Communities Real and Imagined: Designing a Communication System for Zimbabwean Activists

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ABSTRACT
In this paper, I describe how various understandings of community activated the design of Dialup Radio, a mobile phone-based independent media distribution system for Zimbabwean civil society and human rights activists. I identify three distinct communities and discuss their influence on the design process. Finally, I consider the challenges activist designers face in simultaneously addressing the needs of present-day users and the imagined future communities their projects hope to create.

Categories and Subject Descriptors
K.4.2 [**Computers and Society**]: Social Issues

General Terms
Design, Human Factors, Theory

Keywords
Design, Activism, Community, Mobile Phones, Zimbabwe

1. INTRODUCTION
Community is an elusive term even among technologists for whom it is a central concern. While it may be generally understood to have something to do with arrangements of social actors who share something in common (interests, affinities, ethnicity, resources), practitioners and scholars alike seldom reflect on what precisely is intended when the word is employed. And yet, technology designers continually make decisions based on tacit beliefs about the communities that they and their users inhabit.

In this paper, I examine how designers' implicit understandings of community were manifest in the creation of Dialup Radio, a telephone based independent media service created for human rights and civil society activists in Zimbabwe. I will argue that several distinct communities were implicated in the design process, causing the design team to make trade-offs between competing goals and demands. I will also suggest that despite limited direct engagement between designers and various stakeholders, notions of community exerted significant influence over the project as designers struggled to meet the imagined needs of their constituents.

C&T'09, June 25–27, 2009, University Park, Pennsylvania, USA.
ACM 978-1-60558-601-4/09/06.

The decision to base this analysis on an explicitly political project is not accidental. Political activists have long been early adopters of information technologies, and have been among the first to realize the potential for networked communications to create, nurture, and empower communities of all stripes. Activists think deeply about relationships between community and technology. By describing how activist understandings of community are manifest in a technology development process, I hope to show the ways that multiple, even competing notions of community can coexist within a single project and show how these ultimately shape design practice.

2. BACKGROUND: ACTIVIST TECHNOLOGY
There is extensive literature describing activist technology use. For decades, activists have utilized communications technology including FM radio [1-3], public-access television networks [4, 5], walkie-talkies [6], personal computers [7], email and file sharing [8]. Throughout the 1990s, the emergence of Internet technologies transformed protest movements and political campaigns [9-12] and has facilitated the rise of transnational activist networks [13-15]. The advent of mobile phones has continued to transform the nature of dissent and public protest [16, 17]. Since the first mobile-phone enabled protests shook Thailand in 1992 [18], mobile phones have come to play a central role in organizing and coordinating mass mobilizations around the world [19] and facilitates new forms of fluid, responsive collective action [20-22]. Networked communications can also become platforms for political dissent in their own right, as activists create politically-themed games [23] and ring tones [24].

There is far less literature describing the considerable design and engineering effort that goes into creating and adapting technology for activist use. In recent years, a growing movement of politically engaged designers and engineers have been quietly building technical infrastructure for advocacy campaigns around the world. Their efforts have been enabled by the increasing ease with which communications systems can be designed, prototyped, and implemented. The falling cost of computer equipment and bandwidth, combined with the development of user-friendly programming and scripting languages have made is substantially easier to prototype and deploy communications systems and applications. At the same time, an expanding technical literacy has reduced barriers to software development and provided a labor force of technicians for political movements. The recent emergence of "hacktivists" [25] and "advocacy developers" – loose networks of designers and software engineers who work

primarily with social justice organizations -- provides the needed technical expertise for activists to appropriate existing technologies and to create new advocacy tools [26]. Perhaps the best-known example of such a system is Indymedia, a web-based "open publishing" service that was initially developed to support independent journalists covering the 1999 anti-WTO protests in Seattle [27, 28] and has since grown into a global network of websites, radio stations, and newspapers [29].

Studying activist design practices is of particular relevance to the community technology movement. Activist groups have long wrestled with questions of how new technologies can be utilized to encourage communication and collaboration, and how these tools can foster the development of new kinds of social organization that privilege notions justice and social equality. Moreover, that tacit beliefs and ideologies which often implicitly shape design activity tend to be highlighted in activist design practice. The fact that activists devote significant time and energy to debating the political and social implications of their actions provides researchers with unique access to the ways that personal belief and political ideology shape design processes.

