Always Historicise Design: Review of Bruce Sterling Shaping Things

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This essays presents a review of *Shaping Things* by Bruce Sterling (Mediawork Pamphlets series), The MIT Press, Cambridge, Massachusetts, 2005, 152 pages).

Design is about change, about finding possibilities for change, and making change possible.

The challenge of any design education is to open would-be designers up to possibilities. Given that designers are considered creative professionals, with aspirations to even being change leaders, design education should aim to open the designers of the future to possibilities that lie beyond what is currently considered possible.[1]

Any present is never just its present situation, but always also a particular version of the past that makes sense of the version of the future that that present is working on. The sorts of designers who work within the projects already laid out by any past-present-future trajectory are mere functionaries, renderers of the pre-determined. So a design education, particularly a design education at a university, within the idea of the university,[2] must explore other possibilities, and must result in professionals who

continue to stretch and even contravene what at any time a present thinks it is becoming.

This educational brief, 'opening to possibilities beyond the existing possible', is quite a challenge when so many entering design education these days seem to be so adamant that they, and the times they live in, are as they always have been and so always will be. Today's sophomores, far from being cynical, rebellious and/or out-of-step, strike me as particularly at home in their time. They seem so confident that all that there is, are the possibilities already articulated by the present, their job being merely to realise those projects. There have been some interesting accounts of the essential radicality of the student, who being in-between and not-yet, inherently sees things otherwise,[3] but my experience of students lately does not attest to this. Students today seem so assured of their presence, in the Derridean use of the word, with no trace of difference, quite ahistorical. They appear to have very little sense of their own partiality – meaning both their sense of not yet being whole, of still needing to learn; and their sense of being prejudiced, from non-universal backgrounds, living in times and places not shared by others around the world or even in their classroom, of still needing to unlearn.[4]

I am not sure if I am just grumpy about an ideal that never actually existed, even in me back then for example, or if there actually is a generational conservativism in those of student age at the moment, but my worry is that if it is not just my poorly researched view, or if it is not even some temporary demographic swing, then it might just be a symptom of the end of history. As Derrida noted repeatedly, if the future is not seen as something monstrous, showing itself in not entirely recognisable ways,[5] if it is just a problem, already thrown forward, into which we merely have to step,[6] by solving this and that, then in a certain sense history is over. In such a society, the present will still become the past, so there will still be a history, it is just that it is a history that does not matter because there is no issue about the nature of the future; the future is in this sense already history.

In a paradoxical way, the historial grand narratives, such as Kant and Hegel's or Nietzsche and Heidegger's, while having a strong view of where the future is in the end going, nonetheless remained open as to how the next phase would come to pass. These were histories comprising Events, that is to say, a series of never entirely predictable ontological shifts. In the absence of these eventfully strong senses of History, that is to say, at the end of this sort of History, the danger is that we are left with (non)histories comprising the mere continuation, in different forms, or rather with different contents, of the what remains essentially the same.[7]

The mundanity of such a history-less slide into a future of pre-set possibilities is often concealed by the arrogance of those unquestioning in their ahistorical presence. This is what, on a bad

day, I sometimes feel is currently entering the lecture halls and design studios each day. On a good day, this is what I determine to combat: my job is to "always historicise."[8]

In a politically incorrect way, the objective for this educational strategy is not to enable skilled practitioners, but to some extent,to disable these becoming-professionals by exposing them to the finitude of their history. Graduates should feel the limitations of their time and place. These constraints however should also signal all that can be beyond. If deposited in the right way, they should become a constant demand to extend what currently manifests as a 'creative possibility.' The hypothesis is that, in a reversal of some of the psychological accounts of creativity, those humbled by their historical horizons will be in the best position to access what lies outside those horizons.

The problem with this educational strategy is finding appropriate learning material. When I came across Bruce Sterling's *Shaping Things*, I felt that I had found the perfect textbook – perfect because it is unusually clear for a book about design and about the centrality of historicism[9] for the professional practice of design, but also because it nevertheless provides an exemplary instance of not being historicist enough, of being utterly mired in the limited possibilities of a restricted version of the present.

