Commentaries on the Special Issue on Practice-Oriented Approaches to Sustainable HCI

Commentary I:
One Practice Among Many: An Ecology of Practices in Sustainable HCI

CARL DISALVO, Georgia Institute of Technology

As evidenced by this special issue, *practice* is a subject of considerable interest in sustainable HCI. This includes studying everyday practices and their relation to sustainability, and considering practice as a unit of design [Kuijer et al. 2013], that is, as something that might be approached in a manner akin to the design of products and services. This turn towards practices and practice theory is an important contribution to the development of HCI because it focuses research and design attention toward the common activities of life and how those common activities are woven together with a wide range of sustainability concerns. For instance, through investigations into the practices of repair we can gain valuable insight into tactical alternatives to the prevailing logics of planned obsolescence [Wakkary et al. 2013]. Similarly, attending to the corporeal aspects of the everyday, from the sensation of cold feet [Pink et al. 2013] to the experience of walking [Bidwell et al. 2013], reminds us that sustainability is a lived endeavor.

In the tradition of critical reflective HCI [Sengers et al. 2005], in this essay I offer another way to conceptualize practices, and specifically, the relation of design to everyday practices and sustainable HCI. Critical and reflective approaches play an important role in sustainable HCI by analyzing the epistemologies that undergird research and design, and offering generative interpretations that can be used to produce interventions and ever-thicker descriptions. In this essay, I provide a shift in perspective that calls attention to the relational character of practices and explicitly includes design as being among those everyday practices.

In discussing 'design' I'm referring to design within HCI specifically, but most of my assertions and arguments may also be extended to design more broadly. What is most significant to this special issue is that the perspectives of practice theory offers

26

researchers a productive way to describe and analyze contemporary design, which seems to be overflowing its historical and professional boundaries. Indeed, design seems to be merging into increasingly hybrid forms with management and organizations, science and technology, the arts and liberal arts—and sustainable HCI is a salient example of this hybridity. With regards to regards to sustainable HCI itself, as the field begins to move beyond issues of definition, practice theory offers a way to identify the myriad interrelated particularities of lived sustainability and invent new courses of action for design within HCI.

If we take the practice turn seriously, we should examine the practice of design too. At times it seems as if design is set outside of everyday practices: as if there is design and then there are everyday practices. At other times it seems that design is considered to be an integrative practice that affects other practices, without itself being effected. Both of these common perspectives on the relationship between design and other practices are problematic because they ascribe design with a privileged autonomy of practice. Examples of this can be found across design, from professionalized design thinking to the research-through-design approaches of HCI. To counter this autonomy of design, inspired by the work of science studies scholar Isabelle Stengers [2005], I propose we consider that there are *ecologies of practices*—activities, habits, affects, and effects that couple and give rise to new conditions and potentials. This notion of an ecology of practices can add to much of the current work on everyday practices and sustainable HCI. It provides a way of conceptualizing practices so that design is folded into those sets of everyday practices concerned with the issues and conditions of sustainability, and in the process, changes the practice of design in ways that prompt reflection on the character of design within HCI. Many of the papers in this special issue exhibit aspects of this—my aim in this essay is to draw those examples together and sketch an argument for a complementary way to think about and 'do' practices in sustainable HCI.

What is An Ecology of Practices?

Science studies scholar Isabelle Stengers develops her idea of an ecology of practices through her study of contemporary physics [2005]. One of the challenges of studying contemporary technoscience is that much of it is radically interdisciplinary and this, at times, confounds common notions of disciplines and practices. The field of HCI itself is an example. To relegate it to one discipline and its presumed attendant practices would obfuscate the conditions and effects of its interdisciplinary character and, most likely, result in narrow descriptions and potentials. What the notion of an ecology of practices does, as a theoretical tool, is to provide a way of understanding the lively interplay of a multiplicity of practices in the production of knowledge and action in contemporary society.

The term ecology is not merely figurative in this characterization of practices, rather, it denotes a relationship that is mutually constitutive. To understand any one practice it is necessary to understand the other practices it exists in relation to and what the qualities of those relations are. All practices have attributes and exert force upon one another, giving shape to a coherent whole. Through these interactions, an ecology of practices is transformative. As practices encounter one another, they change in response to the pressures, or presumptions and requirements, of one another. Consider the synergies and tensions within HCI with regard to method: designerly approaches proffer a value in ambiguity [Gaver et al. 2005], while anthropological perspectives critique the rush to implications for design [Dourish 2006], and humanistic modes of criticism are applied to systems [Bardzell 2009]. Taken together, such works (and 1000s of others) inform, support, and rebuff one another, and that interplay defines what we know as the field of HCI.

Although an ecology of practices may be combinatoric, it is nondeterministic. Because it is transformative, we cannot wholly predict the outcome of any activity based upon our knowledge of that activity as it exists today. To continue with the example of the field of HCI, as design is informed by anthropology and anthropology is informed by the humanities and the humanities take inspiration from computer science and contemporary culture, these fields change one another in dynamic ways, making it dangerous to assume we know with certainty what the field of HCI will be in three years. But this non-deterministic character of an ecology of practices doesn't preclude engaging future scenarios. We certainly can reason and imagine and engage in informed speculation about the effects of hybridity or changes in future states. Indeed, one purpose of using an ecology of practices as a tool for thinking with is to creatively construct new identities for practices that have yet to fully take form, but which are presaged by current situations.

Why An Ecology of Practices in Sustainable HCI?

