, R. (2000) *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America* [5th Ed.]. London: Routledge.
- Rawsthorn, A. (2008) *A New Design Concept: Creating Social Solutions for Old Age*. New York Times, October 27th, 2008. Available from http://www.nytimes.com/2008/10/27/arts/27iht-design27.1.17228735.html?_r=1 [last accessed July 10th 2010].
- Rawsthorn, A. (2009a) *Creating Social Solutions for MS patients*. New York Times, January 6th, 2009. Available from http://www.nytimes.com/2009/01/16/arts/16iht-design19.1.19425754.html?_r=1 [last accessed July 10th 2010].
- Rawsthorn, A. (2009b) *Focusing Design Solutions on Social Problems*. New York Times, May 24th, 2009. Available from http://www.nytimes.com/2009/05/25/fashion/25iht-design25.html?_r=1 [last accessed July 10th 2010].
- Rawsthorn, A. (2010) *Engineering a Brighter Future*. New York Times, June 13th, 2010. Available from http://www.nytimes.com/2010/06/14/arts/14iht-design14.html?_r=2 [last accessed July 10th 2010].
- Real, B., Orozco, M. & Pérez, S. (2009) *Best Methods and Tools for Service Design*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010].
- Reason, B. (2008) *They Know It In Their Gut*. In Kimbell & Seidel (2008: 39-41).
- Reason, B. & Walker, J. (2009) *Data is the New Oil*. Available from <http://www.livework.co.uk/articles/data-is-the-new-oil-part-1-business-information> [last accessed April 23rd 2011].
- Redström, J. (2006a). *Persuasive Design: Fringes and Foundations*. Proceedings of Persuasive Technology: First International Conference on Persuasive Technology for Human Well-Being...
- Redström, J. (2006b) *Towards User Design? On the Shift from Object to User as the Subject of Design*. *Design Studies*, 27:123-139.
- Reich, W. (1946) *The Mass Psychology of Fascism*. New York: Orgone Institute Press.
- Richardson, T. & Connelly, S. (2005) *Reinventing Public Participation: Planning in the Age of Consensus*. In Blundell Jones, et al. (2005: 77-104).
- Richtel, M. (2004) *For Liars and Loafers, Cellphones Offer an Alibi*. <http://www.nytimes.com/2004/06/26/technology/26ALIB.html> [last accessed October 10th 2013].
- Ritzer, G. (2004) *Enchanting a Disenchanted World* [2nd. Ed.] London: Pine Forge Press.
- Roberts, G. (2010) *Subtle Shifts in Service Science*. The Guardian, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/service-science> [last accessed May 23rd 2010]
- Rose, N. (1999). *Powers of Freedom*. Cambridge, UK: Cambridge University Press.
- Rothstein, J. (2006) *Selective Participation: Controlling Workers' Input at General Motors*. *Research in the Sociology of Work*, 16: 151-175.
- RSA (2009) *Six Challenge for Design Education*. Available from http://www.thersa.org/about-us/media/press-releases/six-challenges-for-design-education?SQ_DESIGN_NAME=print%20friendly [last accessed October 10th 2013].

