

Forum

The Future of Design for Development: Three Questions

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The seedlings for design aimed at improving human well-being and meeting basic needs (Design for Development, or DfD) trace back at least to the Marshall Plan. According to *Fathers* (2004), DfD has seen three waves of interest: *Reconstruction*, from the late 1940s to the early 1960s, following the destruction of World War II; *Alternative Actions*, from the late 1960s to the early 1970s, which questioned previous approaches to providing aid and offered new ones like *Appropriate/Immediate Technology*; and *Mixed Responses*, from the early 1980s to the present, which has seen the broadest level of interest on a large scale. Victor Papanek (1984) and E. F. Schumacher (1973), leading thinkers in DfD with *Design for the Real World* and *Intermediate Technology*, respectively, fall squarely into the *Alternative Actions* wave, joining other movements related to DfD such as *Appropriate Technology*, *Design for the Underserved*, and *Socially Responsible Design*, among others (Rybczynski, 1991; Ho, 2003). In my opinion, the *Mixed Responses* wave led to a new phase starting in the late 1990s that was defined by globalization. It is now possible to connect—if not bring together in real-time—users, designers, donors, researchers, students, and other stakeholders who are geographically spread throughout the planet. New fields, including human-computer interface for design (HCI4D), are emerging or have already become part of the development dialogue. This is an exciting time.

Within the last few years, however, DfD activity has rapidly grown in well-intentioned but seemingly haphazard ways. Because of the energy, resources, and commitment of many talented people, there are great possibilities to impact people's lives—positively and negatively. In this Forum piece, I propose three questions to consider when working on DfD projects: (1) What are the goals of DfD? (2) How can the impacts of DfD be sustained? (3) Is remote design appropriate? The first and second questions aim to assist in orienting DfD practitioners and thinkers, while the third looks at the growing trend of remote design. Here, I would like to encourage some discussion around each. While my background is in product development, I believe many of history's lessons learned in this field also apply to HCI4D. See if you agree with me.

What Is the Goal of DfD?

Design for Development is design in the same way that interface design is design and product design is design; it is design that meets the user's needs. What distinguishes DfD, though, is that the user's needs and his/her environment are complex. The user is economically vulnerable and the environment in which he or she lives lacks and hinders opportunities. DfD does not, however, need to be for nonprofit purposes or target people in less industrialized economies (LIEs). The primary goal of design for development is to sustainably improve the livelihoods of people

who do not have their basic needs met. “Sustainable” here means “continued without further intervention,” such as subsidies. The result of DfD—the product, artifact, application, service, system—should promote such self-sufficiency and autonomy.

DfD is more than designing and making a useful artifact, such as a better water pump, a cheaper incubator, or a more appropriate user interface. Products that increase people’s incomes and provide autonomy are certainly life altering, but focusing solely on the product itself—no matter how user-centric the design—is too narrow a view if the aim is human development. If the sustained development is greater than the life cycle of a product, the development of the product is only one component of DfD and should not be seen as the endpoint. Many products have already made sustainable impacts by moving low-income families to middle-income status; for example, IDE and KickStart treadle pumps in Asia and Africa have increased small-scale farmers’ incomes so dramatically that many of the once-poor farmers are now leaders in their communities.

How Can the Impacts of DfD Be Sustained?

DfD should aim to have a sustained impact on two levels: the product and the environment. A user-centric focus is necessary to address the problem the product is solving at the level of the user. A broader perspective, however, is also needed beyond the product so societies can meet their own developmental needs. Fisher and Starr (2009) argue that, for any of this to happen, projects must have meaningful impact metrics integrated from the start of the project.

Calling for user-centric design is not a novel insight, particularly in HCI design; however, failing to understand users’ needs tends to be a recurring theme of DfD failures. My day-to-day experiences in Africa and the United States—granted, unscientific data collection at best—suggested that a majority of wind-up radios owners are actually more industrialized economy (MIE) users who can easily afford radio batteries and not the LIE users Trevor Baylis envisioned when he invented the technology. DfD, particularly in a cross-cultural context, poses new and unexpected need-finding challenges for design-

ers and researchers. A common mistake, for example, is when designers weigh too heavily the input of local informants, typically on-the-ground staff who are linguistically and culturally fluent. As a result, the needs of the targeted user can be inaccurately filtered through those of the educated élite. How, then, do you do user-centric design in the LIE context? The same way you do it in MIEs: You talk to users. Paul Polak goes as far as arguing that designers “shouldn’t bother [designing]” if they have not engaged in “good conversations, with [their] eyes open, with at least 25 [potential users]” (2008).

Also hindering product sustainability is a tendency in DfD to focus on the early stages of product design, with insufficient consideration of the production, distribution, and repair of the product. Donor-funded projects that are based in MIEs usually have predetermined milestones and timeframes that are inherently incompatible with efforts to support products after launch (Tendler, 1976). For example, it is more likely for large foundations to fund new technology development projects, but it is also necessary to invest in the later-stage efforts, such as manufacturing and distribution, that are crucial for the product to reach its intended users.

