

# Domesticating Design by a Disenfranchised Community

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## ABSTRACT

Many technologies afford functionalities that may be relevant to the daily lives of diverse groups of people but that does not necessarily mean that in all communities they are mundane. Indeed our construction of domestication may reflect power relations and existing inequalities and its influence in design may exacerbate exclusion. We introduce a process to respond to the needs of Aboriginal women in designing systems to support community connectivity and preserve their heritage and some of the challenges it presents. We discuss designing technology probes to help us refine applications that can be subsumed into family and social life. We propose issues relating to rural-urban differences that arise when considering these users that have wider relevance for mundane technologies.

## Categories and Subject Descriptors

H5.m. Information interfaces and presentation (e.g. HCI): Miscellaneous.

## General Terms

Design, Human Factors

## Keywords

Indigenous culture, digital divide, technology probes

## 1 INTRODUCTION

**In accordance with protocol, we acknowledge the people of the Valley of Lagoons and surrounding area in north Queensland, the Gugu Badhun: those who continue to live there, and those of other times and places; and, introduce to you: Gugu Badhun Elder Yvonne Cadet-James and the other researchers named above who support her work.**

Crafting tools to make sense of people's domestication of Internet-based applications, to inform design, is challenging when those users inhabit a world that is remote from a designer's "locale" [11]. Yet, such understandings of domestication may afford possibilities that might otherwise escape a designer's imagination, bonded as they are with the sites of production [20]. Consider a designer's, inherently selective, phenomenological interpretations of use of web-based applications for social networking and information-sharing applications common in their locales. Through their own and other's experience a designer may surmise that an application, such as 'Facebook, acts a 'water-cooler' by co-located and distributed groups. They may notice that the application supports social bonding via exchanging digital material (e.g. photos, videos), tastes (e.g. music, books, jokes), interests (e.g. 'groups', reminders) and so on. The Facebook example illustrates how frequent, web-visible use of applications offers quantities of data to weave into stories that inform design. In a formalised design method data generated through use may be similar to that

yielded by more specifically designed technology probes [14]. More implicitly, a designer's interactions in these experiences shape the meanings of phenomena of domestication.

A designer embodies the 'everyday', the meanings of the 'everyday' and the everyday use of technology based on the quotidian of their own culture. While enabling a designer to act in a technologically empowered society it also represents a "phenomenological blindness" [24] which may reflect power relations and existing inequalities. Facebook's poll page may dramatically state "*Want to instantly know what 30 million people are thinking?*", but there are a great many more people in the world. So a designer's construction of mundane experience may be instrumental in perpetuating exclusion of the marginalized. Consider disparities between the participation in technology design by people who are not white, urban-based, educated males and how, despite shifts in user demographics for common Internet-based applications like Facebook [22], useage seems to exclude minorities. For example, 55% of African-Americans do not use the Internet compared with 40% of white Americans [15]. Here, we explore formative issues in designing structures to support participation in the domestication of technologies across a 'digital divide' in Australia.

Socio-political and economic disadvantage mean Aboriginal people, indigenous to Australia, have not widely adopted and 'appropriated' [7] Internet-based applications. Use of such technologies is not simply about access, in the narrow sense of a conveniently available networked-computer, but rather "*being able to use ICT for personally or socially meaningful ends*" [23]. Aboriginal people are not inherently disinterested in technology, but tend to lack access to the equipment and infrastructure [10] that enables them to domesticate it. They lack opportunities to adapt technologies to features specific to their domain and gain the experience that enables designing. Such disempowerment is intensified by the relatively low population of Aboriginal people, at only 2.5% of Australia's total population [2] and colonial antecedents. They are a diverse, and frequently dislocated, group of peoples displaced from their lands whose culture, social support (such as by kinship), or identity through language has often been eroded (see: [4]). There are profound consequences for cultural memory when a people have limited opportunity to evolve a technology. Culture and history become inscribed into technology when people are empowered in shaping its progression, to integrate their legacies into our '*yesterday's tomorrows*' [3]. But, this is a challenge for fragmented groups in threatened cultures, and particularly when their antecedents differ from those typifying the locale of design. Technologists in Australia tend to be of migrant and/or colonist culture, eager to leave the past behind the frontier to the future.