3. DIALUP RADIO

Dialup Radio was a telephone-based information distribution system designed for civil society and human rights workers in Zimbabwe, a southern African nation ruled by Robert Mugabe's authoritarian ZANU-PF party. The country is widely regarded as a failed state. The local economy has collapsed; corruption, unemployment, HIV/AIDS and political repression are rampant.

One of the ways that ZANU-PF has maintained its hold on power is through tight control of Zimbabwe's media. This control is exerted through several means, including outright ownership of newspapers and broadcast stations, legislation limiting foreign ownership and imposing restrictions on editorial content, and licensing processes that result in self-censorship by media outlets [30-32]. The Internet remains a relatively free medium, however usage rates are relatively low [35].

Dialup Radio was intended to allow local activists to bypass government restrictions on information flows by distributing independently produced radio-style programming directly to users' mobile phones. The widespread adoption of mobile phones coupled with a relative lack of government control over their use made them an attractive platform for an independent media service.

The system included a database of audio files that could be accessed by telephone. Audio content was created and managed by a network of local NGOs through the project website (figure 1). A telephony server and custom software that dynamically generated interactive voice response menus (IVRs) allowed callers to navigate a range of programming including independent news, local politics, underground music and HIV/AIDS awareness information. For example, a caller might be greeted with a message like "This is Dialup Radio, Zimbabwe's source for independent news and information. Press 1 to hear headlines from the BBC. Press 2 to listen to the latest track from Commander Fatso," and so on. There was also a text message-initiated callback feature that allowed users for whom the cost of telephone calls was prohibitively expensive to request calls.

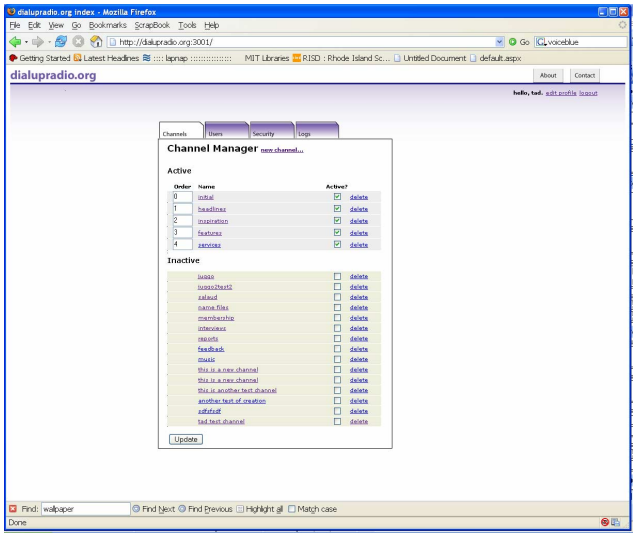

Figure 1: Dialup Radio content management system detail

Dialup Radio was designed through collaboration between several American and British technologists (including the author) and a Zimbabwean non-governmental organization (NGO) that hosts a prominent civil society web portal and provides technology training to other local NGOs. The project began in late 2005 and was successfully piloted in 2007. In 2008, the host organization received a substantial grant from an American foundation to deploy the system throughout southern Africa.

4. DISPARATE COMMUNITIES

In this section, I describe several communities implicated in the development of Dialup Radio, and how these shaped the design process and the end product. I identify three distinct communities, each of which played a unique role in determining how the system was conceived and implemented. The first group, consisting primarily of rural Zimbabweans, fits the most common model of community one finds in the community technology movement. They were understood as the Dialup Radio's "users," those who would be calling in to the system and for whose benefit the project was explicitly created. The second community consisted of civil society organizations that would produce the content that Dialup Radio was intended to broadcast. As will be discussed momentarily, there were divisions between Zimbabwe's NGOs and the general population, and between the organizations themselves. The third community consists of international networks of activists, engineers, and funders who provided many of the resources and expertise that enabled the project.

4.1 The Callers: Rural Zimbabweans

Zimbabwe's civil society organizations are predominantly urban, mainly clustered in the capital city Harare. They are cut off from the bulk of Zimbabwe's largely rural population, and have limited contact with the agrarian issues that dominate local politics [33]. No mere accident of geography, the urban/rural divide has been strictly enforced by the Mugabe regime, employed as a strategy to keep the majority of the population in rural areas where the ruling party exercises greatest control [19]. Farmers' markets have been abolished in the capital city, and informal settlements in urban

areas have been dismantled to force their inhabitants back to the countryside [34].

