GUGU BADHUN WOMEN ON THE MOVE:

ENHANCING WELL-BEING IN AN ABORIGINAL COMMUNITY THROUGH THE USE OF ICT

Thesis submitted by
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Statement on the Contribution of Others

The research described and presented in this thesis was undertaken by the author under the supervision of Dr. Nicola Bidwell, Professor Ian Atkinson, Professor Yvonne Cadet-James and Dr. Felecia Watkin-Lui, who provided editorial and academic advice. I wish to acknowledge the contribution of Dr. Nicola Bidwell who was my primary supervisor until her departure from JCU in 2009. Her rigorous scholarship and enthusiasm for the discipline provided me with a sound foundation for the research presented here.

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List of Publications

Bidwell, N. and **Hardy, D** (2009), *Dilemmas in Situating Participation in Rural Ways of Saying*, Proceedings of OZCHI 2009, Melbourne, Australia.

Browning, D., Bidwell, N. J., **Hardy, D**., & Standley, P.M., *Rural Encounters: Cultural Translations through Video*. Proceedings of OZCHI 2008, Cairns, Australia. Winner of the 2008 Gitte Lindgaard award for best paper, 2008.

Hardy, D., Morgan, M., Atkinson, I, McGinty, S, Cadet-James, Y., Hannan, A & James, R (2008), Enabling Lightweight Video Annotation and Presentation for Cultural Heritage. In: *eResearch Australasia 2008*, Melbourne, Australia, 28 September - 3 October 2008.

Hardy,D., Bidwell, N., Cadet-James, Y. & Atkinson, I (2007), Domesticating Design by a Disenfranchised Community, International workshop on social interaction and mundane technologies (simtech), Melbourne, 2007.

N.B. During my time of candidature I changed my name from Hardy to Madden due to marriage.

Also, all photographs in this thesis were taken by the author.

In loving memory of my grandparents Walter and Marie Hardy

Abstract

Many Aboriginal Australians report a diminished sense of wellbeing in their every-day activities, due to the after effects of colonialization. The concomitants of racism and separation from their traditional lands and culture fuel this situation. Indigenous people from other countries report similar outcomes. This research aims to discover whether access and use of culturally appropriate Information and Communication Technologies (ICTs) can have an ameliorative benefit, enhancing participants' sense of support and engagement with their culture.

Indigenous people often find themselves on the wrong side of the digital divide. Data from the ABS (2007) support this, showing that Australian Aboriginal people lag behind in their uptake of ICTs compared with other Australians. While multiple studies have shown that access and use of ICTs can provide real benefits in regards to empowerment for women, few of these studies have focused specifically on wellbeing aspects. This research contributes to knowledge by examining the wellbeing outcomes for Aboriginal women who are given the opportunity to access culturally appropriate ICT.

The research in this project was a participatory action-research study with women and girls of the Gugu Badhun (an Aboriginal Australian language group) to explore ways to better support their familial and cultural activities associated with identity and group sustainability. Purposive sampling was used to establish a small cohort of Aboriginal women chosen from the Gugu Badhun. Indigenous people's life experiences occur at the intersection of Western and Indigenous knowledge systems, therefore this research uses a collaborative process to support the creation of knowledge at this cultural interface.

The research plan for the study was divided into three action-research cycles: group interviews and focus groups, use of a technology probe, and feedback from the participants. The technology probe was a web-based application with access limited to the women in the study. Analysis of the group interviews and technology probe use showed a keen interest in the group in utilising targeted ICT applications, especially those of the older generation who had no interest in social networking applications such as FaceBook and Twitter.

Storytelling via the probe enabled the participants to mentally revisit scenes that had been highly significant to them (for both positive and negative reasons) and to reframe these

incidents in ways that enhanced their feelings of wellbeing. Evidence for this statement is found in reports from group members that the probe activity has been very healing for them. The probe site allows the women a platform to discuss concepts that are intrinsic to their existence, and how these ideas interlink and enmesh with each other; such as the importance of connection to country, and offline activities surrounding identity and sustainability as a group.