I am reminded of a point made by Alain Findeli in the design history debate in *Design Studies*.[10] After a robust demonstration of the importance of Foucauldian notions of history for design, Findeli asks the pragmatic question, 'so is a chronological narrative of design history (i.e., iconic things, famous people) still appropriate?' Findeli's answer comes via von Haekel's discredited contribution to Darwinism, 'ontogeny replicates phylogeny', that is, that the development of individuals is an accelerated journey through the development of the species to that point. Translated to design education, this means that students should experience over their degree program the history of design history, in which case it is quite natural to commence with a sequential design history, *so long as that history is subsequently deconstructed*.

In the same way, Sterling's *Shaping Things*, I will suggest, provides a great introduction to historicism in relation to the act of designing and being a designer, but it also provides a succinct negative case of a historicism not sufficiently designed.

Shaping Things is in many ways Lewis Mumford simplified and updated. Sterling works from a productively reductive sequence of technological paradigms:

- **artefacts** – the hand-made, human or animal-powered tools of hunters and farmers;
- **machines** – the more complex engineered and manufactured powered tools of industrialisation;
- **products** – the mass produced objects of consumers;

- **gizmos** – customisable and/or networked objects of users; and
- **spimes** – the next phase of things, if Sterling manages a self-fulfilling prophecy, made possible by a combination of smart tags (radio frequency identity chips) and rapid prototyping.

A few things make this typology slightly more sophisticated than it appears in summary, particularly in the context of educating designers.

Firstly, as Sterling explains, each era is not just filled with such things, but is a socio-technical ensemble (which Sterling sometimes calls a 'technosociety', sometimes a 'technoculture') typified by such a thing. This is somewhat like Heidegger's ontological histories, where periods are defined by what counts as a thing at that time.[11]

Secondly, Sterling does not just deposit the typology as a descriptive periodisation, but explains the shifts from one mode of thing to another using hypotheses derived from the social construction of technology (SCOT): the arrival of the socio-technical apparatus behind each type of thing marks,

a) a "line of no return", what SCOT calls 'path dependency' – e.g., the skills of being machinist cannot be translated (back) into making or using an artefact
b) a "line of empire", what SCOT calls 'reverse saliences' – the attractions of the gizmo make still adequate products appear inadequate and so flood them out of the market.

Thirdly, Sterling recognises that despite the paradigm-quality of each socio-technical thing, there is not a strict sequentiality; thing-types from previous eras persist into later eras, for nostalgic purposes, but also because the nature of all eras to date has been to produce more or less intractable waste which hangs around into the future.

Most significant is how succinctly Sterling manages to capture the horizonal historicism of each socio-technical *dispositif.* He does so via a notion of 'metahistory,' that is, the nature of history that each historical period subscribes to, its mode of handling the past and its concept of the future. Metahistories manifest, for Sterling, as the determinations a culture makes as to "whether new things are appropriate, whether they fit into the trajectory that is considered the right track." (37) In short, metahistories are design briefs: they prescribe positively what designers should be working toward, but only by proscribing all other possibilities that designers might contemplate: "a metahistory is the ultimate determinant of the shape of things. It's through metahistory that people come to realize that new things are proper things. New objects that can fit into a metahistorical context are seen as progressive advancements. Otherwise they are considered alien impositions or odd curiosities." (39)

Sterling uses this historicism to indict our current era for its unsustainability. Within our current historical mode, designers "use archaic forms of energy and materials which are finite and toxic. They wreck the climate, poison the populace and foment resource wars. They have no future." (7) Sterling is here close to Tony Fry's notion of defuturing,[12] a form of designing that advances the present into a future of reduced options: "The premier argument for metahistorical intervention is that the status quo will kill us … these [ecological impacts] are all slow crises cheerfully generated by people rationally pursuing their short-term interest, from within a metahistorical framework they have yet to mentally transcend… A society that can't sustain itself may have strong ideas about its metahistory, but objectively speaking it has no future." (40–1)

Consequently, for Sterling, sustainable design cannot be something that can happen in our current socio-technical framework. It rather represents a new metahistory.

