Our Common Future.
Joining Forces for Histories of Sustainable Design

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Abstract: A common ground is emerging for social and cultural studies of design. Design history is exploring the socially constructed and networked nature of our material surroundings; at the same time, STS is investigating design as the interface between humans and technology. This common ground is particularly interesting where it intersects with the rapidly growing fields of environmental history and environmental humanities. Today, environmental concerns, especially issues of sustainability, are essential parameters in all design practices. However, this 'green revolution' is a glaringly white spot on the design historical map, still awaiting its scholarly historicization. Historical understanding of, and critical reflection on, the rise of sustainability as the primordial trope in design discourse is essential to building a solid knowledge base and to underpin present and future decision-making. This article will argue for the urgency of charting this terrain, and call for design history, design studies, STS and environmental history to join forces in the pioneering efforts at studying histories of sustainable design.

Keywords: STS; design studies; history of design; environment; sustainable design.

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1. Introduction

> There are professions more harmful than industrial design, but only a very few of them. […] Today, industrial design has put murder on a mass-production basis. […] [B]y creating whole new species of permanent garbage to clutter up the landscape, and by choosing materials and processes that pollute the air we breathe, designers have become a dangerous breed.
> (Papanek, 1971, xi)

These lines from the opening of Victor Papanek's book *Design For the Real World* are as provocative today as they were when the book was first published in 1971. Therefore, they also serve as a reminder that the history of sustainable design remains to be written. The provocative power of Papanek's audacious assertions can be attributed to how they run counter to the common conception of the designer as problem-solver; a humanist engineer improving bottom lines and user experiences alike. But from a sustainability perspective, this do-good image is turned upside down: "One of the key and celebrated mantras of design practice is that it is a 'problem solving activity', whereas in so many ways the designed has been problem-creating" (Fry and Kalantidou 2014, 5). And because design history largely has adopted design's self-fashioning as an intrinsically benevolent force, this diametrically different perspective has radical implications for approaches, ideologies and politics of design history as well. Histories of sustainable design, therefore, should be quite different from traditional histories of design.

Papanek, the Austrian-American vagabond designer and theoretician worked on what would eventually become *Design For the Real World* from 1963, and much of it took shape in Scandinavia, where he was guest lecturing at design schools in Stockholm, Helsinki, Oslo and Copenhagen. Papanek's persistent and public call for a radical change in design culture made him a key figure as visions of sustainability gradually rose to the fore of an ideologically and morally charged design discourse (Papanek 1983; 1995; Whiteley 1993; Fry 2009). Over the course of the 1960s, the (blind) faith in progress and prosperity – served up by seemingly endless innovation in science and technology – which had fuelled modern design since the industrial revolution, took some serious blows. In design discourse, what started as a form of consumer activism soon evolved into environmentalism (Fallan 2011), and this transitional phase could serve as a good point of departure from which to explore how visions of sustainability have been formed and mediated in the history of design.

Today, sustainability is an essential parameter in all design practice, education, research and mediation. However, this 'green revolution' is a glaringly white spot on the design historical map, still awaiting its scholarly historicization. Tony Fry's depiction of design history's understanding of design as "historically decontextualized" and "a particularist concern" (Fry 2009, 122) is quite exaggerated and unwarranted in light of the field's development over the last decades, but he does have a point that it has hitherto not contributed much by way of connecting design's pasts to its role in creating sustainable futures. Design history would do well to accept his challenge. But the importance of charting the history of sustainability is not just the purview of historians of design. Firstly, it should concern historians of ideas, technology and the environment as much as it should design historians. Researching the design history of sustainability requires new, interdisciplinary collaborations and approaches, as well as

new methods of inquiry. Secondly, in the current climate it is hard to imagine a field of historical scholarship with greater contemporary relevance: historical understanding of, and critical reflection on, the rise of sustainability as the primordial trope in design discourse is essential to building a solid knowledge base and to underpin present and future decision-making. Scrutinizing past ideologies and policies can provide a unique vantage point for asking tough questions of current and future ideologies and policies (Cox 2013). As such, the history of sustainable design might also be thought of as providing the kind of instrumental legitimacy that some design studies scholars keep demanding from design history (Tonkinwise 2014). But even beyond such blunt instrumentalism, this field of inquiry may prove to become that common ground – the interest in our common future – which will make design history more relevant to the humanities and social sciences in general (Margolin 2009; Fallan 2013b). Given the immense societal significance of sustainability and the crucial role played by design in its past, present and future, histories of sustainable design should resound well both in contemporary discourse and cultural history broadly defined. It should be evident, then, that "making society through science and technology" – sustainable or unsustainable – is "a matter of design".