Our aim is to design structures to empower a group in north Queensland in domestication. Queensland, has one of the largest and most rapidly growing Aboriginal resident populations (146,400 in 2006). We are designing methods and technologies that women of the Gugu Badhun group can make 'ordinary' and

sustainable in their respective rural and urban homes. We seek to develop technologies that enable the women to share their lives, experiences, practices and histories using the Internet. For example, using and sharing photos, video and other digital documents of importance to them in a way that suits their everyday life and can be subsumed into their family and social life. We proceed by describing some background that made our current project possible. Next we outline our planned process to design and adapt systems to support community connectivity between rural and urban women and preserve their heritage. This leads to discussing particular challenges in designing participatory methods and technologies that have wider relevance for mundane use.

### 3 DESIGNING WITH THE GUGU BADEN

The Gugu Badhun people are the Aboriginal traditional owners of the land surrounding the Valley of Lagoons, an inland area to the north-east of the Burdekin River including the town of Greenvale in north Queensland. In the earlier days of colonialism, the once large language group, of Gugu Badhun people were able to live on their traditional country by working on cattle stations. However after World War II with changes in labor laws, regarding equal pay, the Gugu Badhun began to disperse from the Valley of Lagoons to find work. Many moved large distances such as almost 800 km to Mt. Isa (population 24,027). Today Gugu Badhun communities are spread across very sparsely populated rural locations such in Greenvale (population 150) to 250Km away in Townsville, largest city in north Queensland (population 150,000).

In the last 5 years, the Gugu Badhun have led various recording projects to preserve their language, culture and history and empower their young people to participate fully in modern Australia through the use of technology. Colonialism has contributed to the loss or endangerment of 90% of Aboriginal languages, for example government policy until 30 years ago prevented Gugu Badhun people from speaking their language in town. The Gugu Badhun's 'Back on Country' project recorded language by taking groups back to their traditional home land where, immersed in the land, their language is more meaningful. This recognizes the critical interdependency between physical natural terrain and 'ways of knowing, being and doing' [16] in Aboriginal culture. Accounts of the way Aboriginal people encounter their natural settings apply the term 'country' (see: [5]) to describe a view of life invested with copious ecological, genealogical and symbolic interconnections between people, places and ecosystems.

The Gugu Badhun filming projects have been extremely successful, for example their Language CD-ROM (Grail Films) gained first place in the category of best interactive DVD/CD ROM at the 2005 North Queensland Media Awards. Continuing from the Language films the community engaged in work on digital history projects. Video histories are an important use of technology in Aboriginal contexts to preserve Traditional Knowledge and write indigenous voices back into Australia's colonial and modern history [7]. An increasing number of projects internationally provide a voice for indigenous peoples to detail their histories and culture (e.g. Pacific and Regional Archive for Digital Sources in Endangered Cultures, the Virtual Museum of Metis History and Culture, the Oral Narratives of the Klamath Termination project etc.). The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) holds The Aboriginal Studies Electronic Data Archive and there are many local projects in Australia such as The Traditional Knowledge Revival Pathway [21]. The most recent of

the Gugu Badhun's video projects was led by Elder author 3 and recorded Elders and other members of the group describing their family histories, including events in living memory.

Almost every Gugu Badhun recording project has entailed using multi-media (e.g. CD-ROM's, DVD's, digital videos) and has involved significant collaboration with non-indigenous people to assist in using technologies. For example, after securing an ARC grant to enable digitizing videos, the Gugu Badhun contracted technology experts at the local university to create a web-based software system to provide additional contextual information, via annotations attached to each video, and access to the video by members of the public. This culminated in designing an online system enabling content description and video annotation of portions from nearly 50 hours of recorded video.