It is very useful to have this kind of argument – that a reformed status quo is inadequate for the project of repairing our societies' sustainability – insisted upon in such a readable monograph. Even more useful is that in Sterling's case, this argument does not collapse into the sort of quasi-spiritualism that so often besets sustainability paradigm-shift advocates, such as deep ecologists. Sterling could have gone the way of those calling for new grand narratives (unified field theories, whole system processes, glocal transdisciplinary stories). But rather than succumb to this yearning for yet another ahistorical metahistory, Sterling argues that a sustainability-oriented metahistory needs to be unlike any other metahistory, to the extent that it would be better understood as post-metahistory:

> "There has never been a metahistory that can recognize itself as provisional. Grand ideas about time always consider themselves to be somehow time proof. All around us we see obsolescence – but our ideas about obsolescence are not supposed to obsolesce.
>
> Can we transcend this failure of insight? Can we make room and offer a cheerful welcome within our own metahistory, for unborn metahistories whose time is not yet here? Can we allow ourselves to understand that our deepest ideas about existence are themselves mortal formulations?" (37–8)

This call for an historical ontology, an ontology that is ineluctably finitudinal, is profound, particularly when yoked to notions of sustainability. Even without mysticism, ecology-centred notions of sustainability tend to be utterly ahistorical, taking for granted within their scientific truth, quite historically specific versions of nature as unchanging harmony.[13] Sterling mentions a similar critique of more anthropocentric eco-socialist utopias: "A small, beautiful,

modest, hand-crafted society, living in harmony with its eco-region, relentlessly parsimonious in its use of energy and resources, can't learn enough about itself to survive… It's bliss is ignorance." (46–7)

These are important critiques that remain to be heard by so much of the sustainability movement. So few of the deluge of programmatic sustainability texts take any heed of the fact that future 'human flourishing' should still involve facing challenges and undertaking change. A society that succeeded in being sustainable, that had no problems for sustainable designers to keep working on for example, would be a very boring, if not dead, place to be.

For Sterling, our sustainable future depends upon its having no horizon, no determination as to what is the right or wrong sort of thing, one that encourages the constant development and redevelopment of any sort of thing. The future of *Shaping Things* is a world of utter experimentation and ineluctable failure. No design in this imagined future can ever be considered adequate to a fixed metahistorical project and thereby fall outside of history, able to remain static (i.e., a classic) despite the passing of time.[14] But similarly, no design can ever be considered inadequate, of no relevance to some metahistorical project. Everything obsolesces and consequently everything needs to be redesigned; and every form of redesign has more or less validity, instructing us about our metahistory and thereby prompting its refocus.

It was this aspect of the book that convinced me that *Shaping Thing* could be a powerful design history textbook for junior tertiary design students. Here was a text that on the one hand, via its notion of metahistory, exposed junior design students to the historical limits of their now. Yet here also was a text that exhorts its readers to embrace that historicism with a radical inventiveness, designing beyond the determinations of the present's possibilities. Further, here was a short and lively book that made clear that the remit of design is not only the design of things, but the design of the metahistories within which those things can be judged. Sterling's book in this sense is an enthusiastic introduction to historical ontological design.

However

This is an over-reading of the book, an extension of one of its trajectories, a trajectory it does not in the end take. The trajectory that Sterling does take concerns information.

For in the end, history, for Sterling, is nothing but information: "History is a *basic resource*… history is information – information about the people and objects transiting time." (42) Spimes, the things of the next post-meta-history that we must design into being according to Sterling, are products that carry extensive information about themselves, in other words, histories that can inform us about how best to proceed into the unpredictable future. Spimes

represent "an internet of things," with "the capacity to change the human relationship to time and material processes, by making those processes blatant and archiveable." (43)

What is disappointing about this equation of information and history is that the next-post-metahistory becomes merely something "more like a search engine" (42), and sustainability becomes the ability to optimise decisions on the basis of existing information:

> "There is the known, the unknown known, and the unknown unknown. When the unknown unknown comes lurching to town, you have to learn about that comprehensively and at great speed. Generating new knowledge is very good, but in a world with superb archives, accessing knowledge that you didn't know you possessed is both faster and more reliable than discovering it.