The contributions from this study include description and evaluation of how the combination of long-term group interviewing with design and use of a technology probe can enhance wellbeing in an Aboriginal group, as well as serve as a technique in assisting group members to elucidate technology requirements in order to exploit the use of ICT in their community. Empowerment of individuals led to an increased sense of self-esteem related to ICT activities and greater domestication of these tools in their everyday life.

Results from this study have wider policy implications dealing with how ICT research is conducted with Aboriginal people in general. The use of cultural mentors along with the long-term engagement with the research group enabled the data obtained from the technology probe and the entire project to be analysed and used in a ways that not only benefited the participants, but also contributed to the corpus of knowledge about improvement of wellbeing for Aboriginal people through the use of ICTs.

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Introduction to the study

A primary purpose of action research is to produce practical knowledge that is useful to people in the everyday conduct of their lives.

A wider purpose of action research is to contribute through this practical knowledge to the increased well-being – economic, political, psychological, spiritual – of human persons and communities, and to a more equitable and sustainable relationship with the wider ecology of the planet of which we are an intrinsic part (Reason & Bradbury, 2006, p.2).

1.1 Introduction and research aim

Many Aboriginal Australians report a diminished sense of wellbeing in their every-day activities, due to the after effects of colonialization (Zubrick et al., 2010). The concomitants of racism and separation from their traditional lands and culture fuel this situation. Significant social and health issues impact on Aboriginal Australians to a much greater extent than those experienced by non-Indigenous Australians. As a result, life expectancy for Aboriginal and Torres Strait Island people is estimated to be 11.5 years for males and 9.7 years for females less than for other Australians, an issue now well recognized in the Close the Gap agenda (AHMAC, 2008). However, for Indigenous people, health and well-being often consists of much more than the standard physical health and economic outcomes.

> Health is defined as not just the physical wellbeing of an individual but the social, emotional and cultural wellbeing of the whole community in which each individual is able to achieve their potential as a human being, thereby bringing about the total wellbeing of their community (National Aboriginal Health Strategy, 1989).

The Australian Institute of Health and Welfare (1994) defines several types of wellbeing: "health, social wellbeing, economic wellbeing, environmental wellbeing, life satisfaction, spiritual or existential wellbeing, and other characteristics valued by humans". Purdie et al (2010) condense these areas to four main groupings: the physical, social, emotional and cultural wellbeing of individuals and their communities.

This thesis reports on research that aims to discover whether access to, and use of culturally appropriate ICTs can have an ameliorative benefit, enhancing Aboriginal participants'

individual and community sense of wellbeing. The research in this project was a Participatory Action-Research (PAR) study into the use of ICT among Aboriginal women. Using a collaborative approach, I worked with women and girls of the Gugu Badhun (an Aboriginal Australian language group) to explore and trial ways that ICT can be designed to better support their familial and cultural activities. This study is a continuation of previous research endeavours initiated by the Gugu Badhun (Hardy et al., 2007; Hardy et al., 2008).

A note regarding the use of personal pronouns

Many academic writers encounter the proscription against using personal pronouns to describe their work early in their training. The reasoning for this construction lies in the requirement to present one's research as objective and unbiased. The roots of this provision follow a positivistic view of data that claim that facts are consistent, observable and replicable. In reality, the use of the pronouns '*I*' and '*we*' varies greatly across the disciplines. Hyland (2001) in a survey of a corpus of 240 research articles found that the frequency of the *I* pronoun per 10,000 words of text ranges from zero in the "hard" disciplines of science such as biology, electrical engineering, and physics to over 35 in the "soft" disciplines of philosophy and linguistics. Hyland reported that three-quarters of all first-person pronouns occurred in the humanities and social science texts.

