Feeding the triple top line

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Abstract
We contend that in order to make sustainability more attainable, HCI practitioners can productively focus on providing quality information to citizens. The example presented here is focused on helping eaters embrace SOLE (Sustainable Organic Local Ethical) food.

Keywords
Triple top line, crowd-sourcing, satisificing, systems

ACM Classification Keywords

Introduction
Many have touted the triple bottom line[1] as a way to incorporate environmental concerns into traditional business accounting. More recently, McDonough and Braungart[2] have proposed the triple top line as an improvement upon this concept. They say "A business strategy focused solely on the bottom line, however, can obscure opportunities to pursue innovation and create value in the design process. New tools for sustainable design can refocus product development from a process aimed at limiting end of pipe liabilities to one geared to creating safe, quality products right from the start."

The triple top line concept is anchored by ecology, economy, and equity. Each design decision has an

impact on all three and the opportunity to generate positive social and environmental effects.

The idea is to move from being eco-efficient, trying to minimize harm, to eco-effective, trying to maximize benefit. The path to eco-effectiveness may involve a stop at eco-efficient, but that is not the final destination.

We suggest that most of all, people need access to good information to make good decisions. Sustainable design and development must come a most informed perspective. Informatics, psychology, and sociology all contribute to human-computer interaction that supports people in making good decisions.

Sustainability is another factor to consider in the design of the technology, one that can be measured by examining the social and environmental effects of the technology.

Success in sustainable interaction design can be measured according to the triple top line. Moving beyond eco-efficiency, where a successful website could complete a transaction with a minimum of waste, we can strive for more transparency and completeness of information that is also fully contextualized in order to compare the social and environmental impacts of different options.

SOLE-ful Example

To make the transition towards food that is sustainable, organic, local, and ethical (a.k.a. SOLE food), one must depend upon local knowledge. As the acronym suggests, many factors must be taken into account, including production and transportation costs, (ecological as well as financial) and ethical considerations of human welfare and animal stewardship.

Monbiot[3] recommended that the world eat tilapia instead of (other) meat, because it is the most efficient farmed animal at converting feed to meat. Yet while tilapia makes imminent sense as part of a system where rice is cultivated, this is not everywhere the case. Furthermore, consumers do not know tilapia when they see it. Jacquet and Pauly[4] point out that the growing popularity of tilapia has led to many other unsustainably-harvested fish to be labeled as tilapia. in order to cash in on tilapia's popularlity. They also cite a DNA study that showed only 25% of fish labeled as "Red Snapper" were labeled correctly.

A systems approach can be very helpful to sustainablility: Joel Salatin[5] has attributed the success of his farm to his philosophy of allowing the animals' true nature come out. Joel Salatin can only sell to about 1500 families close to his farm. To replicate his success elsewhere requires farmers with great deal of management skill and support. His enterprise is definitely one which belongs to the information age.

To make wise purchasing decisions, consumers need to learn things such as what constitutes local food in their area, including local growing conditions and seasonal cycles. And, in addition to information necessary to make the best purchasing decisions, information may also be needed once the purchases have happened. For instance, many who want to do their part to support SOLE food buy into a CSA (Community Supported Agriculture). However, they may not be

prepared for the food processing this requires, or for unfamiliar characteristics of food grown organically, such as insect pests or irregular appearance. Thus, publicly available knowledge is vital to ensure sustainable food choices.

In our modern age of convenience, our adoption of SOLE food is not unlike the technology adoption model (TAM) for technology[6]. Perceived ease of use and perceived utility are important factors when making food choices. As we inquire further, we see many situations that need to be questioned.

Technology

When speaking about technology and interaction design, we must talk about tradeoffs, as described by Rosson and Carroll[7]. In particular, users may not be ready to make big changes all at once, so we must allow them to make small steps along the path of sustainability. Perhaps sustainability must come from the ground up.

Network technology can be valuable in helping individuals maintain and act on their environmental goals[8]. For instance, Canada's CBC recently launched "a million acts of green" with a website by GreenNexxus.com. Such a site both suggests sustainable actions and allows community members to record their efforts and share suggestions, both for other acts and the site itself, with others.

Within a community, best practices can be collected via crowd sourcing. For some, yet another networking site might be too much and it would keep them away from a local focus. We must therefore consider ways to balance internet and place-based communities. It is clear that some support is needed for management of online communication, so it is both less time-consuming and more satisfying.

In addressing the challenges of sustainability through HCI, we must broadly examine questions of economy, ecology, and equity to find the most promising solutions. We must seek to provide the highest quality of information to enable decisions, first, but then work to engage users more deeply. If a user is concerned primarily about food cost, that user should also be informed about indirect costs that are passed on to him or her in other ways than price for the item. Rather than provide only the information that the user prefers to see, use those preferences as a way to shape the presentation of information in a way that enables the transition towards sustainability.

Psychology

One of the challenges for attaining sustainable behaviour is the human tendency to act in self-focused and habitual ways. Information is only useful to the degree that it facilitates social norms and community support to enable individuals to act on their intentions. Using a triple top line approach can provide hopeful avenues out of this conundrum, as these efforts appeal directly to human needs and interests. Using the example of SOLE food communities, members can share information and debate possibilities to enable wise food choices for both producers and consumers, as well as enable problem-solving associated with community decisions, such as the need to reclaim food preservation skills for CSA members. Contact with like-minded others is a strong human need, and so such communities, in themselves, provide a benefit to their members, thus contributing to the triple top line.

Aspirations

Attaining sustainable behaviour rapidly is very challenging. We must find ways to find satisfaction in our best efforts, as well as assessing whether our efforts are sufficient for ecosystem recovery. The literature on `satisficing' in psychology may provide some direction, in that human happiness can sometimes be increased by narrowing choices, and individuals can be satisfied in a wide range of circumstances (including environmentally sustainable ones).

If, through both internet and place-based communities, we can create an environment that promotes connections, where everyone can contribute their piece of the puzzle, success may be more attainable. The challenge is not to find out which option is best in isolation, but rather to support ourselves in ways ranging from finding a local ingredient to having a satisfiying experience incorporating it into a meal.

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