Dialup Radio was conceived as a means of overcoming urban/rural divides by enabling Harare's NGOs to speak directly with the citizenry. Accomplishing this was not without its difficulties. In addition to the prohibitively high calling costs described above, access to Zimbabwe's telephone networks is also tightly controlled. Most of the mobile phone operators have direct ties to the government; even the single independent operator would be unlikely to support a project that was seen as antagonistic to the Mugabe regime. At the same time, call costs were prohibitively high for most citizens.

Access to the mobile phone networks was achieved with GSM modems, which enabled Dialup Radio's server to communicate directly with the mobile phone network via prepaid SIM cards. These were purchased anonymously from black market vendors, making them very difficult for a government monitor to trace. The project relied on small, highly mobile hardware that could easily be concealed or moved as events demanded (Figure 2). Other solutions were also investigated, including using commercial voice over IP termination services based in neighboring South Africa to place and receive calls to Zimbabwe.

There were also social barriers between the host organization and the community for which the service was intended. The NGO was largely staffed by middle-class women. The two principals were middle-aged English speakers, and all three of the people working on the project were Caucasian. This stands in marked contrast to the bulk of Zimbabwe's population, who are Black, young, Shona-speaking and poor.

Figure 2: System hardware fit in a backpack for easy concealment and mobility

These discrepancies had technical and social ramifications that were highlighted during prototype evaluation and brainstorming sessions held with potential Dialup Radio callers. One of the early discoveries was that mobile phone users with contract lines experience much better quality of service than those who used prepaid SIM cards. Most of Zimbabwe's poor rely on prepaid cards for their mobile phone service; however, the discovery was made fairly late in the process because the NGO's staff, who used their own phones for testing throughout the project, all had contracts.

The user evaluation sessions also demonstrated the difficulties in crossing social barriers in such a heated political climate. At one session held in Harare with young professionals, participants were wary of the NGO staffers and refused to discuss politics in any way, not commenting even on whether they intended to vote in upcoming elections. In anther session held with rural teenagers, participants initially appeared to take on the role of school children, dutifully providing their inquisitors with answers that seemed most likely to please. Much to the chagrin of the NGO staff, it nonetheless became clear that they were less interested in news and political programming than in music and cultural information. After this session, a decision was made to adopt a magazine format for the service that featured music and cultural information, interspersed with political content.

4.2 The Producers: Civil Society Organizations

Dialup Radio was initially conceived as a tool to broadcast content produced by the partner organization directly to Zimbabwe's citizenry. However, Dialup Radio came to be seen by the project team as an opportunity to foster cross-agency collaboration and energize Zimbabwe's activist community.

When the project was initiated, Zimbabwe's opposition movement was extremely fragmented. Many people who had actively opposed ZANU-PF during the 2000 and 2002 elections had since left the country or retreated from politics. According to project participants, the remaining civil society and human rights organizations were jaded and fearful. A lack of resources and initiative hindered cross-organizational collaboration. To be sure, groups of activists and NGOs continued to share resources and provide emotional support to each other. For example participants were recruited from several local civil society organizations for one of the Dialup Radio user evaluation sessions, which was held at the home of a prominent supporter of the main opposition party (Figure 3). Nonetheless, local activist networks tended to be small and closed. Fear of government retaliation prevented many activists from working in public, and discouraged them from recruiting new members or forming new partnerships.

The project team hoped that Dialup Radio could help rebuild Zimbabwe's NGO community, by providing opportunities for collaboration within the design process and by creating a service that could be utilized by a host of civil society organizations. The design brief quickly evolved to include mechanisms for other individuals and organizations to become content providers. The driving metaphor of a radio was adopted to convey the idea of a shared service in which various actors could maintain their own "stations." Allowing multiple organizations to contribute programming to a shared service required the addition of a content management system to the design specification. This was implemented as a website that allowed organizations to upload and manage audio files, and server software that could dynamically build interactive voice response (IVR) menus when users called in to the system.

Figure 3: User testing with members of several local NGOs, at the home of a prominent activist.