The discussion regarding whether to use a certain pronoun may seem at first to be a stylistic choice, however, the issue becomes more problematic when reporting research where an author was actively engaged in a collaborative knowledge-making project with other participants. In PAR, research is conducted with community members, flattening the hierarchy between the "researcher" and "the researched" (Brydon-Miller, 1997). While academic researchers often do the bulk of the writing and speaking for the team as a whole, the trustworthiness of their reports are enhanced when acknowledging their own experiences in their own voice (Smith, Rozenzweig and Schmidt, 2010). In addition, concerns regarding intellectual property in research with Aboriginal participants make it even more important that the voices of both the researcher and the other collaborators are heard. Keeping this in mind, portions of the research that concern a reflexive analysis of my worldview are reported using "I", while actions engaged in with the group are discussed using "we" or "the research team". Statements made by the Gugu Badhun are indicated by the words "the participants" or "the women".

1.2 Background to the research

This section reports the background of me and the other participants in regard to this study. As my involvement with the Gugu Badhun did not begin at the start of this project, but four years earlier, details of this previous work are provided as well as information regarding my background which had bearing on the focus chosen for the research design.

An introduction to the author

Although this thesis research was conducted in Australia, I am originally from the United States. I received my undergraduate degree in computer science from Western Oregon University. After working several years in the field (while as a student, and later as a graduate), I became increasingly uncomfortable with a trend that was occurring in the industry whereby we, programmers, were often prevented from discussing the programs that we were designing with the people who would be using them. Generally a business analyst conducted all communications with the end-users, thus acting as an intermediary between the programmers and users, a process that often led to software that was sometimes completely unsuited to the user's environment and work patterns. The resulting applications acknowledged established work processes (the formalized policies for conducting work), but ignored actual work practices (the work-arounds used to get the job done). Dourish (2004) explains this difference by stating:

> *Work processes* are the formalized or regularized procedures by which work is conducted…In contrast…*work practice* is frequently informal and seemingly innocuous, but often provides the lubrication that prevents formalized processes from seizing up (p.63).

An awareness of the disconnect between the people using the programs and the person creating them led me to an interest in looking at how an individual's life could be "*improved"* by the use of culturally appropriate ICT. I put improved in italics to stress that such improvement is in the eye of the beholder.

After moving to Australia in 2004 to pursue graduate studies, I became very interested in Human Computer Interface (HCI), which stresses the importance of interaction studies where much of the focus in is on how people feel about the use of ICT, and the place that it takes in their daily living. Whilst I was completing a Masters degree, my supervisor Prof. Ian Atkinson informed me of a research study based out of the School of Indigenous Australian Studies

(SIAS) at James Cook University (JCU) that was seeking a part-time IT technician to assist in a digital oral history project with an Australian Aboriginal group (The Gugu Badhun Digital History project). I joined the project team and this marked the beginning of my on-going association with the Gugu Badhun. While I did not conduct any of the interviews that formed the bulk of the outputs of that project, I reviewed over 30 hours of video as part of my IT duties which entailed digitizing and uploading these videos into an online repository (Hardy et al. 2008; Browning et al. 2008). This visual representation of the Gugu Badhun and their history helped lay a foundation for the collaborative research outlined in this thesis.