What this notion of an ecology of practices offers, first and foremost, is a perspective that steps back from any single practice to instead view practices in the aggregate. In the context of sustainable HCI, this provides a way of conceptualizing practices so that they necessarily include the practice of design. As an ecology, practices fit together in a lively manner of engagement and response, giving shape to one another and to the condition of the whole. From this perspective, it is not appropriate to consider a practice individually, withdrawn from any other practice. So, the practice of design should not be cast as separate from these other everyday practices, it should be counted among them. With regard to the to the theme of sustainable HCI and everyday practices, then, the question becomes *How does design as a practice fit within a set of practices concerned with sustainability?* This move is important because it couples the practice of design to other practices, and in the process, changes the practice of design.

How does it change the practice of design? To begin with, the term *everyday* suggests a mode of production different from common notions of professionalized design. The articulation of *everyday design* and *sustainability* has been previously explored by Wakkary and collaborators as a way of investigating how the agency of users as designers might be better understood with regard to the issues of sustainable HCI [Wakkary and Tannenbaum 2009]. For Wakkary and Tannenbaum, everyday designers "create and redesign artifacts long after the products have left the hands of professional designers (365)." As they argue, many of the activities of everyday design, including those of appropriation and repair, compliment principles of sustainable interaction design (ibid.) In this special issue, Wakkary et al. [2013] continue to develop this line of thought through their discussion of everyday repair and green-DIY (do-it-yourself projects intended to have beneficial effects with regard to sustainability), exploring these practices as design practices. This is a subtly radical move because DIY and repair are not commonly considered design activities. They may be activities that designers engage in, but to consider repair itself as a practice of design is contrary to many of the common notions of design. But, in contemporary society, where there is a call for reuse and frugality as tactics of sustainability, perhaps the moments of material invention are precisely those of DIY and repair—in which case it would be wholly proper to consider them as design.

Likewise, in their discussion of bathing, Kuijer et al. [2013], provide an example of another possible shift in design, from designing traditional products to designing practices—taking practices as a unit of design. In the case study they present, in order to support water conservation, rather than designing a more efficient showerhead or a reclamation system, the designers endeavored to invent a new practice of washing oneself that would use less water. If anything, Kuijer, de Jong, and van Eijk might

be too conservative in their imagination of practices as units of design. For instance, this idea could be pursued even further still by combining notions of everyday design and the design of practices, resulting in new modes of design-in-use, through which practices are invented and employed in an ad-hoc manner similar to repair and DIY. Put another way, why relegate the design of practices to designers alone?

To understand the activities and effects of design (or any practice) as part of an ecology it is necessary to regard them as they live together with the contexts in which they operate. But much of design research within HCI is concerned with the future—with how products or services or experiences might be in some condition that has yet to fully arrive. This presents a challenge because as social and cultural conditions change, the practices of design change. As we imagine futures and design for them, we need to include in that imaginary how design itself might be different. This certainly comes into play with regards to notions of "collapse" [Diamond 2010], which generally speak of a future condition of significant resource and infrastructural limitations. As Tomlinson et al. note [2013], one design strategy for addressing such a future is the "building of ICT and sociotechnical systems in the abundant present for use in a future of scarcity." But even with this strategy, we cannot assume total success. One of the more challenging aspects of collapse informatics is to consider what our futures as designers of technical systems might be in conditions of technical constraint that are antithetical to so much of contemporary HCI. The design research method of "working comparatively" [Tomlinson et al. 2013], that is, of working in the present with practices that intimate what a future state of collapse might be like, is one way to engage in a performative consideration of future design practices. As Wakkary et al. [2013] note, design fiction may also have a role to play in this endeavor of expressing futures. Design fiction has been, primarily, focused on the fictions of products and use [Bleeker 2009]. It has not been used extensively with regard to fictions of practice. But one could imagine a design fiction that included, reflexively and perhaps even critically, an alternate future of design practice embedded with it.

Whereas other perspectives on practices tend to focus outwards on those activities and habits as being other than design, the perspective of an ecology of practices folds design into a cluster of activities and habits concerned with sustainability. The cases of collapse informatics and everyday design in particular begin to illustrate how as the activities and conditions of sustainability change, design also changes. But hints of this are found throughout all the papers of this special issue. Recognizing this coupling between the design and other practices is important because it begins to undo the privileged autonomy of practice often granted to design—the common idea that somehow, or for some reason, design stands apart as a practice that is uniquely integrative or stable.

There are two problems with the privileged autonomy of practice often granted to design. The first is that it is simply not the case: the practice of design is not sovereign, it does not stand apart from everyday practice. There is no evidence for that in the current form of design nor in design history. Rather, such a notion seems to be an expression of a positivist legacy of casting design as a field distinctively qualified to discover and produce solutions. The second is that, in fact, such a perspective on design actually limits the potential of design. It makes design brittle. The value of design, or any practice in an ecology, is its resilience, not its rigor. To understand how the practices of design might take part in the objectives of sustainable HCI, we should focus on the ways in which those practices adjust, amend, alter in order to operate collectively, together with, other everyday activities and conditions. For example, extending the case study from Bidwell et al. 2013 we might probe how the bodily routines of walking inflect not only the use technology but also the bodily routines of designing. Such

reflective inquiry changes the character of design within HCI, and this becomes the starting point for the emergence of a new practice, yet to come.