2. A New Design History

Design history has a relatively brief history as a discipline or independent field of inquiry. It has its roots in the radicalization of the social and human sciences in general and particularly the renewal of art history in the 1970s. Known as "New Art History", this by now established tradition entailed an expansion of art history's subject matter to include also expressions of visual culture that were normally excluded from conventional conceptions of art (Harris 2001). In this context, design history emerged as a field of study in its own right out of a growing dissatisfaction with the theoretical framework and methodological tools offered by traditional art history. Design history acknowledged the many essential differences between the mass-produced utilitarian objects and the unique artwork which have dominated art history's subject matter. As a consequence, it has become a fundamentally interdisciplinary field, drawing on e.g. sociology, anthropology, social history, women's studies, cultural studies, the history of technology and science and technology studies (STS). The last couple of decades have been very eventful in this respect, and international design history has in part ventured quite far afield from its roots in art history (Fallan 2010).

Recently, design history has toned down the conventional focus on persons (designers), objects (artwork), styles, movements, periods, etc., and is instead becoming increasingly concerned with other aspects of and

actors in design culture. There is a growing interest in the roles of mediators, critics, curators, educators, consumers and users, as well as arenas like journalism, exhibitions and education. A similar shift in focus has taken place in the history of technology and STS as well, and also because the demarcations between 'green' technology and 'green' design are blurred at best, there should be much to gain by a joint venture in exploring the history of sustainable design. Building on these historiographical and methodological developments, such a joint venture will contribute to a design history capable of analysing what arguably is the most important shift in design thinking since the industrial revolution. From a design history perspective, this topic can be examined e.g. by asking how designers, educators, theorists, critics, promoters, consumers and users have conceptualized visions of sustainability.

However, researching the design history of sustainability requires not only an expansion of the field's subject matter into hitherto unchartered waters; it also requires a reorientation of approach, from examining primarily the meanings of material culture to exceedingly exploring a far less stable, tangible and contained domain dominated by ideological discourse and moral concerns seamlessly interwoven with oral, textual and visual culture. This reorientation will also demand a new set of methodological tools, and this field of inquiry should entail such a methodological development of design history, e.g. moving the discipline into the era of the Digital Humanities.

3. First Steps Towards a History of Sustainable Design

As mentioned, the historical conditions for, and development of, sustainable design is a glaringly white spot on the design historical map. This is not for lack of interest – quite the contrary: recent scholarship in the field has pointed out the need to pursue this topic, but has thus far made only cursory and minuscule attempts. Purporting to offer an overview of where design history stands today, Grace Lees-Maffei and Rebecca Houze's *The Design History Reader* (2010) includes a section on "Sustainable Futures, 1960-2003". It is indicative of the dearth of historical research on this topic, though, that five of the seven texts included here are primary sources in the form of manifestos or social critique such as those by Vance Packard and Victor Papanek, and the remaining two are excerpts drawn from larger works with a much broader scope in which the issue of sustainability is but one of many facets. The same scarcity is evident in the recently published *The Handbook of Design for Sustainability*. This tome promisingly opens with a substantial section on "historical and theoretical perspectives" (Walker and Girard 2013, 13-99), motivated by the editors by the claim that "the historical context leading up to our contemporary concerns about sustainability is especially important to under-

stand and absorb" (Walker and Girard 2013, 13). However, despite this declaration, the six chapters subsumed under this heading are primarily concerned with the present and the future. The occasional cursory glance at the past notwithstanding, these texts are not histories of sustainable design in any sense that a historian would recognise.

The historical importance of the seminal figure of Papanek has received some attention, but it is still only fragmentary (Clarke 2010; 2013; Fiender and Geisler 2010). That other major ecologically attuned renegade designer of the twentieth century, Richard Buckminster Fuller, on the other hand, has been the subject of a massive surge in scholarly attention lately – and the interest in his remarkably ambitious and comprehensive design philosophy reaches far beyond the field of design history (Sieden 1989; Pawley 1990; Baldwin 1996; Zung 2001). This lopsidedness might perhaps be partially explained by the fact that while Papanek castigated consumer society and proposed low-tech alternatives to conventional industrial manufacture, Fuller, in stark contrast, advocated high-tech solutions that would elevate the standard of living for all and profiteered from the military-industrial complex (Margolin 1998, 84; Anker 2010, 69-72).

Studies of a broader scope, however, are few. Taking a history lesson from how, "[w]ith the exception of Papanek, Fuller, and a few other critics and visionaries, designers have not been able to envision a professional practice outside of the consumer culture", Victor Margolin urges designers to rethink their own profession "to earn their living in the *culture of sustainability*" (Margolin 1998, 86). Pointing at a few moments in the history of sustainable design, Martina Keitsch has provided a brief sketch of its main philosophical concepts (Keitsch 2012). Similarly, Pauline Madge has outlined the recent history of ecological design, broadly characterized as a conceptual move from the commercially embraced "green design" fad of the 1980s via the more ideologically committed 'ecodesign' initiatives of the 1990s through to its recent incarnation as 'sustainable design' as social critique with real potential to encourage comprehensive change in design practice (Madge 1997).