### 4 CHALLENGES IN DESIGN METHODS

Technology design integrates perspectives on how meaning is constructed and how designers and users involved in the design process reached that understanding. User-centric and participatory design methods in HCI must be adapted to meet the needs of users beyond western culture [4]. In Aboriginal contexts methods need to respond to traditions of communication, ancient structures of knowledge [9] and legacies of life and the, often omitted, history of Aboriginal people since colonization. Here, we describe particular issues currently shaping our generation of techniques to empower Gugu Badhun people in system-design.

#### 4.1 Trust & Engagement

The digital history project generated a slow, but steady progression of trust-building between the Gugu Badhun and researchers and technologists in the university. For example, over 50 members of the Gugu Badhun community attended the software launch and the Elders of the group affirmed the importance of this project and stated that they looked forward to further work with university researchers. Based on trust the group is willing to participate in the design of a project to build capacity within the community for communication both internally between them and externally to the world at large. During the course of the Digital History Project Gugu Badhun team members became skilled in the use of video and audio recording techniques. Upon completion the Elders of the Gugu Badhun community expressed an interest in developing software tools to facilitate their recording and communicating their history across their geographically dispersed community. We (the researchers) suggested a user-focus on women to enable us, as mostly female researchers, to respect gender specialization in Aboriginal TK systems. This provides the opportunity to design a system suited to the life-style of those people who are most often responsible for fostering community connections.

The Gugu Badhun have chosen female participants to enable us to focus and prioritise their concerns and account for social and pragmatic constraints affecting their interactions with technology. We proceed by gaining insight into the Gugu Badhun women's experience of technology by first visiting them in their homes across the region. This helps us to put aside our own definitions of 'mundane', to discover together perspectives that will influence design-adoption and subsequent reviews of design-appropriation. As importantly, these visits provide practical value to the community. For example, at the request of one of the women participating we will assist her in setting up her computer equipment and teach her to use some technologies at her home in Greenvale. This assistance demonstrates the critical importance of engaging Abo-

iginal participants on their own terms and focusing on their needs and wishes, which is not something that many Aboriginal people tend to associate with traditional ethnography.

## 4.2 Challenges from a Rural-Urban Divide

The Gugu Badhun's relationship with country introduces particular challenges for designing to support couplings between technology and natural settings. Country, in Aboriginal culture, is simultaneously lived in and on and is a system of living for physiological, social and spiritual nourishment, thus people experience changes in nature as changes in self. While many non-urban cultures articulate an indivisibility of self and natural settings this aspect of identity is rarely contemplated in interaction design. As importantly, the spread of Gugu Badhun between remote, rural and town locations contributes to discrepant opportunities within communities and between them and the general population. Within Queensland there is a marked difference in relative population distribution. For example, 24% of the Aboriginal population live in remote or very remote areas of Queensland compared with 4% of overall population [2].

The digital divide appears to be wider and deeper for people residing rurally, regardless of their cultural background. It is wider due to access to technical infrastructure and because design tends to occur in and focus on urban contexts. It may be deeper because the socio-economic consequences for digital exclusion are greater for those residing rurally. Technology diffusion and infrastructure in rural Australia considerably differs from urban centres. Contrast internet access for only 20% of rural Aboriginal communities yet near universal access in cities; or that, there is no mobile coverage from 50km inland of the major cities in north Queensland. Further, there are prosaic issues specific to less populated settings that are not addressed by the urban focus of HCI theory and design (e.g. [1], [17]). While less acute than for developing countries; the assertion that "*lifestyle in a rural setting is drastically different from urban locales*" [17] does pertain to the developed world. Cultural differences and constraints may mean applications designed for an urban setting may be unsuitable for use in a rural area [17]. Despite some homogenization the economic, occupational and social life of rural areas remains distinct. Disparities in access to technology create disparities in gaining experience to use the technology and integrate it into everyday life. Thus, a skills gap develops. While people in urban places become veterans in Internet-based technologies rural people are less likely to find help from a neighbour, or a friend locally to start to deal with the online world.