- Ruddiman, W. (2003) *The Anthropogenic Greenhouse Era Began Thousands of Years Ago*. *Climatic Change*, 61: 261–293.
- Saco, R. & Goncalves, A. (2008) *Service Design: An Appraisal*. Available from <http://www.dmi.org/dmi/html/publications/journal/pdf/08191SAC10.pdf> [last accessed October 1st 2011].
- Sale, K. (1995) *Rebels Against the Future: The Luddites and Their War on the Industrial Revolution: Lessons for the Computer Age*. Reading, MA: Addison Wesley.
- Samaliois, F. (2009) *Can Designers Help Deliver Better Services?* Available from http://www.ideo.com/images/uploads/news/pdfs/Can_Designers_Help_Deliver_Better_Services.pdf [last accessed October 10th 2013].
- Sanders, E. & Stappers, P. (2008) *Co-creation and the New Landscapes of Design*. Available from http://www.maketools.com/pdfs/CoCreation_Sanders_Stappers_08_preprint.pdf [last accessed October 10th 2013].
- Sangiorgi, D. (2009) *Building up a Framework for Service Design Research*. 8th European Academy Of Design Conference, The Robert Gordon University, April 1st-3rd 2009. <http://ead09.org.uk/Papers/037.pdf>
- Santos, A. & Rodrigues, J. (2009) *Economics as Social Engineering? Questioning the Performativity Thesis*. *Cambridge Journal of Economics*, 33: 985-1000.
- Sawday, J. (1996). *The Body Emblazoned*. London: Routledge.
- Sawday, J. (2007) *Engines of the Imagination*. London: Routledge.
- Sawday, J. (2010) *Fantasies of the End of Technology*. In Bandyopadhyay, S., Lomholt, J., Temple, N. & Tobe, R. (2010: 57-70) *The Humanities in Architectural Design*. London: Routledge.
- Sax, W. (2010) *Ritual and the Problem of Efficacy*. In Sax, et al. (2010: 3-16).
- Sax, W., Quack, J., & Weinhold, J. (Eds.) (2010) *The Problem of Ritual Efficacy*. Oxford: Oxford University Press.
- Scheper-Hughes, N. (2005) *The Last Commodity: Post-Human Ethics and the Global Traffic in 'Fresh' Organs*. In Ong, A. & Collier, S. (Eds.) (2005: 145-168) *Global Assemblages*. Malden, MA: Blackwell.
- Schuler, D. (2008) *Participatory Design*. <http://www.publicsphereproject.org/patterns/print-pattern.php?begin=36> [last accessed August 1st 2010].
- Schuler, D. & Namioka, A. (Eds.) (1993) *Participatory Design: Principles and Practices*. Hillsdale, NJ: L. Erlbaum Associates.
- Scott, J. (1986) *Weapons of the Weak: Everyday Forms of Peasant Resistance*. London: Yale University Press.
- Scott, J. (1990) *Domination and the Arts of Resistance: The Hidden Transcript*. New Haven, CT: Yale University Press.
- Scott, J. (1998) *Seeing like a State*. New Haven: Yale University Press.
- Segelström, F. (2009) *Communicating through Visualisations*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Seiler, L. (2007) *What Are We? The Social Construction of the Human Biological Self*. *Journal for the Theory of Social Behaviour*, 37(3): 243-277.

- Sellars, W. (1963) *Empiricism and the Philosophy of Mind*. London: Routledge.
- Sense Worldwide (2009) *The Spirit of Co-Creation: Risk-Managed Creativity for Business*. Available from <http://www.thespiritofcocreation.com/download/> [downloaded December 24th 2009].
- Shachtman, N. (2010) Google, CIA Invest in 'Future' of Web Monitoring. Available from <http://www.wired.com/dangerroom/2010/07/exclusive-google-cia/> [last accessed September 20th 2010].
- Shanks, M. (2004) *Art and the Early Greek State*. Cambridge: Cambridge University Press.
- Shanks, M. (2007) *Symmetrical Archaeology*. *World Archaeology*, 39(4): 589-96.
- Shanks, M. (2009) *Engagement: Archaeological Design and Engineering*. *Archaeologies: Journal of the World Archaeological Congress*, 5(3): 546-556.
- Shildrick, M. & Mykitiuk, R. (Eds.) (2005) *Ethics of the Body: Post-Conventional Challenges*. Cambridge, MA: MIT Press.
- Shostack, L. (1982) *How to Design a Service*. *European Journal of Marketing*, 16(1): 49 - 63.
- Simon, H. (1996) *The Sciences of the Artificial* [3rd Ed.]. Cambridge, MA: MIT Press.
- Slater, D. (2011) *Marketing as a Monstrosity: The Impossible Place between Culture and Economy*. In Zwick & Cayla (2011: 23-41).
- Sloterdijk, P. (1986) *Critique of Cynical Reason*. Minneapolis, MN: University of Minnesota Press.
- Sloterdijk, P. (2006) *The Nomotop: On the Emergence of Law in the Island of Humanity*. *Law and Literature*, 18(1): 1-14.
- Sloterdijk, P. (2007) *Neither Sun nor Death*. New York, NY: Semiotext(e).
- Sloterdijk, P. (2009a) *Derrida, an Egyptian*. New York, NY: Semiotext(e).
- Sloterdijk, P. (2009b) *God's Zeal: The Battle of the Three Monotheisms*. New York, NY: Semiotext(e).
- Sloterdijk, P. (2009c) *Networks and Spheres: Two Ways to Interpret Globalisation*. Lecture at Harvard Graduate School of Design, February 17th 2009.
- Sloterdijk, P. (2009d) *Terror from the Air*. New York, NY: Semiotext(e).
- Smith, A. (1776) *An Inquiry in the Nature and Causes of the Wealth of Nations*. Available from <https://www.marxists.org/reference/archive/smith-adam/works/wealth-of-nations/index.htm> [last accessed October 10th 2013].
- Smith, T. (2010) *Confessions of a Service Design Researcher*. Available from http://www.enginegroup.co.uk/service_design/v_page/confessions_of_a_service_design_researcher [last accessed June 2nd 2010].
- Smith, V. (2006) *Worker Participation: Current Research and Future Trends*. *Research in the Sociology of Work*, 16: xi-xxiii.
- Spall, P. (2000) *Neoinstitutional Theory in Nonprofit Organisations - The Power Vacuum*. Proceedings of the 2000 Conference of the Australasian Political Studies Association, Australian National University, Canberra, October 3rd-6th 2000.
- Spiller, N. (2006) *Visionary Architecture: Blueprints of the Modern Imagination*. London: Thames and Hudson.