In response to Tony Fry's accusation, mentioned above, that design history is contributing to, rather than challenging, the unsustainability of contemporary design culture, Anne Massey and Paul Micklethwaite offer examples from the history of design and the design history literature that could be said to form a proto-design history of sustainability. They suggest that the significant interest bestowed upon episodes in the history of design, such as the Arts and Crafts Movment's attention to materials and the environment and the efforts at designing with minimal use of resources which characterized the British wartime Utility Scheme, lends itself to a re-reading of design history in terms of sustainability (Massey and Micklethwaite 2009). From an educational perspective, Robert Crocker has argued that the reason why design history has seemed incapable of engaging with sustainability can be traced to an outmoded conception of

what design is, and proposes a new direction for design history informed by social and environmental history (Crocker 2010).

In her introduction to a recent special issue of *Design and Culture* on "Sustainability's Prehistories", Panayiota Pyla (2012) notes that: "now that sustainability has the added burden of no longer being at the margins, but at the center of design concerns, the realm of design has the responsibility to vigilantly consider how this 'magic word of consensus' came about". She goes on to argue that a history of sustainable design is needed:

> because it can introduce critical angles from which to contemplate the ambiguities, limitations, and potentials of sustainability. Not only in a one-way direction, whereby history teaches lessons for today […]. Rather, by critically interpreting earlier conceptions of nature, ecology, environment, and sustainability, history can lead to reconceptualizations of not only design tasks and priorities, but even the methods for history itself. (Pyla 2012)

This latter is a compelling argument, and one that should be responded to. Unfortunately, though, Pyla's own special issue hardly at all discusses sustainability in the history of design, as both she and her contributing authors are concerned almost exclusively with the history of architecture. The same can be said of Peder Anker's otherwise engaging account *From Bauhaus to Eco-house*, which seeks to locate the origins of ecological design in the context of early modernist design theory (Anker 2010). The two discourses – design and architecture – certainly have commonalities and points of convergence – but they are by no means interchangeable.

This tentative treatment, or circumscription, of sustainability in the history of design demonstrates that the topic is seen as urgent in design history today. Twenty years ago, Pauline Madge (1993) provided a pioneering and very valuable historiographical review that sought to link work relating to sustainability issues in design activism and environmental history to design history and thereby provide a basis from which to develop a design history of sustainability. It is high time her call is heeded.

4. Design Culture and Sustainability as Common Ground

Our culture is a culture of design (Highmore 2009; Fallan 2013a). Design is the interface between us and the world. Everywhere. Always. But why, as Stuart Kendall asks, is this so poorly reflected in current research in the humanities, "when design, in all of its myriad forms, is manifestly both the most significant force shaping our lives today and so widely misunderstood?" (Kendall 2011, vii) We might currently be experiencing a window of opportunity for design history, however, as the so-called 'material turn' is spreading across the humanities and scholars from a broad range of fields are converging on a growing cluster of ontological and

epistemological theories known as "new materialities" (Coole and Frost 2010; Dolphijn and Van der Tuin 2012). What we are witnessing is that:

> an increasing interest in material culture among historians in general is generating research output in which design history gains recognition. Not only do books stemming from "outside the congregation" include design historians among their contributors as well as scholars from neighboring fields writing about design […], but some non-design historians even explicitly comment on the influence and significance of design history for history at large. (Fallan 2013b, 17)

Crucially, design culture is not elite culture, but everyday culture (Fallan 2010, viii). As Ben Highmore argues, it is "the ordinary, the ubiquitous and established" – not the spectacular, rare and new – that best illustrates the significance of design culture (Highmore 2009, 4). In a current context, thinking of design culture as mass material culture makes it a very short step indeed to histories of sustainable design. The quest for a sustainable future is, arguably, the most significant aspect of recent and contemporary design culture, and one that is impossible to tackle without conceiving of our material environments on a massive scale and as everyday: the implications that the material environment has for the natural environment (and vice versa, one might argue), are best assessed when design culture is understood as mass culture, everyday culture.

But although matter has begun to matter in the humanities, the focus has chiefly been on the meanings and performances of artefacts and their interactions with people and roles in society: "Neither the processual materialization of objects, nor their ecological destiny, seems of much interest to scholars in the humanities and the social sciences" (Bedos-Rezak 2013, 50). Histories of sustainable design, however, will require a broader sense of, and attention to, materialites below and above, as it were, their manifestations as artefacts.