## 4.3 Challenges for Technology Probes

An important aspect of our design process is using collaboratively designed prototypes as instruments to support refinement by discovering with our users how they make the technical apparatus 'at home' in their world. The importance of gathering data on interactions in the specific setting in which people, think reason and act is well known [19]. Traditional ethnography is the obvious candidate for generating insights into possibilities for domestication of Internet-based social networking and information-sharing applications by diverse groups of people beyond technologically enabled society. However, conventional methods to situate the researcher appropriately and extensively within a context are challenged by the physical and social contexts at remote geographic locations. Technology probes in domestic and workplace settings offer glimpses into user's verbalised and non-verbalized interactions and experience [8][14]. As with open-ended technical products

they support invention and record interactions. They enable ordinary activities to subsume the data gathering device itself and may reduce the sense of paranoia about being watched associated with traditional ethnographic approaches (see: [8] [11])

We seek to enable remotely-located designers to gather data on the practices, rhythms and routines which structure the women's use of the prototype and related technology. Respecting customary protocols on sharing information appropriately and intellectual property is vital when designing with Aboriginal people (e.g. [4]). However, power relations between non-indigenous and Aboriginal people and cultural manners can make hamper Aboriginal people's empowerment in design decisions. Often, the solution is to carefully design systems for Aboriginal people's exclusive access but this compromises designers' understandings of the complex and unanticipated uses that even a relatively simple application may afford over time [18] in order to adapt and improve it. Thus, the Gugu-Bahun women will shape the design of a 'technology probe' [8] within the prototype to yield remote researchers with access to usage data over a year.

Our co-designed technology probe will help us to uncover how women use technology to maintain a sense of community, what issues arise in the evolving "interaction trajectory" [11] between users and how Aboriginal, rural and other 'infrastructures' become embedded in its use. However, discovering the ways the women use technology from the digital trails they leave as they traverse use in their everyday lives (e.g. browser histories, personal notes etc) presents problems in sensitive contexts. We need to firmly establish what resources are appropriate for examination and will not compromise the women's empowerment in domestication. Our problem exceeds that noted by Cheverst et al., [8] about difficulties in predicting what loggable information will be useful. We are less concerned with implications for data-explosion or limits on the amount of data collectable and storable. Rather our concern encompasses what information is appropriate for us to survey and how to accurately predict and share the implications of logging this data so that the women can give their properly informed consent to a system of logging. Explaining issues of privacy to people who may be unused to technology is itself challenging but not doing so can have profound, emotional effects. For example, consider how clans have been deeply disturbed by discovering the unauthorized web presence of photographs of ritually cherished places and deceased people (see: [4]). As mentioned in other studies (see: [8]) even if it is obvious from the outset which information will render insights into use, it may not be apparent until thorough analysis what stories the data tells.

## 5 CONCLUSION

Our project aims to determine the needs of the Gugu Badhun women regarding domesticating computer supported collaborative systems and to develop an effective participatory design methodology. Together will design an initial prototype and technology probe and refine the application based on their naturalistic usage behavior and feedback. Our research recognizes and embraces differences between rural and urban settings and interactions that are suited to people living in these places.

Arguably, insights gained from designing rural-to-urban connections have wider relevance. Certainly, with Australia's scale, the economic needs to sustain rural life, as drought persists, and reduce migration and travel to urban places as oil prices ascend. Despite demographic changes 14% of the population dwells

rurally but pre-existing inequalities prevent rural people from using applications that are designed for urban life. As applications become increasingly central to life, such as maintaining contact with migrant kin, accessing social welfare services or engaging in commerce (e.g. farm-to-market, tourism etc.) so relative standards of living are likely to decline in rural places. Social connectivity and knowledge dissemination within communities whose members are separated by great distance without supportive infrastructure is a problem for various locales. For example, we find some parallels with our recent study of maritime archaeologists who have limited access to technological equipment, infrastructure, training and support [13]. Providing communications and data storage infrastructure to gather and document data associated with excavations is only one aspect of the challenge. Ongoing support in situ is mandatory and must empower each individual of the community in domestication [13].

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