- Stanton, M. (2002) *The Good, the Bad and the Ugly: The Urbanism of Good and Bad Intentions*. *Perspecta*, 33: 104-113.
- Star, S. (1991) *Power, Technology and the Phenomenology of Conventions: On Being Allergic to Onions*. In (1991: 26-36).
- Steffen, W., Grinevald, J., Crutzen, P. & McNeill, J. (2011) *The Anthropocene: Conceptual and Historical Perspectives*. *Philosophical Transactions of the Royal Society A*, 369: 842-867.
- Sterling, B. (2005) *Shaping Things*. Cambridge, MA: MIT Press.
- Stickdorn, M. & Schneider, J. (2009) *myServiceFellow: Gaining Genuine Customer Insights*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Stickdorn, M. & Schneider, J. (2010). *This is Service Design Thinking: Basics – Tools – Cases*. Amsterdam: BIS Publishers.
- Stiegler, B. (1998) *Technics and Time, 1: The Fault of Epimetheus*. Stanford, CA: Stanford University Press.
- Stockburger, A. (2006) *The Rendered Arena: Modalities of Space in Video and Computer Games*. PhD thesis. London: University of the Arts.
- Stø, E. & Strandbakken, P. (2008) *Political Challenges: to Create Frameworks for Social Enterprises*. In Jegou & Manzini (2008: 173-174).
- Stoekl, A. (2007) *Bataille's Peak*. Minneapolis, MN: University of Minnesota Press.
- Streetcar (2011) *What Is Streetcar?* Available from http://www.streetcar.co.uk/what_is_streetcar.aspx [last accessed April 8th 2011].
- Suchman, L. (1993) *Foreword*. In Schuler & Namioka, (1993: vii-x).
- Sudjic, D. (2005) *Design Award Row Engulfs 'Super School'*. Available from <http://www.guardian.co.uk/uk/2005/jun/12/schools.regeneration> [last accessed July 18th 2007].
- Sukey (2011) <http://sukey.github.io>. [last accessed October 4th 2011].
- Szebeko, D. & Tan, L. (2010) *Co-designing for Society*. *Australasian Medical Journal*, 3(9): 580-590.
- Tallis, R. (2003) *The Hand*. Edinburgh: Edinburgh University Press.
- Tan, L. (2008) *Design in Public Sector Services: Insights into the Designs of the Time (Dott 07) Public Design Commission Projects*. Changing the Change, Turin, 10th-12 July 2008.
- Tan, L. (2009) *Perspectives on the Changing Role of the Designer: Now and to The Future*. Proceedings of International Council of Societies of Industrial Design conference, Singapore, November 22nd 2009.
- Tan, L. (2010) *The Different Roles of the Designer and Their Value*. Available from http://northumbria.academia.edu/LaurenTan/Papers/310034/The_different_roles_of_the_designer_and_their_value_Researcher_Strategist_and_Facilitator [last accessed October 29th 2010].
- Tan, L. & Szebeko, D. (2009) *Co-designing for Dementia: The Alzheimer 100 Project*. *Australasian Medical Journal*, 1(12): 185-198.