A renewed and expanded notion of materiality does not, however, imply a marginalization of the role of human actors. Peder Anker's plea for a humanist, anthropocentric history of environmental design chimes well with recent developments in design history and design studies, as well as in the history of technology and science and technology studies, towards greater interest in the reciprocal relations between humans and things: "The primacy of texts and natural sciences in the hierarchy of today's environmental historiography […] may explain why design has been largely ignored by historians of environmentalism and environmental historians alike" (Anker 2010, 127). Furthermore, argues Anker, because environmental history largely has "focused on issues related to the protection of wilderness, an idea that by definition stands in contrast to designed landscapes", the rich history of efforts at designing ecologically sound objects, buildings and landscapes has eluded the field (Anker 2010, 7).

Despite this negligence of the crucial role of design, the broader concept of sustainable development has long been a key topic within environmental history. In recent years, spurred by the increasing exchange between history of technology and environmental history, issues related to sustainability and technological design have moved to the forefront of many scholars' work in environmental history (Jørgensen 2011; Egan [forthcoming]). Interdisciplinary research into the histories of sustainable design has the potential to contribute to the critical re-examination of sustainability within all three disciplines.

Historical studies of sustainability in design discourse will also require engaging with scientific knowledge and the history of scientific knowledge. Here, too, there is much to gain from joining forces, not only with STS, but also with environmental history. As Sara B. Pritchard argues, that discipline has generated "fresh understandings of historical phenomena and causality" by "incorporating knowledge from the ecological sciences". It is important to acknowledge, though, she continues, that "at the same time, the environment and ecology are historical categories and objects to be examined and understood. In other words, they are not simply *explanans*" (Pritchard 2013, 9). Pritchard then prescribes varieties of constructivist frameworks drawn from STS as an apt way of uncovering the historical contingencies of environmental knowledge and systems alike.

Some historians of science, though, have lamented that STS recently seems to have taken a "contemporary turn", leading to a segregation of historical studies from STS (Daston 2009). Whereas historical studies were fundamental in establishing the field, much STS has become more concerned with contemporary phenomena and processes. This "turn" has been attributed to the strong position of irreductionist program since the 1980s, especially Actor-Network Theory, and the accompanying reliance on ethnomethodology (Asdal and Moser 2012). This does not mean, however, that STS is no longer relevant to historical studies – on the contrary, STS may indeed prove invigorating and inspire new approaches to the writing of history. Kristin Asdal, for instance, argues that a new and more dynamic understanding of the interplay – or interweaving – of *text* and *context* may be "a crucial and potentially fruitful notion" able to "draw STS and history together": "Rather than drifting apart, historians to the archives and STS scholars to actions as they unfold in an ongoing practice, text is an object of research to which both historians and ethnographers (and others) can meet and (often must) relate" (Asdal 2012, 397).

In light of the above discussion about the "material turn", I would add to this that artefacts might also hold the same promise. When the anthropologically fuelled version of Material Culture Studies emerged in the UK in the late 1980s, it became a major source of fascination and inspiration to a design history moving away from its art historical origins. However, much like historians of science and technology have criticised the

contemporary focus of STS, so design historians criticised the contemporary focus of Material Culture Studies (Fallan 2010, 40). But then the relationship between the historian and the sociologist has always been "a nervous romance" (Myhre 1999).

Over the last decade or two STS has proved highly influential on design studies and design history as these fields have been exploring the socially constructed and networked nature of our material surroundings (MacKenzie and Wajcman 1985; Bijker, Hughes and Pinch 1987; Atkinson 2010), as well as the heterogeneous relationships between people and things (Latour 2005; Fallan 2008). At the same time, STS is increasingly investigating design as the interface between humans and technology (Oudshoorn and Pinch 2005; Oldenziel and Zachmann 2008). As a result of this mutual rapprochement, we now see the dawn of exiting hybrid forms of scholarship that bodes well for future collaborative efforts (Shove *et al*. 2007; Guins 2014).

In his keynote lecture at the 2008 Design History Society Conference, tellingly named *Networks of Design*, Bruno Latour suggested a range of ways in which studies of design could facilitate the "drawing things together" that he so persistently advocates: "The more objects are turned into things – that is, the more matters of facts are turned into matters of concern – the more they are rendered into objects of design through and through" (Latour 2009, 2). Studying design, he said, entails studying "gatherings", entanglements, collaborative efforts, cumulative changes, practical skills and ethical concerns – all issues of great relevance to addressing the ecological crisis.