> This is the new form of knowledge at which a SPIME world excels. It is not doctrine, but the school of experience – not reasoning out a solution a priori, but making a great many small mistakes fast, and then *keeping a record of all of them*. This is where the 21st century has a profound oracular advantage over the intellectual experience of all previous centuries – it can simply *search the living daylights* out of vast datamines of experience… The ability to make many small mistakes in a hurry is a vital accomplishment for any society that intends to be sustainable." (47–8)

There are several things wrong and not just disappointing about this turn the book takes, but in each case something significant about our time, and about design in our time, is revealed.

1

The first and major thing wrong is the totalisingly encyclopaedic nature of the vision. Sterling's argument depends on the fact it is not possible to know what one might need to know in the future, so every thing needs to capture any and all information related to it, on the off chance that that information might be useful in the future. Good old 'Moores Law' of exponential processor capacity growth appears to give Sterling a way out of an initial query about the carrying capacity of smart tags. "It may not seem that I 'need' all that information, but that's an old-fashioned way to think. I don't need every web page on the internet, either. It's not a question of designing an internet of things to meet my so-called 'needs'. It's vastly cheaper and simpler just to enable automatic information-generating devices and processes, then search them mechanically and cybernetically, to figure out what I 'need.'" (100)

One should worry about this inherently wasteful attempt to be responsible to the future – it is like claiming that landfills are storage centres for miners of the future. Apart from being a deliberate act of

semiotic pollution,[15] it is premised on the misconception that data storage is immaterial and not itself highly ecologically impacting.[16] Though, remember, all this information resides on things. Sterling's argument is the opposite of both the product-life extension sustainable design strategy of making things more valued,[17] and the dematerialisation sustainable design strategy of maximising service intensity by decoupling use and ownership.[18] Sterling is quite frank about this not thoroughly thought through proposal: "In an age of Spimes, the object is no longer an object but an instantiation. My consumption patterns are worth so much [as tests of rapid prototypes, the results of which become historical data] that they underwrite my acts of consumption. I can get Products in profusion, but I've been kicked upstairs into management. I don't worry much about having things. I worry plenty about relating to them." (79) Despite the fact that "in a Spime world, the model *is* the entity," (96) and " 'identity' [has] become 'more important' than a real, no-kidding physical object," (105) there are still physical instantiations being 'fabbed' anywhere and everywhere for trialing. Isn't this the worst of both worlds?

Returning though to the conceptual issue of the 'information' that is at the heart of Sterling's proposition, even if the carrying capacity of a smart tag becomes very large, very much larger than is currently possible, will this be enough for all that just might need to be recorded about something for some unpredictable future? For is there not no limit to what *might* need to be known? Everything imaginable, and indeed unimaginable, about a thing could be informative in and for the future.

Sterling's vision is impossibly unlimited precisely because it takes information to be context-free data. As many have pointed out,[19] there is no such thing as unsituated information. What counts as data is historically constrained, both in terms of what at any time is considered significant enough to remark, i.e., data entry, and in terms of the meaning and significance of that remark, i.e., the system for decoding that data.[20] To this extent, Sterling is contradicting his own historicism, by insisting that data is transferable across thingly paradigms: his argument depends upon the belief that what counts as information now will be informative to the future, despite any intervening ontological shift. The future might not be predictable, but what is inevitable, according to Sterling, is that today's data will be able to be understood by the future.

The point is perhaps best made in relation to failings, the key thing the future might want to know about present things. Experimental Spimes generated these days should, in the *Shaping Things* scheme, supply information to the future about how they failed. However, can a failure be documented as information, and documented as information in ways that might be meaningful in different circumstances in the future? Surely a failing is too much an embodied phenomenon within a particular context to be

convertible to data. This is especially the case with design, where its chief problem is never that this or that product clearly does not work, but rather that such products just do not work as well as certain people might have hoped, and yet those people keep using them in the absence of anything better.[21] Is this not like SETI, scanning background noise from all parts of universe for signs of intelligent life when one has no idea what a sign of intelligent life might look like, or even if intelligent life can be manifested as a sign?