- Taylor, F. (1911) *The Principles of Scientific Management*. Available from <http://www.marxists.org/reference/subject/economics/taylor/principles/index.htm> [last accessed October 1st 2012].
- Taylor, H. (2001) *Insights into Participation from Critical Management and Labour Process Perspectives*. In Cooke & Kothari (Eds.) (2001b: 122-138).
- Taylor, K. (2004) *Brainwashing: The Science of Thought Control*. Oxford: Oxford University Press.
- Taylor, P. (2003) *Munitions of the Mind: A History of Propaganda from the Ancient World to the Present Day* [3rd. edition]. Manchester: Manchester University Press.
- Teman, E. (2009) *Embodying Surrogate Motherhood: Pregnancy as a Dyadic Body-Project*. *Body & Society*, 15: 47-69.
- Teman, E. (2010) *Birthing a Mother: The Surrogate Body and the Pregnant Self*. London: University of California Press.
- Thackara, J. (2005) *In the Bubble: Designing in a Complex World*. Cambridge, MA: MIT Press.
- Thompson, C. (2005) *Making Parents: The Ontological Choreography of Reproductive Technologies*. Cambridge, MA: MIT Press.
- Thomson, P. & Sacks, G. (Eds.) (2006) *The Cambridge Companion to Brecht*. Cambridge: Cambridge University Press.
- Thrift, N. (2005). *Knowing Capitalism*. London: SAGE Publications.
- Thrift, N. (2009) *Different Atmospheres: of Sloterdijk, China, and Site*. *Environment and Planning D*, 27(1): 119-138.
- Thrift, N. (2010) "The 27th Letter": *An Interview with Nigel Thrift*. In Anderson, B., Harrison, P. (Eds.) (2010: 183-200) *Taking-Place. Non-Representational Theories and Geography*. London, Ashgate.
- Tiles, M. (2009) *Technology and the Possibility of Global Environmental Science*. *Synthese*, 168(3): 433-452.
- Till, J. (2005) *The Negotiation of Hope*. In Blundell Jones, et al. (2005: 23-42).
- Tonkinwise, C. (2003) *Interminable Design: Techné and Time in the Design of Sustainable Service Systems*. Available from <http://www.ub.edu/5ead/PDF/8/Tonkinwise.pdf> [last accessed October 1st 2011].
- Trevett, N. (2010a) *The Big Broken Bank Rebuild*. *The Guardian*, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/bank-rebuild> [last accessed May 23rd 2010]
- Trevett, N. (2010b) *Innovative Thinking*. *The Guardian*, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/innovative-thinking> [last accessed May 23rd 2010]
- Trevett, N. (2010c) *'People Matter' Is Key Message On the Road to Recovery*. *The Guardian*, March 12th 2010. Available from <http://www.guardian.co.uk/service-design/people-matter> [last accessed May 23rd 2010]
- Trudeau, D. & Veronis, L. (2009) *Enacting State Restructuring: NGOs as 'Translation Mechanisms'*. *Environment and Planning D: Society and Space*, 27: 1117-1134.
- Tubbs, N. (2005) *Fossil Fuel Culture*. *Parallax*, 11(4): 104 — 115.
- Turner, H. (2006) *The English Renaissance Stage: Geometry, Poetics and the Practical Spatial Arts 158-1630*. Oxford: Oxford University Press.
- UKUncut (2011) <http://www.ukuncut.org.uk/>. [last accessed October 4th 2011].