As They May Become

Ecologies of practices are vibrant. They emerge and adapt in relation to issues and conditions. As researchers and designers, the perspective of an ecology allows us to identify and analyze current interrelated limitations and potentials of designing in support of sustainability. But perhaps even more importantly, an ecology of practices can be generative, suggestive of how we might think and act—providing a perspective that requires us to reconsider *design itself* as a practice of sustainability. In this way, the notion of ecologies of practices is particularly useful for sustainable HCI, as the field grapples with what it means to 'do' sustainable HCI. As Stengers states:

> An ecology of practices does not have any ambition to describe patterns 'as they are': it resists the master word of a progress that would justify their destruction. It aims at the construction of new 'practical identities' for practices, that is, new possibilities for them to be present, or in other words, to connect. It does not approach practices as they are—physics as we know it, for instance—but as they may become. [2005, p. 186]

This short essay engaging and extending the articles in this special issue is just really an initial gesture towards a shift in how we think about and 'do' practices in sustainable HCI. In terms of next steps, what needs to be done is to explore what these 'practical identities' are, or might be, within sustainable HCI. Design is certainly a component of this identity and needs to be counted among these practices. But in its presence, through its coupling, it also changes. We cannot consider design as we commonly know it today to be the same kind of design that will emerge as useful in support of a sustainable future. Outside of HCI, there are suggestions of what this kind of design might be, for instance in the work of Victor Papanek [1971], Tony Fry [1999], and Ezio Manzini [2003]. But this work has, for the most part, yet to be integrated into HCI. One project in developing these new practical identities of sustainable HCI, then, is to reach beyond what we commonly know as the practices that constitute HCI, in order to add diversity and resilience to these ecologies. Another project is to continue probe the possible futures of design under changing conditions. As researchers and designers concerned with practi ce, we should attend to, and welcome, the evolving character of the practice of design, as one of many practices that will form the new identities of sustainable HCI.

REFERENCES

BARDZELL, J. 2009. Interaction criticism and aesthetics. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems CHI '09*. ACM, 2357–2366.

BIDWELL, N., MASBULELE, S., MARDSEN, G., TUCKER, W., TSHEMESE, M., GAVEN, N., NTLANGANO, S., ENGLINTON, K., AND ROBINSON, S. 2013. Walking the social life of solar charging in rural Africa. *ACM Trans. Comput.-Hum. Interact. 20*, 4.

BLEECKER, J. 2009. Design fiction: A short essay on design, science, fact and fiction. *Near Future Lab. 29*.

DIAMOND, J. M. 2006. *Collapse: How Societies Choose to Fail or Succeed*. Penguin Group USA.

DOURISH, P. 2006. Implications for design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems CHI '03*, ACM, 541–550.

GAVER, W., BEAVER, J., AND BENFORD, S. 2003. Ambiguity as a resource for design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems CHI '03*. ACM, 233–40.

KUIJER, L., DE JONG, A., AND VAN EIJK, D. 2013. Practices as a unit of design: An exploration of theoretical implications in a study on bathing. *ACM Trans. Comput.-Hum. Interact. 20*, 4.

MAESTRI, L. AND WAKKARY, R. 2011. Understanding repair as a creative process of everyday design. In *Proceedings of the 8th ACM Conference on Creativity and Cognition*. ACM, 81–90.

PAPANEK, V. AND FULLER, R. B. 1972. *Design for the Real World*. Thames and Hudson.

PINK, S., MACKLEY, K., MITCHELL, C., ESCOBAR-TELL, C., HANRATTY, M., BHAMRA, T., AND MOROSANU, R. 2013. Applying the lens of sensory ethnography to sustainable HCI. 2012. *ACM Trans. Comput.-Hum. Interact. 20*, 4.

SENGERS, P., BOEHNER, K., DAVID, S., AND KAYE, J. J. 2005. Reflective design. In *Proceedings of the 4th Decennial Conference on Critical Computing*. ACM, 49–58.

STENGERS, I. 2005. Introductory Notes on an Ecology of Practices. *Cultural Studies Rev. 11*, 1, 183–196.

TOMLINSON, B., BLEVIS, E., NARDI, B., PATTERSON, D., SILBERMAN, M. S., AND PAN, Y. 2013. Collapse informatics and practice: Theory, method, and design. *ACM Trans. Comput.-Hum. Interact. 20*, 4.

WAKKARY, R., DESJARDINS, A., HAUSER, S., AND MAESTRI, L. 2013. A Sustainable Design Fiction: Green practices. *ACM Trans. Comput.-Hum. Interact. 20*, 4.

WAKKARY, R. AND TANENBAUM, K. 2009. A Sustainable Identity: The creativity of an everyday designer. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 365–374.

Commentary II:
On Hubris, Hammers and a Promise of Practice

JOHAN REDSTRÖM, Umeå Institute of Design

This special issue targets one the most important questions that research will face in the coming decades; that of how we need to live, think, and do differently to achieve a more sustainable development. The academic community at large is beginning to realize that the rationality attributed to human action might not be as straight forward as traditional science would have it: regularly, we find scientists making frustrated remarks that we, by now, know very well that our behaviors must change to prevent cataclysmic change, yet despite this knowledge we persist in our habits. Seemingly, knowledge about the need for change is not enough to also initiate change. Not only does this become an issue in sustainable development; it also calls for reflection upon the effectiveness of our distinctions between knowing and doing, between theory and practice, also in design.