In the light of this critique, it is important to recognise that smart tags like Sterling is celebrating need not be encyclopaedically information-based. Marco Susani has developed scenarios of their use, that, while still centred around 'information', envision more the communication of stories.[22] Stories are selections and arrangements of information; they are partial syntheses. They are meaningful precisely to the extent that they contextualise and are contextualised. They are useful because they orient, inspire and warn, rather than inform. The key to a story is designing its performance and reception, rather than its content.

From this perspective, *Shaping Things* unconsciously manifests the current metahistory that over-valorises information. It proves itself to be mired in the historical specificity of the early digital age, still replicating a faith in computational power that characterised the Artificial Intelligence movement at this era's outset. It is doing exactly what Jean-Francois Lyotard diagnosed in *The Postmodern Condition*, slipping from know-how to data, from meaning to performativity.[23]

Sterling does recognise that all that information does need to be negotiated or at least processed before it is can be useful. And he puts forward three forms of negotiation, each of which marks another revealing error in the thinking behind *Shaping Things.*

2

The first form of negotiation is provided by 'search engines'. For Sterling, as for so many subjected to the metahistory that is Google today, searching almost magically transcends information and attains knowledge. Sterling is not worried about the infinite amount of information that will characterise the internet of things, because, he believes, search engines can always find what is needed.[24]

However, it is crucial to remember that:

a) search engines only find what they are told to look for, and
b) search engines only find what most other people were looking for when looking for something like what you are looking for.

In terms of the first point, the conundrum about what information to attach to a product to make it a Spime returns to those in the future who must work out what about a Spime they would like to be informed. In either case the information is only as useful as the know-how that put it there in the first place or looked for

it in the last place. In terms of the second point, it needs to be constantly pointed out, to junior design students for example, that search engines do not find the truth, or knowledge, merely what is popular. The essence of Google's search algorithms are not dissimilar to Wikipedia, where definitions of things are derived from a combination of whatever is the most and the latest.

Sterling is of course well aware of all this, and highly approving of this open-source epistemology. However, if the point of Sterling's book is to find a way of resisting constraining unacknowledged metahistories, it is not a strong strategy to be dependent upon the hegemonic summation of popular opinion (or, to give the cleverness of the search algorithms their due, popular expert opinion). What is needed is not more information or better ways of searching that information, but higher levels of acumen in ascertaining the value of that information.

3

Sterling is aware of the dangers of a majority-rules version of what is significant, which is why he has an intriguing chapter on MAYA, Raymond Loewy's design mantra: Most Advanced Yet Acceptable. The chapter argues that Loewy (along with all the 4 horseman of the streamlining movement) was not the self-promoter he is often caricatured as; or rather, that if he was, it was part of his designing, not a psychological pathology. Loewy maintained a playboy appearance because design is about leadership, pulling the population out of its inertia toward more 'advanced' futures. In this regard, Loewy is no different to all designers, who must constantly model a 'taste' for innovatively 'good design'. Having acquired social capital through such ostentatiousness, designers are then in a position to "wrangle", that is, to try to direct our attention away from other opportunities and toward specific aspects of the labyrinthine internet of things. Designers negotiate the mass of smart tag historical (popular expert) information for us, deflecting wider opinion in new directions.

However, there are two points that need to be made about this kind of design leadership. Firstly, at this point in design history, and for good political reasons, including our current unsustainability, user-centred designing is doing everything it can to displace this privileging of the charismatic designer and this stigmatising of the recalcitrant consumer. Designers are being taught to spend much more, higher quality time with those they are servicing, not to pick out ways in which these users might be cajoled into new technologies, or even moralistic versions of sustainable living, but to better facilitate users' need-satisfaction. Designers need to learn to follow better, to design for a specified community, rather than to design some predetermined X for a specified community. For example, to take up a previous point, designers do not need information about the decisive failings of this or that; they rather

need to hear from people how they tend to put up with this or that product that *just* manages to work without doing so well; designing in response to hearing this, servicing these nascent complaints, will help those products help people to be more productive, and help people to help those products be more productive.[25]