The insight gleaned from STS that the production of knowledge – as well as of doubt and ignorance – is historically contingent and distinctly social is crucial to studies of sustainability in design history. The climate debate is a prominent and, in our context, pertinent example of such a process in which, "[a]t times, scientific rules even yield to other imperatives – to the need to reduce complexity and to reach decisions within reasonable spans of time, for instance" (Uekotter 2013, 40). Studying the production of deficient knowledge – what is becoming known as "agnotology" – writes Frank Uekotter, "may serve as a welcome reminder that knowledge is more than an issue for academia" (Uekotter 2013, 40). The history of how sustainable solutions have been envisioned in design discourse provides precisely such a real-life setting where decision-making and practical action takes place with more or less conscious reference to a constantly changing, complex, chaotic and partial knowledge base.

That there is a common ground emerging around the issue of sustainability at the intersection of design history, STS and environmental history is convincingly illustrated also by the work of Finn Arne Jørgensen on what he calls "everyday environmentalism":

> "Environmental historians", he writes, "in particular those con-

> cerned with consumer culture, are well advised to carefully consider the complex and changing relationships among designers, consumers, technologies, and commodified products on one side, and environments, natures, and our ideas and values about nature on the other". (Jørgensen 2013, 73)

To do so, though, environmental historians should, I propose, join forces with STS scholars and design historians in a common future for a common past.

5. Possible Ways Forward: Visions of Sustainability

Although the entire field of sustainable design lies open to and uncharted by design history, an exhaustive historical survey of this field is a momentous task. Rather than trying to move forward in all directions, it can be advisable to identify suitable approaches and sectors for a first set of inroads. One such approach could be to focus attention on how sustainability has been envisioned and visualised in the history of design since the 1960s, and how these visions have varied between different (sub)discourses and arenas and changed over time. A major appeal of this approach is its feasibility: delimitating the scope to *visions* of sustainability has the advantage of sidestepping the issue of qualitatively assessing actual consequences of purportedly sustainable design solutions – a task that is notoriously difficult to tackle in historical inquiry. Analysing design culture's past visions for a sustainable future also will provide an appropriate model, and comparative knowledge, for understanding contemporary design culture's visions for a sustainable future. Although by no means a mainstream approach, examples of this type of historical studies of past visions of the future can be found, especially in the history of technology (Corn and Horrigan 1996). It can also be seen as related to the rich tradition of avant-garde studies in art history (Coles and Rossi 2013). That connection is by no means a far-fetched as it might first appear – as Paul Denison asks: "Might we suggest […] that sustainable design is utopia revisited, and that it bears not a little similarity to modernism's call for restraint and economy of means?" (Denison 2008).

This general approach can then be refined in various ways. One option is to device a three-tier structure, examining three different types of visions of sustainability in the history of design in three different locations/arenas:

- Ideological visions: sustainability in design education and research;
- Pragmatic visions: sustainability in professional design discourse;
- Popular visions: sustainable design in mass-media and popular culture.

Adopting this structure will enable us to follow the notions of sustainability as they travel through different layers, or spheres, of design culture and evolve over time. These visions of sustainability can be mapped and investigated chiefly through textual and visual sources, ranging from conventional archival artefacts to ubiquitous online material. A key category, though, would be magazines of various kinds, from professional trade journals to the popular press. Much of this historical material is now digitized and available through online databases, and therefore lends itself very well to interpretative methods drawn from the Digital Humanities. To give an example: using text and image recognition software, we can map occurrences of the word 'green' and the colour green in imagery on the pages of *Time* magazine over time, providing a visualization of when 'green' became a mainstream trope for sustainable design.

From a Nordic perspective, our regional context provides an opportune setting for exploring visions of sustainability the history of design, partly because the ideas promoted by Papanek and others had a massive impact on design education and subsequent generations of design practitioners, but also because the Nordic societies proved a fertile soil for political activism, counter culture and the environmental movement in general, and because Nordic political and academic culture has produced important contributions to the broader international discourse on ecological awareness and sustainable development, such as the 1986 Brundtland commission report *Our Common Future*, Erik Dammann's organization The Future in our Hands (Fremtiden i våre hender) and Arne Næss's deep ecology movement. Again, this is simply a suggested place to start; histories of sustainable design will of course have to wander far wider into the world – in fact, the topic might actually be an efficient way of catalysing another long overdue development in design history, STS and environmental history alike: broadening the fields' geographies.

In methodological and historiographical terms, studying *visions* of sustainability in the history of design ties in with current developments in the field of design history internationally. The emerging interest in the *mediation* of design in various ways and on different arenas (Lees-Maffei 2009) provides a useful context for the approach outlined here. Herein lies the potential to push this development in a new direction through the exploration of digital technology in charting and analysing visions and mediation in design culture – one benefit of which will be adding a quantitative aspect to methodological approaches hitherto fundamentally enshrined in the qualitative realm. The capacity to move research beyond the conventional dichotomy of qualitative and quantitative methods is a defining feature of the Digital Humanities.