Such entanglements of knowing and doing makes practice theory highly interesting. With respect to the issue of redirecting unsustainable habits, it specifically deals with how our everyday actions unfold and are situated in diverse socio-material contexts. This special issue collects a set of very interesting and inspiring studies that clearly illustrate the potential that practice theory brings to HCI, and why the community's recent increase in interest in this area is more than justified. But while each article is an interesting contribution in itself, they bring something perhaps even more interesting to the light when read together. As I was reading these papers, a concern for existing design practices began to emerge through the foundations of the perspectives and projects reported here. Taken together, these contributions have something to say that I think we all need to listen to. In what follows, I will try to explain why I think that is so.

HUBRIS

This special issue brings light upon the relations between design and everyday life. In what follows, I will focus on what I believe is a major challenge when it comes to joining practice theory and design, a challenge that in many ways echoes issues related to the distinction between 'knowing' and 'doing', and why we, as in the case of sustainable development, find it hard to initiate significant change although we even admit ourselves we should know better by now.

Whereas the theoretical frameworks appropriated here are essentially analytical and descriptive in nature, design is, literally, in the making. Although design certainly

is about reflection and inquiry as well, it is very much formed by its 'will to act', so to say: design practice is much about an ability to not only understand, but to move, to intervene, to do. We do not just think about sitting, we make chairs. And even if our aim is to research and reflect upon what an act of sitting actually is or might be, we would probably make 'chairs' as part of the process of finding out. But, what does it take to change the way we do design? Will new knowledge automatically change the way we behave, or is design practice more like everyday practice where we know new knowledge about, say climate change, do not automatically change the way we do things. More specifically, will new theories brought into design lead to a change in how we actually do design? It seems that the very same problem this special issues aims to address, that of finding ways that HCI can support people to transcend from a rational understanding to initiate change of one's actions in everyday life, is a question also to design research: will an increased understanding of everyday practice that potentially allow us to think differently about 'what' to design, also lead to changes in how we actually *do* design? Importantly, this is not a critique of the work presented here, or of the theories brought into HCI in this special issue, but a more general question about how theory and practice are related in design research.

Many practices, design practices included, are remarkably resilient. Indeed, when it comes to how we do design, no matter how many times we use words such as 'change' and 'future' to describe the character of design we are quite conservative with respect to certain central ideas. One such idea that we have kept close to heart, at least since early Modernism, is the idea that designers can provide solutions to problems that will make people live better lives. This position is so basic to us that it almost feels counter intuitive to consider it problematic—but, in a certain sense, it really is.

This is an example from the early days of the Bauhaus, a text by Annie Albers, that I often return to. Among other things it states that "Today the woman is the victim of a false style of living. It is obvious that a complete change is urgently required. New objects (the car, aeroplane, telephone) are designed above all for ease of use and maximum efficiency. Today they perform their function well. Other objects in use for centuries (the house, table, chair) were once good, but now no longer fully do their job" [Fleischmann 1998, p. 302]. Indeed, the Bauhaus project was ideological: a heartfelt ambition to use the potential of new technologies of mass-production to improve our ways of life and to liberate by leaving old routines behind.

Although the political rhetoric of design is different today, this is a basic idea we still maintain: the idea that objects carry with them meaning and values, and that design holds the potential to transform one situation into a new one by means of introducing new such objects that bring new values and meanings. This worldview suggests that the designer, typically from a privileged position as a detached observer and free agent, can step out of the complex fabric of everyday life and initiate change by means of devising a solution that will resolve what is (typically also from the outside) perceived as a problem. Further, since the designer can act in this way, it is also possible for her or him (unlike the ordinary person/user/consumer) to consider the 'big picture' and think not only about the small things, but indeed intervene into and transform the very structure of ways of life. This basic idea about 'total design' is certainly more present in Modernist manifestos than in HCI today, but the idea that designers can come in and introduce new products or systems into problematic situations to transform them in favorable ways is hardly completely absent in the asking of questions such as "Consideration of the various ways HCI aims to intervene in everyday consumption practices raises ethical issues about these approaches: are they empowering, persuading, or coercing? What are the ethical implications of considering "everyday practice"—as routinized ways of behaving and living—as a unit of intervention for HCI and design more broadly?" [Pierce et al. 2012].

Now, if we think about what practice theory tells us about how meaningfulness is created and situated in socio-material processes unfolding over time, this idea about what design is and does needs closer examination. For instance, one might think, in the face of practice theory, that one would ask questions not only about the everyday practices we aim to design for, but also about the design practices we ourselves are based in, and bounded by, as we do so. Interestingly, this is not something we seem very inclined to do, not even in the contributions in this special issue. Clearly, the aim is to introduce new ideas and concepts, that is, in this case practice theory, into our research practice to initiate change and redirect it, but it seems that for some reason we still do not look into what changes then actually take place in our own work.

It appears is if we, like the people we study, cannot 'see' our own practices. This is especially intriguing in the light of another area of increasing interest in this community, that of 'reflective practice' as a way of understanding knowledge and knowledge production in (design) research. References to the work of Donald Schön [1983] on how knowing is in the action are ample in discussions of the roles of design (practice) in research (cf. also Koskinen et al. [2011]). And so, we may ask: how come questions about the relations between everyday practice and design (research) practice do not surface? My guess is that this is because we still, perhaps unconsciously, maintain that distinction between knowing and doing, of first knowing and then doing, that we aim to get away from.

Evoking the notion of assemblages, Gilles Deleuze and Félix Guattari [2004, p. 555] state that "This is the double articulation face-hand, gesture-word, and the reciprocal presupposition between the two. This is the first division of every assemblage: it is simultaneously and inseparably a machinic assemblage and an assemblage of enunciation. In each case, it is necessary to ascertain both what is said and what is done." Thus, if we look not only to what is said about design targeting everyday practice, but how it is actually carried out, we might get a hint at what is going on. As an example, let us consider how the issue of unfolding is treated.