- Un, S. Rocchi, S. & Green, J. (2008) *People's Behavioural Drivers and Emerging Signals Towards Sustainable Ways of Living*. In Meroni (2008: 147-152).
- von Uexküll, J. (1992) *A Stroll through the Worlds of Animals and Men*. Berlin: Mouton de Gruyter.
- Untergunther (2008) *Untergunter*. <http://ugwk.eu/> [last accessed July 6th 2011].
- Vaajakallio, K., Mattelmäki, T., Lehtinen, V., Kantola, V. & Kuikkaniemi, K. (2009). *Literature Review on Service Design*. Available from <http://www.taik.fi/dr/tutpor/img/lib/kirjallisuuskatsaus.pdf> [last accessed May 19th 2010].
- Vallas, S. (2006) *Theorizing Teamwork Under Contemporary Capitalism*. *Research in the Sociology of Work*, 16: 3-24.
- Vargo, S. & Lusch, R. (2004) *Evolving to a New Dominant Logic for Marketing*. Available from <http://sdlogic.net/> [last accessed October 1st 2011].
- Vargo, S. & Lusch, R. (2006a) *Service-Dominant Logic as a Foundation for a General Theory*. Available from <http://sdlogic.net/> [last accessed October 1st 2011].
- Vargo, S. & Lusch, R. (2006b) *Service-Dominant Logic: What It Is, What It Is Not, What It Might Be*. In Lusch & Vargo, 2006a: 43-56.
- Vargo, S. & Lusch, R. (2008a) *From Goods to Services: Divergences and Convergences of Logics*. *Industrial Marketing Management*, 37(3): 254 - 259.
- Vargo, S. & Lusch, R. (2008b) *Service-Dominant Logic: Continuing the Evolution*. *Journal of the Academy of Marketing Science*, 36: 1-10.
- Vargo, S., Maglio, P. & Akaka, M. (2008) *On Value and Value Co-creation: A Service Systems and Service Logic Perspective*. *European Management Journal*, 26: 145-152.
- Vernant, J.-P. (2006) *Myth and Thought Among the Greeks*. New York, NY: Zone Books.
- Vesterdal, I. (2009) *Service Design in the Public Sector*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010]
- Vezzoli, C. & Manzini, E. (2008). *Design for Environmental Sustainability*. London: Springer.
- Virilio, P. (2000) *The Information Bomb*. London: Verso.
- Virilio, P. (2007) *The Original Accident*. Cambridge: Polity Press.
- Virno, P. (2008) *Multitude Between Innovation and Negation*. Los Angeles: Semiotext(e).
- Virno, P. (2009) *Natural-Historical Diagrams: The 'New Global' Movement and the Biological Invariant*. *Cosmos and History: The Journal of Natural and Social Philosophy*, 5(1). Available from <http://cosmosandhistory.org/index.php/journal/article/view/129/238> [last accessed October 10th 2013].
- Wahba, A. & Bridgwell, L. (1976). *Maslow Reconsidered: A Review of Research on the Need Hierarchy Theory*. *Organizational Behavior and Human Performance*, 15: 212-240.
- Wardrip-Fruin, N. (2006) *Expressive Processing: On Process-Intensive Literature and Digital Media*. PhD thesis. Brown University: Rhode Island.
- Wark, M. (2007) *Gamer Theory*. Cambridge, MA: Harvard University Press.

