

## **Three Bad Assumptions: Why Technologies for Social Impact Fail**

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### **Abstract**

While an increasing number of technologists want to develop humanitarian technologies, most projects suffer from mismatched expectations between the technologist and target community. There are methods to promote “correct” community engagement, but the majority of humanitarian technologists do not have the time or resources to learn relevant social science theory and practice. From practical experience and research, we suggest five strategies and corresponding tactics to help address this problem.

Keywords-humanitarian technology, community development

### **I. INTRODUCTION: HOW THE CHASM IS CREATED**

Although humanitarian technologies often support particular traditional development sectors such as agriculture or health, the communities with whom we work do not self-arrange in this manner. People do not live in sectors. This simple statement helps explain decades of development inefficiencies, competing efforts, and gaps in services and programs. With the best of intentions, humanitarian technologists continue to perpetuate myopic development initiatives. Contradictions underlie both engineering as a discipline and humanitarianism as a goal. The developing world is littered with the vestiges of failed technology-for-development projects. Communities are increasingly skeptical of visitors who over-promise, under deliver, and rarely return. People in the developing world are tired of being research subjects.

There is a growing awareness of the ubiquity of failure in humanitarian technology. FailFaires are becoming must-attend events where we admonish ourselves for our short-sightedness, and praise ourselves for acknowledging suboptimal outcomes [1]. Exposés on the downsides of the “Playpump” [2] and the hyperbole of Three Cups of Tea [3] are intended to keep us honest as practitioners, as are EWB Canada’s excellent Failure Report [4]. Recent efforts have attempted to develop a taxonomy of technology failure [5]. Three errant assumptions continue to lead many NGO and academic efforts toward failures, and many developing communities to a rejection of technology as a viable development strategy. Communities have gone so far as to tell their well-meaning humanitarian technology visitors to never return.

### **II. THE THREE BAD ASSUMPTIONS**

**A.** Because a community did not have a certain technology before, the community will certainly be better off now that the project has been implemented.

The thinking (perhaps reasonable to us) is that “they had nothing of this sort, and now they at least have something that has to be better than nothing.” Creating and deploying a novel technology may feel like it will inevitably move the development needle – until we see that the project does not actually meet a real community need, is deemed useless or cumbersome by community, or worse, exacerbates or introduces discord in the community.

**B.** The quality bar for humanitarian technologies is low.

While it is of course necessary to consider sustainability concerns such as local sources of materials and the capacity of the community to maintain the technology, simple design does not mean poor design. Time is the enemy of quality of projects for development projects. A student or team that only has Spring Break to visit a field site and install a working prototype is likely to cut corners to meet a deadline. In mature markets, this is forgivable, even standard operating procedure – we like to alpha- and beta-test new technologies; we understand that the software will have service packs and fixes after its release. But prototypes and early adopters have no place in humanitarian technology. When it comes to field deployment, testing should not happen in communities where livelihoods are at stake. It is usually wrong to offer a community a “proof of concept” technology that we would not offer paying customers in the developed world.

**C.** Install and forget works in development.

Very few development efforts make a truly long-term commitment to the communities they seek to serve. We have yet to visit a community anywhere in the developing world that does not have a story about an NGO or student group that promised to come back and never did. We know the value of long-term relationships with communities, and no one wants to tell community members that they will not likely return. We often justify not returning because we have left the community with a technology – something they didn’t have before. After all, we have done the important part of the job, which is the project itself. Perhaps we have even left some training and repair manuals and some spare parts. Anything beyond that is simply relationship building and PR. There are two flaws with this thinking. First, is a community loses its

trust in our intentions; any future work is a non-started. Second, our primary goal is to actually improve the quality of someone's life. We should know if that goal is realized, and if not, we need to understand why not. Answering these questions requires an actual sustained presence in the community.