A key observation in many of the studies reported here is that practice is continuously changing, it is something characterized by "ongoingness" rather than static states. For instance, Kuijer et al. [this issue] state that "These instances of adaptation, improvisation and experimentation in performance can be triggered by all kinds of smaller and larger changes in circumstances, such as for one the introduction of new technologies. Over time these small variations can turn into extensive transformations of the practice-as-entity."

And so one would perhaps think that to find ways for design to engage in such unfoldings, one would have to look for ways for designing to become present, embodied, within practice. But the basic methodological response still seems to be based on a process of first studying and analyzing, then withdrawing from the world and developing a "solution," then finally intervening and evaluating. Consider the approach in LEEDR described by Pink et al. [this issue] as an example. "Sensory ethnography ... is allowing designers to begin understanding this 'constantly evolving ecology of place'. . . . This approach has allowed the unraveling of the contingencies through which individual families' energy consumption emerges. . . . From this the LEEDR designers have been able to extrapolate rich sensory use scenarios for potential interventions, which are informed by our understanding of how contingent activities weave in and out of practices. These scenarios serve to both inform us about where energy is being used while also influencing and inspiring the creation of potential new technologically mediated practices through design." Another illustration can be drawn from Kuijer et al. [this issue] who develop an interesting approach which includes the participation of professional actors to enact, or perhaps rather prototype, various forms of 'bathing'— but still removed from a 'real-life' setting. Importantly, this is not a critique of these

studies (which I, on the contrary, enjoyed very much), but simply a reflection upon how we as designers typically operate in relation to the world. Given what practice theories tell us about meaning-making in everyday life and how knowing is situated, embodied, in practice—isn't this a rather problematic approach? Can a design process engaged in everyday practice, participating in the unfolding and entangled complex of knowing and doing that makes it into what it is, be located outside?

Most of the time, it seems that we unconsciously assume that the primary reason why design has not successfully addressed the issue of unsustainable practices is a lack of understanding of the contexts we are designing for. As a response, designers need to become better attuned to the problems at hand. We need to *know* more. The somewhat cynical reading of this view is that we in this way completely neglect the possibility that it might actually be the way design practice works that is the main problem here. We may increase our knowledge, replace the unit of analysis and design, but our design practice remains remarkably resilient to any significant methodological transformations. So what we end up with is a change in what we design for, but with little or no consequence for how we design for it.

Hammers

Besides the (secret) ambition of total design there is another aspect of much design that has implications for how we may approach practice to address the issue of sustainability. When you think about it, most design disciplines are named after what they produce, after what kinds of solutions they provide. For instance, if I would say that I am an industrial product designer you would immediately get an idea about what kinds of stuff I might be creating and how that differs from what you would have pictured should I have said that I was a service designer, a textile designer, or a graphic designer instead. We are defined by what we produce. In a caricature, we might depict ourselves as people with hammers entering the world to look for nails.

The central role of the solution, of the product, in defining what something is must be understood in relation to the logic of industrialized mass-production and mass-consumption that most design practices, after all, are fundamentally conditioned by. According to this logic, the primary means for making a better world is to produce a new thing, to offer a better solution, a better product: "The Bauhaus attempts to produce the elements of the house with this economy in mind—therefore to find the single solution that is best for our times. It applies itself to this task in experimental workshops, it designs prototypes for the whole house as well as the teapot, and it works to improve our entire way of life by means of economic production" as László Moholy-Nagy said in 1923 [Moholy-Nagy 1998, p. 303]. Ultimately, this is a logic where design becomes defined by what it produces—and people by what products they use [Redström 2006].

Again, most contemporary claims within design research are much more modest than the radical propositions made by the Modernists, but the idea that interaction designers venture out with, already from the start, the explicit aim to design an IT system that will improve life is not that strange. Because of the logic of the contexts we work within, we are in the habit of assuming that the typical output of our design practice will be applicable also here. It is never a question of *if* the world needs a new system or a new product, it is only a question of *what* system or product it needs. What Bourdieu said about habitus is as applicable to design practice as it is to everyday practice: "The objective homogenizing of group or class habitus which results from the homogenity of the conditions of existence is what enables practices to be objectively harmonized without any intentional calculation or conscious reference to a norm and mutually adjusted *in the absence of any direct interaction* or, *a fortiori,* explicit co-ordination" [Bourdieu 1977, p. 80].

So, confronting our habit of entering the world with the hammer in our hand: would it not be relevant to think of the opportunities opened up by this engagement with practice theory not as a way to increase our understanding of the given design problem, but as a way to critically examine ourselves and the way we orient our design practices around certain kinds of solutions? In the context of this special issue, the propositions made by Wakkary et al. [this issue] seem to point in this direction: "We propose that design fictions can be readily incorporated into practices in ways that transform those practices and *hold implications for transformations of design as well*." [author's italics].

Still, given the problematics of mass-consumption with respect to sustainability, can we safely assume that what the world needs is yet another hammer?

Habitus

Practice theory works to reveal, to remove layers of *a priori* assumptions through the detailed study of what is actually unfolding. Or, as Bidwell et al. [this issue], argue on basis of their study of solar charging stations: "We hope this will promote acceptance that we cannot assert what sustainable practice means *a priori* in any intervention. Our going along in the settings that constitute our lives creates both the environment and our knowledge of it, concretely, intangibly and ideologically. . . . we have shown how walking interconnects routines in using, storing, sharing and sustaining resources and proposed that detaching practices from bodies and their paths limits solutions." A process of revealing can allow us to understand more about why certain unsustainable practices prevail despite people knowing better, but it can also be used to understand more about why the way we do design, partly, left us here in the first place.

