In this forum we highlight innovative thought, design, and research in the area of interaction design and sustainability, illustrating the diversity of approaches across HCI communities. — Roy Bendor, Editor

Humble Design for Sustainable Mobility: Relearning What Designing Means

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Designing for sustainability transitions is not an easy task, and tackling complex sustainability issues requires collaboration. As a postdoctoral researcher in design for sustainable mobility, I keep asking myself: How can I contribute? After 25 years of working as a designer, this was the very question that brought me into the academic world.

I have come to realize that, for those who want to engage in sustainability transitions, a useful practice for designers can be to create learning spaces—learning spaces where different actors can collaboratively interpret insights and together challenge what might be taken for granted; and where people can cooperatively work on how to support sustainability transitions. However, when designing learning spaces, as I did in the research projects upon which my doctoral studies were built, I found that the careful crafting of these spaces was crucial. Co-design exercises and service-design tools with customer journey maps and what-if scenarios were certainly useful. That said, since learning spaces are dynamic and always depend on those who participate, in the design process they have to be treated differently from products or services, which are more definite and finished once designed. Therefore, I found that alternative design strategies were necessary when designing learning spaces.

To me, designing for transitions is about understanding citizens and people, users and consumers. Of course, to be a designer means moving

from insights to insights, going from understanding the present to suggesting futures. It also means promoting stakeholder voices and bringing their knowledge to the meeting rooms where decisions are made. But I need to be a designer who's more humble than the one developing seamless and smooth services or smart and sophisticated products. I need to adapt my position as a designer and find a more subtle approach to my design. As I suggest in my dissertation [1], such an approach includes three design postures: *remake*, *revalue*, and *relearn*.

With a *remake* design posture, system flow and system dynamics are the center of attention, including how users make use of systems, and possibly even abuse them. A *remake* design posture includes attention to interruptions, embracing designing as a continuous, ongoing activity, and using glitches as design materials. With a *remake* design posture, it's key to humbly admit that my designs are never finished. A *revalue* design posture focuses on values—in particular, intrinsic values—called upon to open up and challenge narrow growth agendas. With a *revalue* design posture, I can try to introduce or

support alternative values, knowing that ultimately it is up to users to decide what is important to them. And lastly, with a *relearn* design posture, I focus on insights developed while learning, fostering collaborative designing where representations illuminate and challenge.

Working from a *relearn* design posture, my purpose is to create learning spaces. I believe learning spaces can be initiated at several points in design processes, with special attention given to challenging the known, and thereby to relearning what might be taken for granted. When alternative ways of doing everyday things are tried—for example, commuting to work with public transport instead of driving a privately owned car—learning follows. As a designer, I can help initiate these trials where relearning can take place, and I can set them up purposefully so that people learn from their own experiences. Therefore, I suggest that interventions aimed at performing “proto-practices” [2] are useful as a design method for engaging in sustainability transitions. These learnings can then be brought forward to decision makers at later stages in the design process.

To be part of interventions that explore everyday practices, I need to humbly admit that the products or services I design are only partial pieces of practices and that these materials and systems of provision are not on their own going to be game changers. Therefore, I have to understand how these parts fit into everyday life and how technologies and humans are, and

Insights

- Creating learning spaces can be a project for designers who want to engage in sustainability transitions.
- When designing learning spaces, alternative design strategies are key. Therefore, designers need to adapt their positions and find a humbler design approach.

could be, configured. Lucy Suchman [3] has proposed *configurations* as a way to deliberately find new knowledge. Configurations are never stable—users keep reconfiguring together with products and technologies so that new constellations constantly appear. As a design researcher, I can intervene in everyday practices by changing materials or technologies, and thereby deliberately reconfigure constellations as a way to understand possibilities for shifting practices toward less environmental impact.

There are several different ways to carry out interventions in everyday practices. Yolande Strengers and Cecily Maller [4] summarize three dominant ways of carrying out interventions with sustainability agendas. First, there are interventions that aim to modify individual behavior, such as nudging people to make choices with less environmental impact. For example, placing vegetarian options before other food options at a restaurant can nudge people to choose less meat. Second, there are interventions through market instruments, such as pricing and incentives, to persuade people through rational economics. Here, carrots and sticks can be used to make less sustainable options more expensive, for example, by introducing congestion charges for cars and subsidizing more sustainable travel modes such as public transport. And third, there are interventions that, through the launch of new technologies, disrupt people's everyday lives for sustainability purposes. Here, an example could be the introduction of electric vehicles or bringing mobility-as-a-service systems to market. Often, technology interventions go hand in hand with market interventions; for example, in Oslo, electric vehicles are exempt from congestion charges. All three types of interventions may be effective, and as a designer I can engage in all of them. Designing for sustainability, in this sense, can mean focusing on nudging individual behaviors *and* communicating economic incentives *and* developing products or services with new technologies.