### **III. TECHNOLOGY VS. SOCIAL SCIENCE**

Many organizations have created frameworks, checklists and top ten lists to ensure the soundness and credibility of their development projects. We point our students to the growing "mea culpa" literature and step them through such resources as BRIDGES.org's "Real Access / Real Impact criteria" and "12 Habits of Highly Effective Development Initiatives" [6]. These resources are unequivocally useful for class discussions and have unquestionable value. They remind us of the UN Millennium Development Goals themselves -- who could be against universal education and health [7]? Our students emphatically nod: of course they will do their research on the area; of course they will conduct community assessments. Of course they will be participatory, because we have said over and over again that community participation is the key to project success. What we fail to teach them, however, is that these activities are hard, time-consuming, and often lead to conflicting information.

It is unrealistic to expect to turn technologies and engineers into development experts and social scientists with a little in-class instruction. It is similarly unrealistic to teach social scientists to be computer scientists and engineers in a semester. Yet humanitarian technology initiatives require expertise -- real expertise -- in both fields.

We share an enthusiasm for the potential of technology to help address the complex challenges associated with development. Too often, however, we lead with the technology, focusing on our understanding of the solutions before we really understand the problem. Understanding a community's needs (and its priorities) is essential, but such assessment takes both time and expertise. We should expect to spend a lot of time listening to community members (especially dissenting voices), and, where appropriate, we should seek out colleagues whose knowledge and experience compliments our own.

With that focus in mind, we offer five principles that have helped us work successfully with communities. These suggestions represent practical advice that, in our experience, has helped obtain community participation, and the perception of projects as successful by both practitioners and community members.

### **IV. THE FIVE PRINCIPLES**

These five principles have guided our work for several years. They have contributed to productive and participatory community engagement. These ideas are neither surprising nor unique, but they have helped the authors (a social scientist and a computer scientist) communicate honestly with each other and with the communities with whom we have worked. We believe the use of these principles leads to an engagement strategy that has a higher potential for success.

#### **A. The community matters -- your ideas don't**

We are in the field of humanitarian technology because we are moved to action against inequity. We develop our foci around certain problem and community types -- a region, a disease, a cause. Often, this agenda runs up against conflicting community perceptions. A humanitarian team focused on malaria reduction is in for a surprise when the community does not place malaria as its top priority. If the community identifies lack of education as its most pressing concern, this presents an option to link malaria reduction with school absence, likely requiring a shift in project design. Trying to convince a community that our priorities should be theirs is counterproductive at best.

There are many development anecdotes that describe the best of intentions gone wrong -- a community health post built upon land that no one in the community will walk on because of its bloody history, the well that is build closer to town -- to the dismay of women who now no longer get to enjoy their only time to chat with other women, the arsenic-free water pump whose water tastes unpalatable to those who prefer the poisonous water. If a family dislikes the taste of bread made in a solar oven, they are not going to use it just because we tell them it is better for the environment. Truly listening to community members about their perceptions and priorities will necessarily require changes to the project design that we have spent months or years developing. While that project may represent our "baby" (or our dissertation), we should not expect, and we cannot require, the community to adopt our priorities.

#### **B. Don't use the community as a research subject**

There is often discord when development practice and research abut in the field. Much has been written on the real goals of humanitarian technology, and active debate persists among development practitioners and researchers over objectives. Does "development" require an actual improvement in the quality of life of community members, or is it acceptable to conduct research that may not impact community development in the foreseeable future, but which may have a long-term potential for positive change? Our own thinking on this subject leans strongly toward development as positive impact. Pilot projects are particularly problematic in this instance, and should not be undertaken unless the community specifically understands that the pilot means short-term engagement and a low probability of immediate positive community impact.

Data collection and development are not the same. Using a community for project and usability data is only appropriate when explicit consent can be negotiated [8]. Otherwise, the implied promise of engagement and change is broken, which leaves a community without a usable technology and often with diminished trust of development initiatives in general. For this reason, we advocate that students go through the Institutional Review Board (IRB) process at their institution – not because it is a terribly useful tool in the field, but because the process of writing an IRB brings these questions and risks to the forefront, and makes evident what needs to be negotiated at the community level [9]. Many humanitarian technology projects eschew the IRB because they are not doing traditional research, but are project-based. The value of the IRB in humanitarian technology is not about research, but about respect for other people.

