

Re-purposed activist as new sustainable HCI researcher

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NOTE

The first person pronoun in this paper refers to the first author. All content was produced by the first author. The second author helped frame and organize content.

INTEREST AND BACKGROUND

I graduated high school in Redlands, CA in 1991. By 1999 I was working for National Datamax, a small software company in Southern California. My work was rewarding: I was the sole author of a 200-page technical manual for the Windows version of ProSource Premier, portfolio management software for independent stockbrokers. The internet was new. For us, information technology wasn't a shortcut to techno-utopia, but it was part of a shared and inspiring vision for a beautiful and sustainable future for humanity. Since 1995 I had been active in the radically inclusive self-expressive experiment in sociality and self-reliance called Burning Man. In 2001 this led to a project in dispersed community: a group webcam house. Our vision was to change the world by modeling the behavior we learned through the Burning Man experience: interdependence, do-ocracy, safety third, radical inclusion, self-reliance, Leave No Trace, and personal responsibility. These traits were uncommon in the 'default' world—and if not every person could come to the playa, we could bring the playa to the people in smaller, more understandable bits.

In 2004 the emerging social contract of Burning Man was honed to the current "Ten Principles". In 2000 those sensibilities were embedded in the experience even if they had yet to be formalized. 'The house' was built on individual understanding and group negotiation of those sensibilities. To get a sense of 'the house,' consider the Muppets. Recall in particular, if you can, the setting of the 1999 film *Muppets from Space*: an interdependent community living together, sharing resources and fostering personal development through self-expression. Now add technology and connectivity.

'The house' in our story was a 5-bedroom ranch-style single-family home outfitted with dozens of 24/7 streaming webcams, servers, monitors, tons of storage space and a cozy pool in sunny San Diego, CA connected to the then-open CitizenX webcam community. The house was an exploration in community and sustainable social impact. Resource awareness and use optimization (reduce, re-use, re-purpose) was foundational both to social life at the house and its physical organization. Little 'waste' left the house, and all surplus was open for use. This surplus—computers, food, art installation materials (nails, 2x4s, half-empty cans

of paint, flammable liquids, 10-cc nitrous containers), furniture, water bottles—supported a greater community of artists, social activists and community service projects. Each resident was responsible for producing an interactive weekly program with the "remote housemates" and projects ranged from cooking shows to philosophical debates with puppets. My role was to support personal development and group projects through personal quarterly goal setting and weekly accountability meetings with residents and remote housemates. Questions I've since learned are standard in agile software development—"What did you do last week?", "Plans for this week?", "Issues? Resource needs?"—were part of our social practice. The technologies of constant connectivity were as ubiquitous as possible at the time. Our goal was to use technology to support the social relationships and concrete goals—collaborative projects, personal development—of dispersed participants. We wanted the technology to become invisible; *space*, we thought, would "disappear," and we would all be "present" in the same *place*.

In July 2006 I re-located to Reno with a nuclear family: my partner and infant daughter. Our 'people' were in Southern California. Living without an extended network was hard, so I built a new one. I volunteered with the Committee to Aid Abused Women (CAAW) at the Reno Courthouse Temporary Protection Order Office. I served for two years on the City of Reno Neighborhood Advisory Board for Ward 5. I sat on the City Council's Plastic Bag Ban Advisory Board. And I served two terms on the Board of Kiwanis International of Downtown Sparks. With the Kiwanis Board I launched a partnership with the Renown Skilled Living Facility to organize monthly multi-generational socials for local families and facility residents. In that time I earned the Nevada Facility Operator Certification for Utility Systems (FOCUS) certification. FOCUS teaches people to use low-cost, low-entry technologies and environmental characteristics to "improve energy and water efficiency and indoor air quality" in large buildings and processes (e.g., large factories and municipal water systems). The foundation of FOCUS's approach is to define the process (and problem) as clearly as possible and devise efficiency improvements appropriate to the process's natural and built environment. After my experience with

FOCUS, I became a LEED Professional¹; helped launch Advanced Energy Audits LLC, a start-up commercial and residential energy efficiency analysis company; and added the ‘Bicycling around Reno’ section to the City of Reno Green Pages.