Secondly, the problem with design over its recent history is its lack of leadership. Too often, leadership has remained at the level of reorienting the form of this or that future product, not at the level of determining *what* future product. Or more importantly, designers too rarely show leadership not so much in terms of doing something, but in terms of refusing to do something. Declining design services to clients that designers do not feel have a place in the future is one of the most powerful ways that designers can lead. Not to mention the even more pro-active project of elimination design.[26]

Sterling's invocation of MAYA, as faux-leadership, is symptomatic of the way many designers seem to do anything to avoid politics today. Better to have a totalised information system backing up any experiment one might undertake than to take a principled position on behalf of a desired future and against another undesired future.

It is particularly unfortunate that in a book advocating design leadership in regard to wrangling attention to the appropriate aspects of any mass of information, the very overt visual communication of the book is so un-exemplary. The back blurb tells us that the book has been "enhanced by the delicately emphatic graphic intelligence of Lorraine Wild." However, this mostly amounts to a variety of word, phrase or paragraph highlighting strategies. There is no attempt to make the graphic design do more meta-views or analyses of the text, or illustrate, extend or oppose the specifics of text in any way. The design remains graphic, with no innovation in the book format to make it work differently. No doubt these were the limits of the brief from the publisher, but couldn't the designer's attempts to resist those limitations be some how smart tagged into the book's graphic design – if those attempts took place?

4

The question in the end falls to what designing actually is that it might be able to wrangle significance out of a pile of over-informed experimental things. Sterling is not a designer, only a design enthusiast,[27] as he makes very clear in the book. Whether or not that is the cause, Sterling, I think in the end characterises design by its exact opposite. In the myths of the origin of design that make up the first chapters of the canonical texts of Alexander, Jones and Lawson, design emerges by differentiating itself from the trial-and-error process of craft work. Design is the development of a visual thinking that manages to intuit what will work best without having to prototype all the ideas that may not work best. Design leaps ahead of craft work by being a particular form of forethought. For Sterling,

design in the time of Spimes is all about 'fabbing', that is, prototyping as much as possible. Because the future is not predictable, design cannot be about forethought, so instead must return to trial-and-error, only this time the 'real-time' testing is accelerated by rapid manufacturing and smart tag documentation.

If the expertise of design has now been reduced to accelerated physical experiments, then there is no particular expertise associated with designers that might lead us to trust their wrangling over others, and so the whole vision recollapses into a democractic encyclopedia, or worse, a blind evolutionary system.

Design is about change, choosing which change to make. Design is taking a direction, and thereby erasing possibilities, and taking responsibility for doing so. Sterling's *Shaping Things* is the dream of a designing that does not have to choose, that always has a reset memory that absolves responsibility.

Whilst there are now 360 first year design students reading his text in a Design History subject at my institution, I am hoping that over the course of that subject they are accelerated out of a passive reception of its insights into ontological design historicism, toward a critical analysis of its version of irresponsible backed-up designing. I know that they will have arrived at the desired destination when they do not feel the need to keep this book on record, just-in-case there is some information in it that might one day prove useful, but instead feel justified in letting it be forgotten.

Notes

1. The promotion of design to the level of change management in complex situations is being championed at the moment by the likes of NextDesign Leadership Institute. See for example the following taken from an NextD interview with Harold Nelson, Founding Director of the Advanced Design Institute: "I noticed that you made reference to bounded and unbounded problems, equating problem solving with the former and design with the latter. What gets confusing is that the history of design and design education suggests the opposite to be the present reality. You and I both know that in undergraduate and graduate design schools around the world today, students are given bounded problem statements and are then encouraged not to rebound or reframe the problem. In most graduate schools of design, students are still discouraged from reframing under the misdirected guise that this is the way the real world works!" ("Patterns in Motion: Examining Design's Reconstruction" http://www.nextd.org/02/04/03/contents.htm [as viewed 10 March 2006]).