The Digital Humanities could be thought of as a trading zone and meeting place for the inter- and transdisciplinary exchanges that histories of sustainable design entail. As environmental history has been a pioneer field in appropriating and contributing to the development of Digital

Humanities, this particular collaboration holds great promise in devising histories of sustainable design capable of reforming design historical methodology through linking it with the rapidly evolving Digital Humanities. The exploration of digital mapping, visualization technologies, and topic modelling opens up for investigating new research methods based on digital technology and their potential application to design history. The Digital Humanities are becoming a new exciting modality of research taking advantage of the computer and the internet in archiving and examining large amount of data, providing and producing various tools that can be used for accessing and examining digital archives (Gold 2012). It seems especially promising for studies that deal with the examination of non-textual material, such as images, time-based media, audio, film and design (Bentkowska-Kafel *et al.* 2005; Bailey and Gardiner 2010). Design is fundamentally *networked* in character (Fallan 2008; 2012), and this feature is what makes it so integral to the Digital Humanities – both as a generative component, but also as subject matter (Burdick *et al.* 2012). There should be exciting potential, then, in exploring the possibilities of Digital Humanities for design history, both for expanding its media of research, for facilitating research exchange and dialog between disciplinary traditions, and for finding new forms of research dissemination (Berry 2012).

Whichever way visions of sustainability are investigated in the history of design, doing so might very well constitute an effort at heeding the challenge posed by Latour to scholars of design in the context of the current ecological crisis: "where are the visualisation tools that allow the contradictory and controversial nature of matters of concern to be represented?" (Latour 2009, 9).

6. Conclusion

Perhaps it is worth returning to the problem-solving ethos of design practice, which got such bad press from Victor Papanek. Re-appraising this attitude and identity might provide an opportunity to move beyond the 'doom and gloom' which has characterized much environmental history. Beyond the many tales of pragmatic, piecemeal problem-solving that design practice is engaged in, design history abounds with accounts of holistic, utopian visions. Fuller, for instance, in all his difference from Papanek, believed that: "politics will be obsolete" by the year 2000, if only designers could be in charge (Fuller cited in Anker 2010, 80). With the crucial caveat that the ecological "design-science revolution" (Fuller 1981, xix) that Fuller preached implied the undermining of democratic society (Anker 2010, 81) – participation is an essential parameter of the sustainable development, without which it could easily slide into "ecofascism" (Madge 1997, 52) – his remarkable efforts at employing design thinking to solve complex environmental problems can serve as an exam-

ple of the kind of positive angle which can be discerned when studying visions of sustainability in the history of design. In the words of Victor Margolin:

> Designers have the ability to envision and give form to material and immaterial products that can address human problems on a broad scale, and contribute to human well-being […] well beyond green design or ecodesign which, thus far, have represented designers' attempts to introduce ecological principles to the market economy. (Margolin 1998, 90)

This re-appraisal of the problem-solving ethos of design practice must not, of course, entail a return to the hagiographic, genuflecting praise of the designer as genius and design as a panacea for everything that is wrong with the world. A design history geared to examine issues of sustainability needs to consider "design as practice of decision-making as well as form-making, and of problem-questioning as well as problem-solving" (Hall 2009, 59). The problem-solving, and problem-questioning, ethos of design therefore warrants renewed attention if this is directed to the ways in which it has been applied to envision more sustainable futures. Exploring visions of sustainability in the history of design, then, could contribute a more positive, solution-oriented outlook for our common future of the past.

References

Anker, P. (2010) *From Bauhaus to Ecohaus: A History of Ecological Design*, Baton Rouge, LA, Louisiana State University Press.

Asdal, K. (2012) *Context in Action – And the Future of the Past in STS*, in "Science, Technology & Human Values", 37 (4), pp. 379-403.

Asdal, K. and Moser, I. (2012) *Experiments in Context and Contexting*, in "Science, Technology & Human Values", 37 (4), pp. 291-306.

Atkinson, P. (2010) *Computer*, London, Reaktion.

Bailey, C. and H. Gardiner (2010) *Revisualizing Visual Culture*, Farnham, Ashgate.

Baldwin, J. (1996) *Bucky Works: Buckminster Fuller's Ideas for Today*, New York, John Wiley & Sons.

Bedos-Rezak, B.M. (2013) *Mutually Contextual: Materials, Bodies, and Object*, in P. N. Miller (ed.), *Cultural Histories of the Material World*, Ann Arbor, The University of Michigan Press, pp. 47-58.

Bentkowska-Kafel, A., Cashen, T. and Gardiner, H. (eds.) (2005) *Digital Art History,* Bristol, Intellect.