My work with Kiwanis is an example of modeling sustainable social behavior. The project began with a vision for finding ways for people of different ages to interact. Skilled Nursing Facilities care for people when no one else can. Family members often lack the skills, time or interest—or are completely absent from the lives of the residents. In this particular facility, most residents live out their days within the walls of the building and small courtyard. It is a storage system for the old and infirm. In our culture of short term gain and disposable everything, these are our cultural landfills. Sequestered in skilled nursing facilities, old people are far removed from our daily experience. The first hurdle in developing the Kiwanis project’s public-access multigenerational activity was to alleviate our western culture’s fear of old people. We did this by hosting a ‘Party for the Grandmas & Grandpas’² with two clear, tangible goals: decorate the skilled nursing common room with timely decor and serve dessert. Individuals and families were willing to do a clear task in a less than “ideal” environment. Over time, comfort grew, relationships developed, and friends invited friends. After a regular routine was established, the next project emerged: in collaboration with the local Burning Man community and educational networks, we brought live performances to the monthly events. Volunteer performances from the local high school jazz band, religious groups, burlesque troupe, individual musicians and bands all found a very receptive and grateful audience—and many first time volunteers developed ongoing relationships with the facility to bring performances of all kinds (beyond the program scope) at no cost. As groups shared their experiences, new opportunities presented themselves and new performers joined the community. Now in its fourth year, this program has grown to include a second monthly event hosted by the facility residents’ new Aktion Club chapter of Kiwanis. The chapter continues to plan and host internal and external events.

I am currently an undergraduate in the Informatics department at the University of California, Irvine. I will apply to human-computer interaction PhD programs at the end of 2014. I am interested in exploring agile methods in sustainability evaluation processes; community technology infrastructures; data ownership and responsibility practices; and conducting a survey of current HCI best practices/pet

¹ At the workshop, I will be the person with the button that says “Ask me why LEED is deeply problematic!”

² This name came from efforts to explain what we were doing to my then-four-year-old daughter. The name stuck.

peeves. There is a grassroots project ‘freelance/start-up’ collaboration space in Reno (renocollective.com) I would like to study. And if time and collaborator interest permits, UML-diagramming the Book of Genesis is on my bucket list, along with “Google Religion”: where the search patterns of your chosen religious and political leaders determine your search results (the next step in outsourcing moral overhead).

QUESTIONS FOR SUSTAINABLE HCI

My questions for sustainable HCI concern the field’s frame (or frames) of reference—and metrics—for talking about “sustainability.” When we talk about sustainability, what do we measure? Are we talking about water use? Electricity use? (Peak load or total power?) Air pollution? (Air Quality Index or point source emissions?) Individual psychological well-being? (Population suicide rates?) Social capital? Gross Domestic Product or Genuine Progress Indicator? Waste management? (Biodegradability or cradle-to-cradle?) Toxicity? Carbon footprint? High school graduation rates? Unemployment rates? Resilience to natural disasters?

How do we scope our analysis in space and time? If we build a software system to support “more sustainable behavior,” how long should we wait before we can evaluate success? How durable are the effects of our “interventions”? Do we measure over the period of a weeks- or months-long user study? Over a quarterly or yearly business cycle? Over the life of the researcher or study participant? Over the life of an organization or city?

What are our mechanisms for revising frames and metrics? For example, the United Nations Framework Convention on Climate Change meets every few years to reassess their understanding of “sustainability.” What about us? What is the field’s “mission statement”? When was it last changed? How has it changed? Who is invited to that conversation?

How, conceptually and practically, have you addressed sustainability in your research process? How do you measure “how sustainable” your own research process is? For example, how much paper did you print? Did you fly around the world to present your results? What are the expected improvements to sustainability that will result from your work?

WHAT IS SUSTAINABILITY? HOW MIGHT IT BE ACHIEVED?

Defining sustainability is an active, ongoing process. The term must be defined explicitly for every conversation—sometimes more than once. Individuals’ definitions of sustainability depend on their position. Consider: a civil engineer, a hydrologist, an epidemiologist, and a social worker walk into a bar after a long city council meeting about water quality. These people have different worldviews because of their training and everyday experiences and work practices. And they serve different stakeholders. They can talk past each other and not learn anything. Or they can share a pitcher and find common

ground. When the pitcher is empty, if all goes well, they have arrived at a single, shared definition of “sustainability” for the topic at hand. They may use four different metrics (or sets of metrics), but these metrics fit together into a single coherent picture. The four separate reports they write at the end of their project can be read by one person—and make sense.