Improving the impacts of DfD beyond the realm of the product requires long-term collaborative relations that promote local capacity building. As such, DfD projects and programs should be viewed as partnerships, not assistance. Development is different than relief or reconstruction, where assistance, following an emergency like a cyclone or conflict, is needed and usually welcomed. With developmental collaborations, LIE partners at local NGOs, universities, and businesses gain experience (“Oh, that’s a cool way to do it!”), and MIE participants learn about designing within complex constraints, inconsistent inputs (“Hmm, I hadn’t considered unscheduled rolling blackouts”), and unique opportunities. Most useful to DfD target customers and designers may be collaborations with other LIE entities.

Supporting local capacity so a society can address its own developmental needs is obvious in theory. Sub-Saharan counties like Ethiopia—which have a large number of technical non-governmental organizations (NGOs) and utilize expatriate skills—ironically have a surplus of unemployed or underemployed engineers. In fact, since 2002, Ethiopian universities have graduated more than 15,000 engi-

neers (UNESCO, 2009). In most cases, these locally-trained engineers do not have the requisite skills to solve immediate problems, owing to inadequate experience, unavailability of mentors, and/or overly rote education. The environment for new graduates in LIEs is often not a nurturing one; when I asked a student at Kenyatta University about his job prospects, he told me he could not afford the *kiti kidogo* (little gift) needed to secure an interview. Strengthening local capacity in parallel with developing products offers the potential of sustained and long-term development, particularly if some skills can be outsourced by MIEs, but it is not easy, and investment in the longer term requires trade-offs with shorter-term beneficial impacts.

Design process impacts sustainability. We must recognize that design practice in MIEs may or may not transfer to LIEs. For example, in my world, the design of consumer products, MIE designers prototype and iterate, refining the product's aesthetics, functionalities, shape, size, weight, and feel. Outside of NGOs in LIEs, however, there is little original local product design because there is no money. Product development in Kenya tends to be limited to attempted reproduction of foreign-made (and designed) products (e.g., wheelbarrows) and simple products that have been reverse-engineered and adapted to local inputs (e.g., flip-flop sandals) (Donaldson, 2006). Among Kenyan producers, prototyping and iteration are economically infeasible and viewed as wasteful.

Is Remote Design Appropriate?

Remote design is the design of products to meet the needs of a user remotely located (geographically) from the designer or design team. Papanek came around to believing that remote design would "most certainly fail" (1984). In an interview, Gui Bonsiepe, recognizing the implicit hierarchy of expert (MIE designer) and novice (LIE designer/user), went further in his criticism, calling remote design "some kind of benevolent paternalistic attitude of the center to these [peripheral] countries" (Fathers, 2003). Bonsiepe continued, saying:

Design problems will only be resolved in the local context, and not by outsiders coming in for a stopover visit. This typifies one of the great disadvantages of short-term consultancy jobs, with people flying in from the central countries with

very little knowledge about the local context, and believing that issues can be resolved by remote control. (p. 47)

Remote design also contends with the issue of product sustainability, as design can only be truly user-centric when it involves comprehensive customer involvement and ready access to the environment. Invariably, released products need improvement and modification, but the remote designer is not in situ and may have moved on to a new project. Yet despite the unequivocal criticisms and sustainability challenges, much of DfD continues to be remote. Why? It is likely a reflection of demand (or supply, depending on your perspective)—in the United States, for example, undergraduate engineering students increasingly want to "do good," particularly on an international level; the result is DfD-focused project classes that address LIE problems remotely.

So is remote design appropriate? No, but as long as the demand continues to exist it is more productive to ask this: What improves the effectiveness of remote DfD projects? Many of the same things that make any project sustainable: strong local partners, comprehension of stakeholder needs, capacity building, and recognition that not everything in the design process will, or should, transfer. Additionally, designers should recognize the inherent limitations of the situation: Design that addresses interaction with a human should not be remote from the target humans. Input on technical problems that have no bearing on the user interface, however, can be fruitful. For example, a Burmese NGO is radically redesigning a micro-irrigation pressure pump so that the main components are made of plastic. The new design could cut production costs by at least 30% and increase consistency and quality in production, a big product development challenge in many LIEs. The resulting "new" pump will be more affordable to many more poor farmers. In creating this pump, a team of designers in California, nicknamed the "reachback team," successfully supported the designer at the Burmese NGO, providing assistance with plastic selection and design for molding. In cases such as this, remote assistance on technical issues or the hardware in a black box could work, but remote design of the front end or hardware's human interface most certainly will not.

Finally, a simple thing that can be done to truly

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impact future design for development: Disseminate and publish failures and lessons learned. Too rarely is there transparency in mistakes made with development projects. DfD, more than any other design field, needs to learn from and correct mistakes because of the vulnerability of target users. Our ultimate goal in DfD is the elimination of DfD projects. ■

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