This is not an issue to be taken lightly by over-simplification, but just to tentatively sketch a question: what is the relation between design's basic strategy of delivering "solutions" from a detached place of observation and the problem of people becoming passive and thinking that things are to be taken for granted the way they are? Could it be that there is a relation between the basic logic of mass-production to hand over finished ready-made solutions and our rather passive approach to sustainability that our problems will be solved by new technical solutions that at some point will arrive at our hands? Be that we know we need to change our unsustainable practices, we have just been trained to sit here and wait for a solution that will make it happen. "I know driving a lot is no good but I really like it, so please give me a better and more eco-friendly car."

Design engaging in everyday practice, and the appropriation of practice theory in design, implies a very interesting possibility to reveal not only aspects of everyday life, but importantly also how existing design practices relate to the world. This, I think, is a very important potential of practice theory: that it may allow us to better understand why and in what ways current design practices continue to contribute to unsustainable practices in everyday life.

While we readily embrace the idea that design can make a difference by introducing new things into an everyday situation, it less satisfactory to reflect upon the fact that according to the very same logic, design probably has a significant responsibility for why it looks the way it does in the first place. As a response, we would probably like to say "but look, *our* design is different, it is not *our* design practice that caused this huge problem". But—what will it take for us to actually be justified to respond in that way? Perhaps a start for finding that out would be to acknowledge that new theory does not automatically imply a new practice.

REFERENCES

BOURDIEU, P. 1977. *Outline of a Theory of Practice*. Cambridge University Press.

DELEUZE, G. AND GUATTARI, F. 2004. *A Thousand Plateaus: Capitalism and Schizophrenia*. Translated by B. Massumi. Continuum, London.

FLEISCHMANN, A. 1998. Economic living 1924. In *Modernism; An Anthology of Sources and Documents,* V. Kolocotroni, J. Goldman, and O. Taxidou, Eds., Edinburgh University Press.

KOSKINEN, I., BINDER, T., REDSTRÖM, J., WENSVEEN, S., AND ZIMMERMAN, J. 2011. *Design Research Through Practice: Lab, Field and Showroom*. Morgan Kaufmann, San Francisco.

MOHOLY-NAGY, L. 1998. The new typography 1923. In *Modernism; An Anthology of Sources and Documents,* V. Kolocotroni, J. Goldman, and O. Taxidou, Eds., Edinburgh University Press.

PIERCE, J., SENGERS, P., STRENGERS, Y., AND BØDKER S. 2012. Sustainable HCI through everyday practices: Call for papers to a special Issue of ACM *Transactions on Computer-Human Interaction*. http://tochi.acm.org/si/sustainable.shtml (Accessed 2012-12-14).

REDSTRÖM, J. 2006. Towards user design? On the shift from object to user as the subject of design. *Design Studies 27*, 2, 123–139.

REDSTRÖM, J. 2013. Form-Acts: A critique of conceptual cores. In *Share This Book: Critical Perspectives and Dialogues about Design and Sustainability*, R. Mazé, L. Olausson, M. Plöjel, J. Redström, and C. Zetterlund, Eds., Axl Books, Stockholm.

SCHÖN, D. 1983. *The Reflective Practitioner: How Professionals Think In Action*. Basic Books, New York.

Commentary III:
Theories of Practice, Everyday Life and Design Futures

MATT WATSON, University of Sheffield

This collection of articles represents a welcome strand in the steadily widening progress and growing influence of theories of practice. As a human geographer who has worked with sociological and theoretical engagements with practice theories as a means of addressing social change towards sustainability, it is a pleasure to be asked to comment on the intervention it represents. What little more than a decade ago was principally a field of abstract theorization has steadily spilled out, first across diverse areas of the social sciences before, more recently, beginning to have visibility in policy discussions and in the practices of professionals including designers. Amidst this dynamic, the articles collected here together offer a distinctive contribution. Each articulates between theoretical propositions and committed empirical engagement and argument, to consider different aspects of the potential relations between practice theories and the role of design and HCI in engendering future changes in everyday life that can contribute to greater sustainability.

Of course, within this broad-brush portrait of commonality, there is ample room for diversity. Leaving aside the obvious point that sustainability is bewilderingly unfixed as a concept, other key terms in that characterization of the collection are open to interpretation. Perhaps most surprising, as someone outside of the field, is the distance that discussion of HCI can travel from interactions between humans and computers. Of the five articles, only Pink et al. focus their article on a project involving a digital interface, in this case between householders and their home heating system. For other contributions, the link with computers is more tenuous, and perhaps most attenuated for Kujer et al. and their study of their proposed cleanliness proto-practice of splashing.

Much less surprising is the diversity of approaches to practices, and to practice theories. As Tomlinson et al. point out, "theories of practice" refers to a diversity of approaches. Quite properly, some of that variation is clear across this collection. All authors here recognize that for practice theories, practice is not synonymous with doing. Rather it is a concept which enables analytical attention to work on from specific moments and sites of action, to comprehend how moments and patterns of doing are orchestrated and reproduced over time and across different spaces. However, the ways in which this potential is translated varies in this collection, as it does elsewhere in the burgeoning field of applications of practice theory. For Bidwell et al., the approach enables close attention to the interleaving of performances of practices. In contrast,

for Pink et al. the preoccupation of some practice theory approaches with moving on from accounts of specific situations of practical action cause them to look elsewhere for theoretical and methodological resources. Meanwhile, for Kuijer et al., the attraction of practice theory is its ability to take attention beyond moments of practical action, particularly human-machine interactions, to approach the embedding of those actions in broader dynamics of social order, such as shared temporal rhythms and social norms around personal cleanliness. For both Tomlinson et al. and Wakkary et al., practice theory is presented as informing responses to large scale future societal change.