Developing the project as a shared service raised administration and policy issues for the partner organization. One of these had to do with editorial control. The system could be managed in various ways. Participation could be open to anyone or restricted to a few trusted organizations. Content providers could have total control over their channels, or be required to submit new programming to an editorial board before it went live on the system.

The partner organization chose a fairly conservative approach. Participation was limited to a select handful of organizations. All content was required to be approved by an editor before it was available to callers. The desire to maintain control over the content was motivated in part by reluctance to broadcast overly provocative material. This is an understandable concern – civil society organizations maintain a precarious position in Zimbabwe, anti-government activists face arrest, beatings, and imprisonment.

The decision to exercise editorial control was also motivated by the NGO's desire to maintain ownership of the system. This was largely described as a matter of "branding," which became increasingly important as the NGO came to see Dialup Radio as a valuable asset for its international fundraising efforts.

To ensure quality and protect its brand, the NGO chose to maintain a central position in the project as gatekeeper and service provider. Dialup Radio was to be provided to the civil society community as one of the NGO's program offerings; it was not to be wholly given over to the movement.

The NGO also wrestled with how to pay for the telephone service upon which Dialup Radio depended. Telephony is relatively expensive in Zimbabwe; much of the population cannot afford to make voice calls. A decision was made early on in the design process to provide a call back service in which the system would make calls to users in response to text messages or make a "tickle calls" (where the phone is hung up before the recipient answers). This arrangement would allow users to access the service for free by shifting the cost of calls onto the service providers.

Several models were considered, including soliciting funds from international agencies and middle-class ex-patriots living in Europe. The host organization also requested the project include a billing feature (not implemented) that would bill content providers based on how often their content was accessed. This approach reveals underlying attitudes about the NGO community. In positioning itself as a service provider to local civil society organizations, the host organization approached potential collaborators as clients. The NGO network was thus understood as a community of professionals, in which billing and receiving payment for services rendered was accepted practice. This model is distinguished from, for instance, solidarity-based activist communities in which participants contribute resources depending on their ability to pay rather than on the type or amount of services that are consumed.

4.3 The Enablers: Global Activist Networks

Project participants were also involved with international activist communities. The designers and engineers were based in the United States and the UK and were involved with a variety of activist groups both in their home countries and abroad. The NGO was based in Harare, but relied on international donors for funding. Its staff regularly traveled throughout Africa, Europe, and North America to attend meetings and conferences. While the design activity was focused on the local context, the project team was also mindful of international activist networks, explicitly considering these communities as the design activity was undertaken.

It was generally believed that the technology developed by the Dialup Radio team might also taken up by activists outside of Zimbabwe. Indeed, this was among the motivators of the technicians' involvement in the project – it was viewed as an opportunity to address the situation in Zimbabwe and also to develop tools that would be useful back home. The agency that provided funding for the project was also interested in technology migration, anticipating that the tools and techniques developed in Zimbabwe could be adapted for other environments in which it was active.

To ease adoption by international organizations, the team relied on open source software and preferred platforms with robust developer communities. Notions of technology migration also influenced how features were prioritized, with the technical team preferring implement features likely to have wide appeal outside the local context.

Although the development team sought a design that could easily be adapted by other activist organizations, solutions developed for the unique local context often defied easy translation. The designers had to devote significant energies to overcoming singular infrastructure, poverty and political hurdles that would not likely be duplicated elsewhere. For example, the team elected to create a custom content management system (CMS) for the Dialup Radio's audio files because the most popular CMS in the activist community – Drupal – was considered insufficiently secure for the Zimbabwe environment.

Over the course of the project, the NGO shifted its focus from local to international communities. The NGO initially sought to establish itself as a service provider offering the Dialup Radio platform to other Zimbabwean organizations. Later, the NGO became increasingly interested in partnering with agencies in other locales to deploy Dialup Radio throughout Southern Africa. This shift was largely shaped by institutional concerns. As the project gained momentum, the organization began to view Dialup Radio as a fundraising vehicle that would be attractive to European and American donors. While funding had always been an issue for the

project, the organization's thinking moved away from finding ways to support the project, thinking instead about how the project could support the NGO. This attitudinal shift exerted a significant influence on the design. Despite its origins as a clandestine communications platform, Dialup Radio was ultimately developed as an aboveground service offered by the NGO. Concerns about mitigating government opposition and interference gave way to a focus on protecting and enhancing the organization' brand, which reinforced the to need maintain strong editorial control and influenced decisions about which other agencies could be considered for partnerships.