2. Derrida's sustained engagement with the idea of the university, from the level of theoretical critique to letters to the French president concerning school-level philosophical teaching, are available in English in the two volumes *The Right to*

Philosophy – Who's Afraid of Philosophy? [trans. Jan Plug; Stanford: Stanford University Press, 2002]; *Eyes of the University* [trans. Jan Plug et al; Stanford: Stanford University Press, 2004]. However I am here paraphrasing elements of "The University without Condition", an article that thinks through the modern university as the profession of the 'as if' in the face of globalisation – in *Without Alibi* [trans. Peggy Kamuf; Stanford: Stanford University, 2002].

3. Jean-Francois Lyotard characterises the human before completing its humanist education as inhuman – *The Inhuman* [trans. Bennington, Geoffrey & Rachel Bowlby; Oxford: Polity, 1991]. Michel Serres characterises the learner as the in-between and the third – *The Troubadour of Knowledge* [trans. Glaser, Sheila & William Paulson; Ann Arbor: University of Michigan Press, 1997]. One of the most powerful readings of the inherently politicising nature of the student is by William Spanos in the final chapter of *The End of Education: Toward Posthumanism* [Minneapolis: University of Minnesota Press, 1993].

4. This use of the ambiguity in the word 'partial' is Sam Weber's – see "It" in *Glyph 4* (1978). Recognition of the way in which learning requires a willingness to unlearn is a trait of the liberation pedagogy of Paulo Freire.

5. "A future that would not be monstrous would not be a future; it would already be a predictable, calculable, and programmable tomorrow. All experience open to the future is prepared or prepares itself to welcome the monstrous arrivant, to welcome it, that is, to accord hospitality to that which is absolutely foreign or strange, but also, one must add, to try to domesticate it, that is, to make it part of the household and have it assume the habits, to make us assume new habits. This is the movement of culture." "Passages – from Traumatism to Promise" in Elizabeth Weber, ed *Points – Interviews 1974–1994* [Stanford: Stanford University Press, 1995] pp. 385–387.

6. I am here alluding to Derrida's etymological analysis of the idea of a 'problem' as that which one throws (*ballein*) forward (*pro*) as a protective projection, a shield: see *Aporias* [trans. Thomas Dutoit; Stanford: Stanford University Press, 1993] pp. 11–13, and "Fifty-Two Aphorisms for a Foreword" in Papadakis, A., Cooke, C., & A.Benjamin eds *Deconstruction Omnibus Volume* [London: Academy, 1988].

7. The end of history, and the end of the world, as times and places of possibility, is a notion that has been examined with typically beautiful thoroughness by Jean-Luc Nancy. See Nancy's use of the notion of eco-technics, a transposition of Heidegger's notion of machination into the discourse of globalisation, as that which forecloses on historical sovereignty in "War, Right, Sovereignty – *Techne*" in *Being Singular Plural*

[trans. Richardson, Robert & Anne O'Bryrne; Stanford: Stanford University Press, 2000]; but in particular see Nancy's essay "Finite History" (in *The Birth to Presence* [trans. Brian Holmes et al; Stanford: Stanford University Press, 1993]) which finds a positive way to experience the end of history.

8. This slogan was made famous as the postmodern Marxism of Frederic Jameson: *The Political Unconscious: Narrative as a Socially Symbolic Act* [Ithaca: Cornell University Press, 1981].

9. Historicism has many meanings from developmental progressivism to the concept of Kuhnian paradigms. It will become apparent that I am using it in the latter ontological sense: that is, the theory that the nature and meaning of things at any one time are the outcome of a distinct constellation that is not carried forward to other times, and which may well be untranslated to other times.

10. "Design History and Design Studies: Methodological, Epistemological and Pedagogical Inquiry" *Design Issues* v11 n1 (Spring 1995).

11. See *What is a Thing?* [trans.W.Barton; Chicago: Henry Regnery, 1967], but also the "Sketches for a History of Being as Metaphysics" in *The End of Philosophy* [trans. Joan Stambaugh; Chicago: University of Chicago Press, 1973].