This diversity of understandings about what practice theory can do, and of approaches to its application, is not a weakness. While in some areas of academia practice theory is starting to feel like part of the orthodoxy, there is as yet no orthodoxy of what practice theory actually is. Nevertheless, there are some points of difference worth exploring further, as their exploration helps to open up aspects of the value and limitations of practice theory for informing design and transition towards sustainability.

For Pink et al., the profound limitations which they identify in theories of practice for approaching the details of lived experience mean turning away from them, to a sensory ethnography approach informed by phenomenological anthropology and understanding of ecologies of place, after Ingold. This is somewhat surprising, on two counts. First, across the range of approaches identified as theories of practice, a uniting feature is an understanding of practices (and thereby both individuality and social structure [Schatzki 1996]) as constituted by and reproduced through practical activity. Second, as a philosophical position, theories of practice share much by way of intellectual heritage, particularly with common roots in the work of Heidegger and Wittgenstein, via Merleau-Ponty and Charles Taylor [Reckwitz 2002; Schatzki 1996; Shove et al. 2012]. Indeed, authors in this special issue, not least Bidwell et al., find no difficulty in approaching practices through ethnographic methods.

None of this is to say that Pink et al., are in any way wrong to turn to phenomenological anthropology and sensory ethnography to pursue understanding of changes in everyday life in pursuit of sustainability. As their article amply demonstrates, the approach taken can furnish insights, and inform innovations, which take seriously the injunction that technological innovations intended to shift everyday life towards greater sustainability will best be designed through sophisticated understandings of the situations of their use. Their sensory ethnography approach clearly informs both the interface of the app through which householders can interact with their heating system, and novel proposals like the "heat me" bags. Through insights into the embodied pleasure of warm jumpers and blankets, combined with ethnographic awareness of the affordances of existing infrastructures, the bags could perhaps help overcome the thorny problem of how to get people to enact the obvious advantages to low carbon comfort of putting a jumper on when it is cold. The regret, then, is not at all of the approach taken here, but rather that the approach is presented in contrast to, and as a corrective for, practice theory approaches. The article could have made a still greater contribution by recognizing that the gaps the approach addresses are within dominant methodological implementations of practice theory, not within the commitments of practice theory itself. This could, for example, have drawn out more fully the importance for practice theories of the arguments made here about the ways in which performances of practices can only emerge within specific relations between people, things, resources and meanings that can be taken to comprise 'place'.

In contrast with Pink et al.'s characterization of practice approaches, Bidwell et al. show something of the potential for exploring the interleaving and coordination of practical action within a practice theory approach. Through a focus on the interleaving of practices which circulate around the solar powered mobile phone charging stations, the article highlights the ways in which performance of practices inevitably must be

interleaved and coordinated by people in the accomplishment of their daily lives. In the study of practices around the use of the new charging stations, walking is placed as the central practice through which people integrate performances of other practices in the spaces, times and socialities of their days. The emphasis in the more analytical passages of the article on place and embodiment, not least through the work of Tim Ingold, connects well with the theoretical purposes of Pink et al., through a different lens of practice.

Meanwhile, Tomlinson et al. highlight the limitations of practice theory applications that stay too close to the "here-and-now" of practical action. While acknowledging the critical significance of insights that arise from close attention to the here-and-now of everyday doings through practice theory approaches, they call for such approaches to be articulated with time scales extending well beyond the present, and to engage with societal level shifts. The authors do not go on to explore how far this is a theoretical shortcoming of practice theory, and how far a limitation of key implementations of the approach. If the value of practice theory is indeed dependent on recognition of practices as entities transcending individual moments of performance [Reckwitz 2002; Schatzki 1996; Shove et al. 2012] then temporal extension beyond the present is inherent to the approach. As Tomlinson et al. recognize, work informed by practice theory does have a record of following practices over time, though the one example they pick out as the exception in doing this is only one example in a growing field of work premised on the capacity for practice theory to enable the exploration of change over time.

The other two articles in the collection also seek to emphasize the potential of practice theory approaches to inform work on more societal levels of change. For Kuijer et al., practice theory can inform the design of products, systems and services to engender systemic change through presenting practices, rather than artefacts themselves, as the object of design—a proposal with echoes of Shove and colleagues' "practice oriented product design" [Shove et al. 2007]. For Wakkary et al., practice theory similarly has potential for informing interaction design with a view to engendering transformations and innovations in practices.

The ambitions of the three articles, then, connect with the promise of practice theory approaches to enable researchers and theorists, in principle at least, to be able to grasp the specificities of practical action but at the same time to gain understanding of practices which endure over time and are distributed across space. It is the ambition to explore practices over time which is most distinctive about these articles. Tomlinson et al. may base their accusation of presentism on a partial reading of recent work in the practice theory tradition, with a growing range of work exploring the past trajectories of practices. However, theories or practice have so far had limited application to envisaging, enabling or responding to putative futures. Of course, some future orientation is inherent to any research which is framed within a sustainability agenda, and a rapidly burgeoning body of research explores ways to change current practices, particularly around energy use, towards lower resource intensity, increasingly through articulation with theories of socio-technical change [McMeekin and Southerton 2012; Spaargaren 2011; Watson 2012]. Especially through having provided the basis for compelling accounts of past transitions in practices, and coevolution of technologies, norms, meanings and competencies that are the corollary of those transitions, theories of practice appear to hold an unrealized potential to inform future changes, not least the radical changes required to shift society on to a sustainable footing.

