Beyond Writing Papers: Can SHCI Move the Needle?

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Abstract

The "Next Steps for Sustainable HCI" consensus statement concludes that SHCI has had little impact outside of HCI; therefore, it has failed to promote sustainability despite the steadfast desire of SHCI researchers. I propose that the problem confronted by SHCI researchers is a fundamental one: the current academic paradigm of small-scale research that culminates primarily in a publication will not have the impacts we aspire to. To truly "move the needle" on sustainability, we must focus our efforts on changing the industries that create the mass-adopted products and services that permeate the modern world, and the political and social institutions that shape the policies that govern our lives.

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H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

Introduction

The "Next Steps for Sustainable HCI" consensus statement by Silberman et al. begins with a quote from Elina Eriksson: "We want to change things for real, not just write papers" [5], which captures the sentiment of

the CHI 2014 Sustainability workshop which it came out of. Among the many lessons learned from work in Sustainable HCI (SHCI) presented in the article, one is quite striking: "Thus far, sustainable HCI research has had little impact outside HCI." For a community that aspires to have direct impact on the issues of sustainability, this statement is a devastating, but accurate assessment of the true impact of SHCI.

The Silberman et al. article provides several suggested steps for the SHCI community to contribute to efforts towards promoting sustainability including: draw on relevant work outside HCI, build systems that people use in their everyday practices, and address the full diversity of sustainability issues [5]. I propose that SHCI's lack of impact on sustainability is even more fundamental: the current academic paradigm of small-scale research that culminates primarily in a publication will not have the impacts we aspire to. To truly "move the needle" on sustainability, we must focus our efforts on changing the industries that create the mass-adopted products and services that permeate the modern world, and the political and social institutions that shape the policies that govern our lives. The problem of the academic publishing paradigm and the need to collaborate with practitioners in other fields are mentioned in the Silberman et al. article, and this paper builds on that foundation.

In this paper, I use the definition of sustainability from "Our Common Journey: A Transition Toward Sustainability": meeting the needs of the human population, sustaining the life support systems of the planet, and substantially reducing hunger and poverty [3, p. 31]. By moving the needle on sustainability, I mean for an effort to have a measurable impact on one or more metrics of sustainability, such as greenhouse gas emissions from energy use.

The Academic Paradigm

Most SHCI research projects exist in the long-standing academic paradigm: research is conducted, often involving the creation of some novel technology, where the ultimate result is one or more publications in conferences or journals. Other researchers in the field may take note of the work via the publications, and use the knowledge generated in their own research. Authorship of publications is the "coin of the realm", and most career advancement in academia revolves around publications: jobs, tenure, and grant funding. The contributions of the research are primarily in the form of generalizable knowledge coming from the results of evaluation and analysis.

While this academic paradigm has proved very successful in expanding the boundaries of human knowledge, in the realm of SHCI, it appears largely ineffectual in moving towards a more sustainable world in a concrete manner.

In order to actually change things, I propose that the SHCI community focus on activities where the primary contribution is a change that promotes sustainability, and any publications serve a supporting role to document and measure the degree of change affected. These changes must be able to affect change on a large scale in order to address the enormous scale of sustainability issues [1]. One way to reach scale is an IT product or service (like an app) that can be distributed in a digital fashion to millions of people.

Another option would be to develop systems that are not necessarily scalable, but provide insight at "sustainability 'leverage points'" [5], such as high-level policymakers. For example, Jonathan Gruber developed an economic

microsimulation model to predict how new laws would impact the healthcare ecosystem, which influenced healthcare reform in Massachusetts and the US Affordable Care Act [4]. Thus, a limited system was able to influence policymakers, the results of which 'scaled' to millions of people.
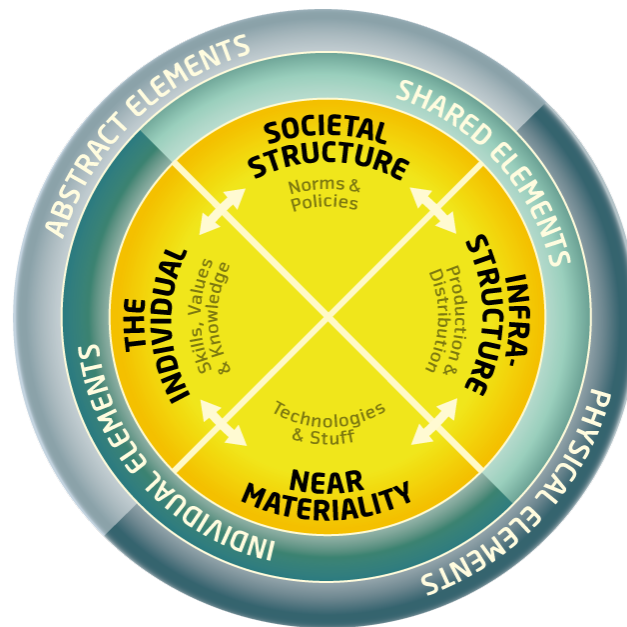
Figure 1: The Contextual Wheel of Practice, which identifies four different elements that affect practices: Societal Structure, Infrastructure, Near Materiality, and The Individual.

Beyond the Individual

Substantial amounts of SHCI research has focused on the individual: providing feedback on resource consumption, and trying to influence their behavior to reduce consumption. Yolande Strengers describes this perspective

as designing for *Resource Man*, an archetype for the user who is empowered by feedback and desires to control energy use through technology [6]. However, many factors influence everyday practices beyond individual choices. The Contextual Wheel of Practice, developed by Entwistle et al. and shown in Figure 1, highlights the elements beyond the individual: Societal Structure, Infrastructure, and Near Materiality [2].

I propose that to have real impact on sustainability, SHCI research must target the shared elements shown in Figure 1, Societal Structure and Infrastructure, and away from the individual elements. However, societal structures and infrastructure are consist of and are built by individuals. Therefore, this shift does not necessarily mean that SHCI research should not address individual users, but that the overarching goal should be affecting the shared elements rather than changing individual behavior. In the following section, I sketch some ideas for SHCI research that could potentially move the needle.

Research Directions

As identified by Silberman et al. [5], the scale of sustainability issues often makes them difficult to grasp. For example, people have difficulty understanding the time scale over which anthropogenic climate changes are occurring; therefore, climate change is often considered not as urgent as other societal issues. One way to make the public more aware of the consequences of climate change would be a Civilization-style game where the player controls a city or nation. If each turn in the game represents one or more years in the simulation, players can experience climate change on a more condensed time scale. Using climate change models, the game could show the projected impacts of climate change as they increasingly affect the game play: coastlines disappearing

due to sea level rise, famines due to crop failures, etc. An entertaining game can potentially have millions of players, who can become more informed citizens when they take part in the political process through voting. Note that while such a game would be played by individuals, the goal of the game is not to convince players to reduce to their environmental impact, but to change attitudes and social norms regarding climate change.

While developing such a game is possible in the current academic environment, the pressures and priority given to publishing do not support the needs of a system that must scale to many users with the level of polish that users expect from modern IT systems.

More broadly, SHCI can directly target the government policies that shape many sustainability issues. This targeting could include providing better models of human behavior to decision makers, or directly targeting the political system by providing better ways to communicate with elected representatives, or making it easier for sustainability-focused candidates to run for office. These government-targeted actions have the advantage that they reach beyond sustainability, and would be useful for other movements, such as social justice, that require changes to Societal Structure.

I hope that the CHI 2015 workshop can be a forum to come up with further ideas on how SHCI can actually be a force in making the changes in the world that we want to see.

Acknowledgments

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