12. Tony Fry *A New Design Philosophy: An Introduction to Defuturing* [Sydney: UNSW Press, 1999].

13. For a corrective, see the histories of ecology by Donald Worster, in particular "Nature and the Disorder of History" in Soule, Michael & Gary Lease eds *Reinventing Nature?: Responses to Postmodern Deconstruction* [Washington: Island Press, 1995]. See also Daniel Botkin's *Discordant Harmonies: A New Ecology for the Twenty-First Century* [New York: Oxford University Press, 1990].

14. This becomes clearer in another text by Sterling in the proceedings of the final *Eternally Yours* conference, *Time in Design – Product Value Sustenance*: "I don't care if products are perfect. In fact, I prefer my products faulty, messy and simply under construction, because artefacts are better for us that way. Show designers an artefact, and designers really want to solve that problem once and for all, preferably for ever, although this aim is not much more realistic than a novelist thinking that he can write a perfect novel and the world will never require another new novel ever again." (180) In contrast to this designerly fetish for the finished, which I have discussed elsewhere ("Is Design Finished?" *Design Philosophy Papers* Issue 3 [2004]), Sterling promotes 'planned obsolescence' as a strategy to prevent freezing the world in compromised situations.

15. That digitalisation is accompanied by a materialisation that the digital distracts you from noticing is a point made by Vilem

Flusser in *The Shape of Things* [London: Reaktion, 1999] and Ezio Manzini, "Prometheus of the Everyday: The Ecology of the Artificial and the Designer's Responsibility" in Buchanan, Richard & Victor Margolin eds *Discovering Design* [Chicago: University of Chicago Press, 1995].

16. See for example Berkout, Frans & Julia Hertin "De-Materialising and Re-materialising: Digital Technologies and the Environment" *Futures* v36, 2004.

17. See the *Eternally Yours* project and Albert Borgman's work on focal things.

18. This is John Thackara's mild critique of the book in a review that accompanies the online publicity for the book: "Macroscopes" http://mitpress.mit.edu/e-books/mediawork/titles/shaping_webtake/index.html [as at 10th March 2006].

19. Seeley Brown, John & John Duguid *The Social Life of Information* [Boston: Harvard Business School Press, 2000] and Albert Borgmann *Holding Onto Reality: The Nature of Information at the Turn of the Millenium* [Chicago: Chicago University Press, 1999].

20. Here I do not just mean the sort of problems that were exaggerated as Y2K, where dykes in Holland were controlled by software in programming languages that nobody understood anymore. What I mean is that even if the open source movement does ensure the relearnability of any program written now in the future, in other words, even if a piece of data can be decoded into plain English, what cannot be reconveyed, no matter how many datasets and metatags there are, is why that piece of information about this thing was of interest to those people in that place at that time.

21. In some of the best writing in the book, about the arrow-of-time-ness of the human condition, Sterling acknowledges that no product can be perfect, definitely across time, but even for its time. However he fails to heed the converse, that many products are therefore more or less tolerated imperfections: "No material thing can ever achieve full and utter Acceptability. People are too ductile to have their problems solved. People are not parameters for design problems. People are time bound entities transiting from cradle to grave. Any 'solved problem' that involves human beings solves a problem whose parameters must change with time… Properly understood, a thing is not merely a material object, but a frozen technosocial relationship."

22. See "Interaction Contextualised in Space" in *Interactions* (July/August 2005).

23. *The Postmodern Condition* [Minnesota: University of Minneapolis Press, 1984].

24. It is important to note the extent to which Sterling is unknowingly reproducing some of the least post-post-modern gestures in

all this. The dream of a) encyclopaedic knowledge + b) the perfect synthetic tool is German Idealism, for example Hegel.

25. This is Fernando Flores' version of innovation, based on hearing how people are responding to what is around them, rather than for-seeing what people might want around them. See for example, "Innovation by Listening Carefully to Customers" *Long Range Planning*, v26, n3 (1993).

26. See Tony Fry's "Elimination by Design" *Design Philosophy Papers* Issue 4 (2003).

27. I am taking this category, which also covers me, from a line in the Cohen Brothers film, *The Man who wasn't There* (2001).