- Watson, D. (1997) *Against the Megamachine*. <http://radicalarchives.org/2010/09/06/dw-against-the-megamachine> [last accessed May 1st 2011].
- Weber, C. (2006) *Brecht and the Berliner Ensemble*. In Thomson & Sacks (2006: 175-192).
- Weiner, N. (1950) *The Human Use of Human Beings*. New York, NY: Houghton Miller.
- Weiss, G. (2009) *Intertwined Identities: Challenges to Bodily Autonomy*. *Perspectives - the International Postgraduate Journal of Philosophy*, 2: 22-37.
- Weiss, G. & Haber, H.F. (1999) *Perspectives on Embodiment: The Intersections of Nature and Culture*. London: Routledge.
- Weizman, E. (2010) *Political Plastic*. *Collapse*, 6: 257-303.
- Wiener, N. (1950) *The Human Use of Human Beings*. Available from http://asounder.org/resources/weiner_humanuse.pdf [last accessed October 10th 2013].
- Wilson, E. (Ed.) (2009) *Government of the Shadows: Parapolitics and Criminal Sovereignty*. London: Pluto Press.
- Winhall, J. (2006a) *Is Design Political?* http://www.core77.com/reactor/03.06_winhall.asp [last accessed October 10th 2013].
- Winhall, J. (2006b) *Transforming People, Places and Products*. Sarasota Design Summit. Available from <http://www.designcouncil.org.uk/Files/Transcripts/Audio-transcripts/Sarasota-Design-Summit-06/> [last accessed October 1st 2012].
- Winner, L. (1980) *Do Artefacts Have Politics?* *Daedalus*, 109(1): 121-136.
- Winner, L. (2002) *Are Humans Obsolete?* *The Hedgehog Review*, Fall 2002: 25-44.
- Winter, T. (2007) *The Mechanical Problems in the Corpus of Aristotle*. Available from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1067&context=classicsfacpub> [last accessed October 10th 2013].
- Wipperfurth, A. (2005) *Brand Hijack: Marketing without Marketing*. London: Penguin Books.
- Witkin, R. (2009) *The Aesthetic Imperative of a Rational-Technical Machinery: A Study in Organisational Control Through the Design of Artifacts*. *Music and Arts in Action*, 2(1): 56-68.
- Wolfe, J. (2004) *Humanism, Machinery and Renaissance Literature*. Cambridge: Cambridge University Press.
- Woudhuysen, J. (2010) *Innovation*. Available from <http://www.spiked-online.com/index.php/site/article/8509/> [last accessed August 14th 2010].
- Wreiner, T., Martensson, I., Arnell, O., Gonzalez, N., Holmlid, S. & Segelström, F. (2009) *Exploring Service Blueprints for Multiple Actors: a Case Study of Car Parking Services*. Proceedings of the First Nordic Conference on Service Design and Service Innovation, November 24th-26th 2009. Available from <http://www.aho.no/en/AHO/News-and-events/Service-Design/Program1/PapersAbstracts/> [last accessed May 23rd 2010].
- Yaneva, A. (2005) *Scaling Up and Down: Extraction Trials in Architectural Design*. *Social Studies of Science*, 35(6): 867-894.
- Yaneva, A. & Latour, B. (2008) 'Give Me a Gun and I Will Make All Buildings Move': An ANT's View of Architecture. in Geiser, R. (Ed.) (2008: 80-89) *Explorations in Architecture: Teaching, Design, Research*. Basel: Birkhäuser.

Yee, J., Tan, L. & Meredith, P. (2009) *The Emergent Roles of a Designer in the Development of an E-learning Service*. First Nordic Conference on Service Design and Service Innovation, Oslo, November 24th-26th 2009. Available from http://nrl.northumbria.ac.uk/8824/1/yee_tan_meredith.pdf [last accessed October 10th 2013].

Zalamea, F. (2012) *Synthetic Philosophy of Contemporary Mathematics*. Falmouth, UK: Urbanomic.

Zalasiewicz, J., Williams, M., Smith, A., Barry, T., Coe, A., Bown, P., Brenchley, P., Cantrill, D., Gale, A., Gibbard, P., Gregory, J., Hounslow, M., Kerr, A., Pearson, P., Knox, R., Powell, J., Waters, C., Marshall, J., Oates, M., Rawson, P., Stone, P. (2008) *Are We Now Living in the Anthropocene?* *GSA Today*, 18(2): 4-8.

Zalasiewicz, J., Williams, M., Haywood, A. and Ellis, M. (2011) *The Anthropocene: A New Epoch of Geological Time?* *Philosophical Transactions of the Royal Society*, 369: 835-841.

Zeithaml, V., Bitner, M.J. & Gremler, D. (2008) *Services Marketing: Integrating Customer Focus Across the Firm* [5th Ed.]. New York, NY: McGraw-Hill/Irwin.

Zerzan, J. (1999) *Against Civilization*. Eugene, OR: Uncivilized Books.

Zwick, D. & Cayla, J. (2011) *Inside Marketing: Practices, Ideologies, Devices*. Oxford: Oxford University Press.