In 2008, I sat on the plastic bag ban advisory panel for the City of Reno. We held a series of three meetings with different stakeholders to find out if banning plastic bags was viable for the city. A lobbyist from the American Chemistry Council—a plastics industry lobbying group—flew in from Sacramento for all three meetings. At one meeting, a representative from the Trex Corporation also attended. Trex is a Fernley, NV-based company that makes decking out of mostly post-consumer recycled plastic. Fernley is 34 miles from Reno. In the context of the global economy, Trex is a local company for Reno citizens. The prospect of banning plastic bags in Reno raised the question: How would it affect Trex? On one hand, banning plastic bags seemed to be a step toward sustainability. On the other, Trex seemed like the model of a sustainable company. In comparison to wood decking, we thought, Trex decks save forests. Nobody uses toxic sealants on the wood. It’s better for the home. It’s better for children. Waste bags become inputs for new products. And best of all, it’s all local! So I asked the Trex representative: how do you get our plastic bags?

He told us that Trex buys waste plastic bags exclusively from a plastics exchange. (You cannot drive your pickup to the Trex factory and sell Trex a box of plastic bags.) They buy the cheapest bags. Often, the cheapest bags come from Asian vendors. Often, those bags come originally from the United States—including Reno. So, while Trex is a local company for Reno citizens, the process of making Trex decking is far from local: a plastic bag might be thrown out in Reno, put on a ship, sailed to China, stored for weeks or months, sold to Trex on an internet-based plastics exchange, put on another ship, sailed to Los Angeles, and trucked to Fernley before being turned into decking.

One question this story raises is: how sustainable is Trex decking really? But we cannot answer this question without saying what we mean by “sustainable” *in this specific conversation*. Different people bring different definitions—and metrics—to the conversation. For the Trex representative, sustainability meant “recycling”: taking waste and repurposing it. “More recycling” meant “more sustainable.” For him, other relevant metrics were: more trees saved, fewer toxics introduced into homes, less splinters for children, and time and money saved for homeowners on deck maintenance (over wooden decking). For the plastics industry lobbyist, sustainability meant “recycle our products—and don’t put people out of work.”

In 2008, plastic bags were everywhere in Reno. In the three hours I spent taking photos, I found them stuck in bushes

alongside roads, in parks, in trees, in the river, and in elementary school playgrounds. I photographed one caught on a railing in front of City Hall. In this context, the relevant metrics for the city’s environmental services administrator were: time and money spent by the city to clean up inappropriately discarded bags; the economic effect of discarded bags on tourism, and conversely, the potential for more tourists to be drawn to a “green city”; and mechanical problems (which cost time and money to fix) caused by plastic bags caught in street sweepers, snowplows, and municipal water treatment systems.

All these sets of metrics matter. All of these positions are equally valid. (And there were other stakeholders I’m not mentioning: for example, my job on the panel was to represent the interests of “the public.”) But we failed to build a common understanding of the problem space where every stakeholder’s position was included. We were unable to agree on a coherent set of metrics. We were unable to decide what “sustainability” meant to us *in this conversation*. Indeed there was no “us”: we entered the meetings as individuals with disparate interests, and left unchanged. Because we failed to create shared meaning, we failed to agree on metrics, and failed to construct an “us.” As a result, when the city environmental services administrator wrote up the meetings, there was a list of conflicting recommendations. The administrator made his report to the city council. The city council, lacking clear direction, tabled the matter—for the time.

It will come up again.

Yesterday I was faxing a stack of paperwork. As the shop owner helped me, I saw on his wall calendar a quote from naturalist John Muir: “When we try to pick out anything by itself, we find it hitched to everything else in the universe.” So where do we start? Here are three pieces of advice.

1. Use the trash. Use the waste of other people’s processes as input for your own. If you need to mine, mine a landfill first. Carrion birds, worms, and fungi keep processes moving by turning waste into inputs.
2. Improve the *least* sustainable part of the system first. If you’re trying to make your phone battery last longer, drop the most power-hungry app first. It draws more power than the next five combined.
3. Finally, don’t cut for convenience: account for the *whole* system. When designing—or intervening in—a system from the perspective of sustainability, nothing can be thrown “away.” There is no “away.” To achieve sustainability requires that we act as if this is in fact true. In such a system, there is no such thing as “waste.” This includes plastic bags *and* the 90-year-old physicist with dementia and no living relatives.

#3 is almost impossible—but only almost.