**C. Buy-in from one community “champion” is not enough**

This recommendation contradicts conventional development wisdom. Project leaders are often instructed to find a community champion to adopt and “sponsor” the technology being introduced. Usually, this is a mayor or equivalent – a chief, a group of elders. This idea stems from the belief that communities follow the example set by the persons in charge, especially in collective-oriented communities. While this may be true at least to some extent, it fails to recognize that those in power often do not share power. Many humanitarian technology failures, even those developed by the most engaged technology companies, stem from giving community leaders control of the technology. Follow-up visits to such communities frequently demonstrate that the dominant family or group in the community is the primary beneficiary of the initiative.

We have found our projects are much more sustainable and equitably used when we have transferred project or technology management to those who are already on the margins of the community – women, the elderly – especially widows, and those with disabilities. These groups of people understand the power relations in the community, and often appreciate the opportunity to work outside the dominant paradigm. Due to the cachet of an NGO or university, those in charge rarely challenge this unorthodox deployment; likewise, these unlikely champions enjoy a shift in status and recognition, which serves as a form of development in itself. Widows, who are often the most ostracized members of a community, set a powerful example. If they, as outcasts, can use and benefit from the technology, the perception is often that everyone can. Women and those with disabilities are often the least mobile and least likely to leave a community, unlike those in more powerful positions; thus, a project can enjoy consistency and a greater chance of sustainability.

**D. Poor people are not monolithic**

Because many humanitarian technologists do not have the luxury of getting to know the community well, they have a difficult time recognizing the power differentials in a community based on class/caste, race, gender and religion. We tend instead to lump “poor people” together as a self-organized unit with little internal differentiation. After all, they share many characteristics that we aim to impact; they are all without the options and opportunities afforded to those in higher socioeconomic strata. We have a tendency to also present “the poor” as a virtuous and grateful group that is happy we are willing to help, and who will do the right thing with the technology presented to them. This is frequently a misperception. Often, outsiders are viewed with suspicion, especially in communities with a colonial past, or those that have been disappointed by previous encounters with development efforts. Gratitude is not a given – often, we are simply bringing the living standard of a community up to the most basic level. It is also presumptuous to assume that those in dire straits will use new resources in the way that we think they should. Project members are often disappointed when people use the donated laptop to read about movie stars rather than find employment or health information, or that a family will choose to go to a Bollywood film rather than pay back a loan. The poor are like all of us in this regard; we sometimes choose to act on taste and preference rather than logic. We should not be surprised when people do not drink the chlorine-treated water because they prefer the taste of untreated water or that they sell donated mosquito nets for a profit, any more that we should be surprised when our colleagues smoke, consume trans fatty acids, or collect debt on vanity items. We only have to look at the emerging body of literature in behavioral economics in development to realize that we are not the arbiters of judgment [10].

**E. The customer is always right**

It is condescending to view the beneficiaries of humanitarian technologies as anything other than customers. If our technology is being used in unanticipated ways, or not at all, it is because we have failed to correctly address human needs and wants with a technology. If we fail to serve our market, our project will become another failure. If we fail to understand the market for our produce, or if the market is already flooded with a competing product, we are likely to fail. If we fail to embrace existing standards, or if we develop a product of poor quality, we should not be surprised when our customers look elsewhere. Instead of being a standards-free zone, humanitarian technology should be governed by the same standards that we employ at home. The use of community devices, technologies and protocols is almost a more cost-effective and more success-prone approach than developing a custom solution. Our efforts should attempt to amplify existing community practices, rather than replace them.

**V.**

**CONCLUSION**

The history of humanitarian technology is replete with mismatched expectations between the practitioner and the community intended to benefit from the provided technology. Recent work examining the failures that result from this mismatch shows promise, but few actionable recommendations for closing the chasm between practitioner and community have emerged. We have offered a few ideas that have worked for us. They are based upon several years of experience and practice. We encourage our colleagues to test these ideas.

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