However, realizing this potential is fraught with difficulties. Many of the difficulties arise from the generic difficulties of saying anything at all specific about the future beyond a relatively immediate time horizon. The same properties of practice theory approaches that enable them to provide compelling narratives of past transitions and the configuration of the 'now' help us to understand the difficulties of foreseeing future

transitions. A focus on practice enables the exploration of the diversity of relations between coevolving technologies, norms, meanings, skills and more from which changes to practice are an emergent effect, with a nonlinear trajectory. Change in practices are always incremental innovations that typically result from the convergence of current constellations of elements, but which then change the conditions for future performances of the practice. As a result of the iterative, emergent nature of transitions to practices over time, it is difficult to extend analysis of practices far into the future as anything other than informed speculation. It is inevitably incumbent on the analyst to fix boundaries around the range of elements and possibilities of their integration, in order to say anything of future configurations of practice. As the articles exploring future practices make clear, there are always grounds for critique, but that does not preclude that exploration from being worthwhile.

The embeddedness of practice is tackled by Kuijer et al. by moving the objects of their research into a lab setting. This inevitably leaves open all sorts of questions about what else would have to change for splashing to displace showering as the default practice of personal cleanliness. As research into the dynamics of showering practice [Hand et al. 2005; Shove 2003] has made clear, showering has its current role as a result of the niche it has created for itself in the material infrastructures, norms and temporal rhythms of everyday life. Kuijer et al.'s bold reduction of the dimensions of practice into a "laboratory" setting inevitably loses this complexity, but follows the norms of laboratory science in seeking to reduce complexity to illuminate given aspects more deeply. A broader focus, however, could enable changes which are more significant in terms of resource demand. The reduction in hot water use in typical 'splashing' sessions compared to a fast wash in a low flow shower is small and at least partly displaced by the increased need for space heating. Understanding wide variations in the temporality of whole body washing—from around once a year in some times and societies to around once a day in cont emporary affluent societies—indicates potential for a much more significant step change in resource use for personal cleanliness. Splashing could possibly make more difference by being less enjoyable and more inconvenient than showering, thereby reducing the frequency of washing, than by its reduction in hot water use per wash.

Tomlinson et al. have the longest time frame, envisaging through a practice approach the requirements for everyday life in a resource-scarce post-collapse world, in articulating a call for the development of *collapse informatics*. Understandably, the characteristics of this future world are not closely defined, but it seems odd that the scarcity of resources and the erosion of complex social organization in both economic and political activity do not appear to seriously dent the possibilities for digital communication. In its current expression, digital communication is fundamentally dependent on complex economic organization, and a sophisticated state apparatus to defend property rights and security whether for intellectual property, the globally-distributed and capital-intensive production process of short-lived hardware, and the massive server capacity, cable networks, etc. that enable the web. As Wakkary et al. point out, digital technology is generally resistant to DIY intervention without specialist skills. Of all of the imponderables of a post-collapse society, the possibilities for digital technologies and communications seems significant. A broader framing of the issues here would also help make a more persuasive case for considering technologies for a resource-scarce future society, in that the authors arguments for enabling practices that are less resource-dependent could help delay or avert collapse (*transition informatics*?), as well as ready society to deal with it.

Ultimately, the exploration of future practices, as in these articles, is very unlikely to result in narratives that will be accurate when those futures become present. Rather, their value more clearly lies in provoking reflection and potentially disruption and

innovation in current practices, including the practices of design in HCI and elsewhere. This is embraced most fully by Wakkary et al., who argue for the use of 'design fictions' about putative futures as an intervention into contemporary practices, particularly within processes of design and codesign.

REFERENCES

HAND, M., SHOVE, E., AND SOUTHERTON, D. 2005. Explaining showering: A discussion of the material, conventional, and temporal dimensions of practice. *Sociological Res. Online 10*.

MCMEEKIN, A. AND SOUTHERTON, D. 2012. Sustainability transitions and final consumption: practices and socio-technical systems. *Tech. Analy. Strategic Manag. 24*, 345–61.

RECKWITZ, A. 2002. Toward a theory of social practices: a development in culturalist theorizing. *Euro. J. Social Theory 5*, 243–63

SCHATZKI, T. 1996. *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge University Press, UK.

SHOVE, E. 2003. *Comfort, Cleanliness and Convenience: The Social Organisation of Normality*. Berg, Oxford, UK.

SHOVE, E., PANTZAR, M., AND WATSON, M. 2012. *The Dynamics of Social Practice*. Sage, London.

SHOVE, E., WATSON, M., HAND, M., AND INGRAM, J. 2007. *The Design of Everyday Life*. Berg, Oxford, UK.

SPAARGAREN, G. 2011. Theories of practices: Agency, technology, and culture: Exploring the relevance of practice theories for the governance of sustainable consumption practices in the new world-order. *Global Environ. Change 21*, 813–22

WATSON, M. 2012. How theories of practice can inform transition to a decarbonised transport system. *J. Transport Geography 24*, 488–96