Yet another way to carry out interventions can be to focus on practices. With practices rather than individuals, markets, or technologies

as the central unit of analysis, we can ask different questions and develop innovative intervention approaches. Nicola Spurling and Andrew McMeekin [5] suggest three possible approaches to intervene in practices: recrafting practices, substituting practices, and changing how practices interlock. They discuss how these have been used from a policy perspective to favor the emergence of sustainable mobility practices.

Furthermore, design interventions can be alternative ways of investigating and exploring possibilities for sustainability practices. They can be deliberately messy inquiries—neither ethnographic descriptions nor tests of prototypes, but rather something in between [6]. Design interventions are not standardized methods; nor are they necessarily aimed at bringing clarity. Instead, they can be useful to describe sociomaterial practices as they are, and to develop insights on how these might be reimaged. I find this openness much in line with a humbler design approach and with my proposed design

postures, and I have used design-led interventions into practices to explore how to reformulate everyday living.

Armed with a practice perspective, I can better work out where to intervene in mobility practices, which materials to design, and what reconfigurations to suggest. And by conducting design-led interventions, I can open up and explore possibilities. I used this combination when I engaged in a research project together with a Swedish corporation that wanted to update its corporate mobility service system, including commuter buses, shuttle buses, and taxis that were supporting transportation needs at their worksite. The project aimed to redesign the existing product-service system by including a digital application to support a shift toward sustainable mobility practices among the employees.

For research purposes, we wanted to disrupt practices in order to evoke employees' reflections on their commuting and transportation practices. It was therefore important

to include material reconfigurations in the service system. Hence, as a complement to existing vehicles, we introduced shared electric bicycles. The employees' internal mobility practices were disrupted when this option was made available to them, thus encouraging them to reflect on something that they previously took for granted. Furthermore, the corporation gained new understandings when representatives from different parts of the company were invited to explore employees' mobility practices and collaboratively develop future possibilities for the corporate mobility service system (for more details, see [1]).

Adding electric bikes, and thereby reconfiguring the system, pushed some employees—even those who had never used electric bikes before—to develop new mobility practices for their on-site transport. All employees we interviewed were happy with the electric bikes; they had no difficulties in adopting the new practices, including booking, starting, running, and returning the bikes. Moreover, electric-bike users discovered many additional benefits. With a *revalue* design posture, we wanted to understand the intrinsic values that were brought to the surface. Some said they really appreciated the flexibility and not having to depend on timetables. Not only was this freedom highly valued, but it also allowed employees to be more time-efficient in their work commitments. Freedom and time-efficiency are values often associated with car driving, but here we found that they also connected to bike usage. Others valued getting fresh air during their workday, telling us that this helped them to relax or feel more creative afterward. These are values typically connected with cycling, so it was no surprise to also find these values in this particular case. There were those who enjoyed the electric bikes purely for fun. These employees pointed out that they valued the excitement of riding the electric bikes up and down the hills around the work site. No other transport mode in the system was described as fun and exciting. With a *revalue* design posture, we were able to pinpoint having fun, which was perhaps

not a typical corporate value, as an important value to promote as an entry point for potential users.

In the same research project, we also developed insights on needs based on how the electric bikes were used outside the service provider's intentions. We treated these "misuses" as leads for how to further develop the mobility system. In stakeholder workshops, designed as learning spaces, we pointed to these misuses as potentials for developments. With a *remake* design posture, we were able to pay attention to alternative uses that appeared as new practices developed. The original intention was that the electric bikes were to be shared among four dedicated office buildings during work hours to facilitate transport to meetings taking place at these buildings. However, what we had heard in interviews was that several employees preferred to use the electric bikes in conjunction with the arrival and departure of their regular commuter trains. The company did not advertise that electric bikes could be used for connecting rides, since Swedish tax regulations prevent the internal corporate mobility system from being connected to public transport. But this was exactly what employees did, as they aligned their work trips with what was practical for them in their everyday lives. Therefore, in stakeholder workshops we discussed different strategies to overcome this system glitch, and with a *remake* design posture, we used the glitch as a design material to suggest potential future developments. To upscale this part, we suggested, would mean bringing more electric bikes into the system and adding more docking stations at more buildings, and would require longer opening hours to enable the system to become even more accessible. But it could also mean changing the system rules to allow employees to use the electric bikes in conjunction with commuting trips.

It's too early to tell if these upscaling suggestions will be brought forward; adjusting system rules is clearly complex. Whether we researchers will have a chance to influence Swedish tax regulations is another issue. However, I believe this is a good

example of what I can continue to do to contribute to sustainability transitions. By intervening, I can detect and amplify what might be taken for granted. Through careful analysis, I can reformulate everyday living and suggest more sustainable possibilities. With thoughtful considerations, I can propose alternative configurations of humans and technologies. However, as a humble designer, I also need to acknowledge that we cannot solve sustainability on our own, and perhaps we should not even consider sustainability issues as solvable problems. Rather, what I can do is to identify suitable leverage points [7] in systems where we can intervene with hope to make positive sustainability impacts. Even small changes can cause larger shifts. Although I realize I might not succeed, I cannot afford not to try.

ENDNOTES

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