The notion of engaging deeply with a local situation while simultaneously considering the global activist community is a common theme in activist design projects. One approach is to support technology migration from one context to another through open source licenses, common platforms, and good documentation. Another is to create institutions that service activist networks over long periods of time. These are not mutually exclusive approaches and in the end, the Dialup Radio project embraced them both.

5. CONCLUSIONS

5.1 Multiple Communities

Looking closely at the Dialup Radio project reveals least three separate communities implicated in the design process. There was a professional network of civil society organizations based in Harare, which was separated by social and geographic barriers from majority of Zimbabwe's population. This second community of predominantly rural Zimbabweans lacked access to independent and foreign media. Project participants' involvement with international NGO and activist communities also influenced the design process.

Serving multiple communities is a common feature of activist design. Many activist projects attempt to support an existing activist networks while simultaneously reaching out to a broader population. Similarly, activist designers often balance the particularities of local context with the impetus to speed technology migration by generalizing problems. Dialup Radio is an interesting case study because of the degree to which participants were aware of the tensions between the various communities, and the extent to which they consciously tried to reconcile them through the design process.

This was a difficult undertaking that was exacerbated by Zimbabwe's unique circumstances. For instance, reaching out to rural populations by a middle-class, urban NGO required confronting geographic, cultural, and logistical barriers that were compounded by the specter of government repression and a pervasive climate of fear. Relationships between local actors and international networks were also complicated. On the one hand, global activist and NGO networks provided the personnel and material support that undergirded the project. At the same time, designing with these networks in mind placed demands on the project that at times conflicted with local needs.

Differences between the various communities' needs were manifest throughout the project. For example, decisions about editorial control and funding models required the design team to make tradeoffs between competing values and to set priorities by explicitly stating and revising the project's underlying goals.

5.2 Communities Real and Imagined

Balancing divergent interests in pursuit of a shared goal – or, perhaps more accurately, several complimentary goals -- is a common attribute of contemporary activism. The activist "community" is not a monolith, not an undifferentiated whole – it is, in the words of social theorists Hardt and Negri, a multitude of divergent perspectives and interests [36]. Projects are often enacted by short-lived alliances of individuals and organizations, often coming together for a limited time without formal relationships or institutions. Such was the case in the Dialup Radio project, where American and British technologists teamed up with an NGO based in Harare to create an independent media service for rural Zimbabweans.

Providing material support for the emergence of these "submerged networks" [37] is a primary objective of activist technology design. This is an inherently future-oriented approach, requiring design teams to vacillate between considering the needs of actually existing, present-day users and those of imagined future communities. In the case of Dialup Radio, this meant looking at Harare's civil society organizations and Zimbabwe's rural population, and imaging a network of urban NGOs that could collaboratively offer an independent information service, and a rural population that wanted to access it.

The Dialup Radio project's ambitions were not limited to meeting the needs of these imagined communities; the project team also hoped to actualize these communities through the design process itself. Unfortunately, impedances to cross-institutional collaboration among Zimbabwe's NGOs and to forging connections between urban civil society organizations and rural populations limited opportunities to employ participatory design and iterative prototyping methodologies. As a result, assumptions about quality of mobile phone service and callers' interest in explicitly political content went unchallenged until fairly late in the process. More significantly, the project did not have the hoped-for catalyzing effect among Zimbabwe's activist and rural populations.

The project team also imaged future social movements in far-off countries that had uses for Dialup Radio's technology. While this remains a tantalizing possibility, the project has garnered considerable interest among international activist and civil society networks and has received substantial funding for future development – all positive indications for future success.

Although hypothetical, imaginary communities maintained a tangible presence throughout the Dialup Radio project. As designers envisioned the desires of soon-to-be-empowered rural activists and of future social movements around the world at the same time that they contended with more immediate needs. In a sense, a core challenge facing the project team was how to design for the future while remaining grounded in the present day.

5. ACKNOWLEDGEMENTS

This paper is based on research conducted at the MIT Media Lab. I am grateful to Salaud, Juggo, Ken Banks, Bren Burrell, Kim Fortun, William Mitchell, Sandy Pentland, and Ethan Zuckerman for their support, partnership, and guidance.

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