Berry, D.M. (ed.) (2012) *Understanding Digital Humanities*, Basinstoke, Palgrave

Macmillan.

Bijker, W., Hughes T. and Pinch T. (eds.) (1987) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, Cambridge, MA, MIT Press.

Burdick, A., Drucker, J., Lunenfeld, P., Presner, T. and Schnapp, J. (2012) *Digital_Humanities*, Cambridge, MA, MIT Press.

Clarke, A. (2010) *The Anthropological Object in Design: From Victor Papanek to Superstudio*, in A. Clarke (ed.), *Design Anthropology: Object Culture in the 21st Century*, Vienna, Springer Verlag.

Clarke, A. (2013) *'Action Speaks Louder': Victor Papanek and the Legacy of Design Activism*, in "Design and Culture", 5 (2), pp. 151-168.

Coles, A. and Rossi, C. (eds.) (2013) *The Italian Avant-Garde: 1968-1976*, New York, Sternberg Press.

Coole, D. and Frost, S. (eds.) (2010) *New Materialisms: Ontology, Agency, and Politics*, Durham, NC, Duke University Press.

Corn, J.C. and Horrigan, B. (1996) *Yesterday's Tomorrows: Past Visions of the American Future*, Baltimore, Johns Hopkins University Press.

Cox, P. (2013) *The Future Uses of History*, in "History Workshop Journal", 75 (1), pp. 125-145.

Crocker, R. (2010) *What is History and Theory for Sustainable Design Education?*, paper presented at *Connected 2010. 2nd International Conference on Design Education*, 28 June 1 July, University of New South Wales, Sydney, Australia.

Daston, L. (2009) *Science Studies and the History of Science*, in "Critical Inquiry", 34 (4), pp. 798-816.

Denison, P. (2008) *Histories and Utopias: Learning from Les Modernistes*, paper presented at the *Changing the Change Conference*, Turin, 10-12 July.

Dolphijn, R. and Van der Tuin, I. (eds.) (2012) *New Materialism: Interviews & Cartographies*, Open Humanities Press.

Egan, M. (forthcoming) *The History of Now: Decoding Environmental Sustainability*, Cambridge, MA, The MIT Press.

Fallan, K. (2008) *Architecture in Action: Traveling with Actor-Network Theory in the land of architectural research*, in "Architectural Theory Review", 13 (1), pp. 80-96.

Fallan, K. (2010) *Design History: Understanding Theory and Method*, Oxford, Berg Publishers.

Fallan, K. (2011) *'The "Designer" – the 11th Plague': Design Discourse from Consumer Activism to Environmentalism in 1960s Norway*, in "Design Issues", 27 (4), pp. 30-42.

Fallan, K. (2012) *Introduction*, in K. Fallan (ed.), *Scandinavian Design: Alternative Histories*, London, Berg Publishers, pp. 1-12.

Fallan, K. (2013a) *Culture by Design: Co-Constructing Material and Meaning*, in K. Aukrust (ed.), *Assigning Cultural Values*, Frankfurt am Main, Peter Lang, pp. 135-163.

Fallan, K. (2013b) *De-tooling Design History: To What Purpose and for Whom Do We Write?*, in "Design and Culture", 5 (1), pp. 13-19.

Fiender, M. and Geisler, T. (2010) *Design Criticism and Critical Design in the Writings of Victor Papanek (1923–1998)*, in "Journal of Design History", 23 (1), pp. 99-106.

Fry, T. (2009) *Design Futuring: Sustainability, Ethics and New Practice*, Oxford, Berg Publishers.

Fry, T. and Kalantidou, E. (2014) *Design in the Borderlands: An Introduction*, in T. Fry and E. Kalantidou (eds.), *Design in the Borderlands*, London, Routledge, pp. 1-11.

Fuller, R.B. (1981) *Critical Path*, New York, St. Martin's Press.

Gold, M.K. (ed.) (2012) *Debates in the Digital Humanities*, Minneapolis, University of Minnesota Press.

Guins, R. (2014) *Game After: A Cultural Study of Video Game Afterlife*, Cambridge, MA, MIT Press.

Hall, P.A. (2009) *True Cost Button-Pushing: Re-Writing Industrial Design in America*, in "Design Philosophy Papers", 7 (2), pp. 59-70.

Highmore, B., (2008) *General Introduction: A Sideboard Manifesto: Design Culture in an Artificial World*, in B. Highmore (ed.), *The Design Culture Reader*, London, Routledge, pp. 1-11.

Jørgensen, F.A. (2011) *Making a Green Machine: The Infrastructure of Beverage Container Recycling*, New Brunswick, NJ, Rutgers University Press.

Jørgensen, F.A. (2013) *The Backbone of Everyday Environmentalism: Cultural Scripting and Technological Systems*, in D. Jørgensen, F.A. Jørgensen, and S.B. Pritchard (eds.), *New Natures: Joining Environmental History with Science and Technology Studies*, Pittsburgh, University of Pittsburgh Press, pp. 69-84.

Keitsch, M. (2012) *Sustainable Design: A Brief Appraisal of its Main Concepts*, in "Sustainable Development", 20 (3), pp. 180-188.

Kendall, S. (2011) *The Ends of Art and Design*, Chadron, NE, Infra-Thin Press.

Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network Theory*, Oxford, Oxford University Press.

Latour, B. (2009) *A Cautious Prometheus? A Few Steps toward a Philosophy of Design (with special attention to Peter Sloterdijk*, in J. Glynne, F. Hackney and V. Minton (eds.), *Networks of Design: Proceedings of the 2008 Annual International Conference of the Design History Society* (UK) University College Falmouth 3-6 September, Boca Raton, Universal-Publishers, pp. 2-10.

Lees-Maffei, G. (2009) *The Production-Consumption-Mediation Paradigm*, in "Journal of Design History", 22 (4), pp. 351-376.

Lees-Maffei, G. and Houze, R. (eds.) (2010) *The Design History Reader*, Oxford, Berg Publishers.

MacKenzie, D. and Wajcman, J. (eds.) (1985) *The Social Shaping of Technology*, Milton Keynes, Open University Press.

Madge, P. (1993) *Design, Ecology, Technology: A Historiographical Review*, in "Journal of Design History", 6 (3), pp. 149-166.

Madge, P. (1997) *Ecological Design: A New Critique*, in "Design Issues", 13 (2), pp. 44–54.

Margolin, V. (1998) *Design for a Sustainable World*, in "Design Issues", 14 (2), pp. 83–92.

Margolin, V. (2009) *Design in History*, in "Design Issues" 25 (2), pp. 94-105.

Massey, A. and Micklethwaite, P. (2009) *Unsustainability: Towards a New Design History with Reference to British Utility*, in "Design Philosophy Papers", 7 (2), pp. 123-135.

Morris, J. (2001) *The New Art History: A Critical Introduction*, London, Routledge.

Myhre, J.E. (1999) *Historikeren og sosiologen– en nervør romanse?*, in "Nytt norsk tidsskrift", 16 (4), pp. 321-335.

Oldenziel, R. and Zachmann, K. (eds.) (2008) *Cold War Kitchen: Americanization, Technology, and European Users*, Cambridge, MA, MIT Press.

Oudshoorn, N. and Pinch, T. (eds.) (2005) *How Users Matter: The Co-Construction of Users and Technology*, Cambridge, MA, MIT Press.

Papanek, V. (1971) *Design for the Real World: Human Ecology and Social Change*, New York, Pantheon Books.

Papanek, V. (1983) *Design for Human Scale*, New York, Van Nostrand Reinhold Co.

Papanek, V. (1995) *The Green Imperative: Ecology and Ethics in Design and Architecture*, New York, Thames and Hudson.

Pawley, M. (1990) *Buckminster Fuller*, London, Trefoil.

Pritchard, S.B. (2013) *Joining Environmental History with Science and Technology Studies: Promises, Challenges, and Contributions*, in D. Jørgensen, F.A. Jørgensen, and S.B. Pritchard (eds.), *New Natures: Joining Environmental History with Science and Technology Studies*, Pittsburgh, University of Pittsburgh Press, pp. 1-17.

Pyla, P. (2012) *Sustainability's Prehistories: Beyond Smooth Talk – Oxymorons, Ambivalences, and Other Current Realities of Sustainability*, in "Design and Culture", 4 (3), pp. 273-278.

Shove, E., Watson, M., Hand, M. and Ingram, J. (2007) *The Design of Everyday Life*, Oxford, Berg.

Sieden, L.S. (1989) *Buckminster Fuller's Universe: An Appreciation*, New York,

Plenum Press.

Tonkinwise, C. (2014) *Design Studies: What Is It Good For?*, in "Design and Culture", 6 (1), pp. 5-43.

Uekotter, F. (2013) *Farming and Not Knowing: Agnotology Meets Environmental History*, in D. Jørgensen, F.A. Jørgensen, and S.B. Pritchard (eds.), *New Natures: Joining Environmental History with Science and Technology Studies*, Pittsburgh, University of Pittsburgh Press, pp. 37-50.

Walker, S. and Girard, J. (eds.) (2013) *The Handbook of Design for Sustainability*, London, Bloomsbury Academic.

Whiteley, N. (1993) *Design for Society*, London, Reaktion Books.

Zung, T.T.K. (2001) *Buckminster Fuller: Anthology for the New Millennium*, New York, St. Martin's Press.