An introduction to the Gugu Badhun

The Gugu Badhun are an Australian Aboriginal language group that trace their ancestry back to 5 main family groups whose traditional country is in rural northwest Queensland including the present-day town of Greenvale and environs (see Figures 1 and 2 below). Unlike most of the surrounding countryside, this area offers year-round access to water, supplied by a series of large lagoons fed by the Burdekin River. This water source proved to be an attraction to invading European pastoralists as early as Leichhardt, who stated in 1845, "all the elements of fine pasturing country were here united…Finer stations for the squatter cannot exist" (p. 242). Within 30 years of that endorsement the pastoralists had driven the original inhabitants off their country and then at a much later date "hired" the descendents of those people as labourers on cattle stations that they established there. The Aboriginal workers were poorly remunerated, often exchanging their labour for food, sub-standard housing and a miniscule rate of pay, much less than that earned by Europeans (Reynolds, 1999). After the 1940s most of the Indigenous people moved off the land and into regional towns and cities in search of better salaries and increased educational opportunities for their children (Broome, 2001). Only a few of the Gugu Badhun now live "on-country", the rest are dispersed throughout Queensland and greater Australia. Despite the separation of the family groups, they still maintain links to their land and culture through family get-togethers and campouts. One such annual event is a week-long "Cultural camp" held on their country during school holidays where the Elders pass on traditional knowledge (TK) such as language, care for the land, and spirituality to the younger members of the community (pers comm. Cadet-James, 2009). Full attendance at these events has become difficult as members are scattered throughout Australia. Increasingly the Gugu Badhun are turning to ICT solutions to solve this issue.

[image removed due to copyright restrictions]

Figure 1 - Location of Gugu Badhun traditional country (from Hema Australia Road Atlas, 2010)

[image removed due to copyright restrictions]

Figure 2 - Geographic location of Gugu Badhun traditional country (http://slq.qld.gov.au/info/ind/languages/qld)

For the last 5 years, the Gugu Badhun have led various digital recording projects geared toward the preservation of their language, culture and history, and to 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 the towns where they lived such as Greenvale, Townsville, Mt. Isa and Charters Towers. The Gugu Badhun's language project recorded language by taking groups back to their traditional lands, where, in context with their land, their language is more meaningful (Hardy et al., 2007). This recognizes the critical interdependency between physical natural terrain and 'ways of knowing, being and doing' (Martin & Mirraboopa, 2003) in Aboriginal culture. The holistic nature of the Aboriginal worldview emphasizes an epistemology (ways of knowing), ontology (ways of being) and methodology (ways of doing) that are intertwined with connection their land and are not separate as they are in Western belief systems.

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 (Caroll et al., 2002). The most recent of the Gugu Badhun's video recordings (The Gugu Badhun Digital History Project) was led by Elder Yvonne Cadet James and recorded Elders and other members of the group describing their family histories and cultural traditions (Hardy et al., 2007). An important consideration in the project was that a Gugu Badhun woman was one of the lead investigators, not just outsiders from an external research group. Following on from that project, the group became interested in creating a new ICT system, capable of supporting communication and traditional knowledge sharing, by using an expressly participatory method, rather than a traditional top-down design framework (Hardy et al, 2008). The action research project described here is the culmination of that expression of interest.

Wellbeing as a concept

The overriding research question for this study was to explore how culturally appropriate ICTs could be used to enhance wellbeing. Therefore an understanding of how wellbeing is perceived is important to this discussion. Wellbeing is a broad term that encompasses ideas such as personal happiness and life satisfaction. Economic policies often target low economic status as

a priority as this wellbeing indicator is fairly easy to measure. Despite these methods, research has shown that economic status is not a consistent indicator of reported happiness, as it does not always rise with income (Layard, 2005). Other wellbeing components such as quality of life or social and emotional wellbeing are more subjective and therefore prove difficult to quantify. Gregory et al. (2009) define the standard indicators of quality of life as wealth and employment, built environment, physical and mental health, education, recreation/leisure time and social belonging.

1.3 Conceptual Framework

The conceptual framework that informs this research comes from a post-positivistic worldview. Research in the West has long been integral with a positivist worldview (Reason & Bradbury, 2006), evaluating people and their interactions through a method that privileges the beliefs of the researcher (the expert) over those of the researched. Therefore "reality" as reported by the researcher takes precedence over the subjective view of the people living that existence. In a post-positivist framework, the different forms of knowing, including feelings and actions are equally as valid as cognition and rationality in creating knowledge (Gaventa & Cornwall, 2006). This framework supports the participative and collaborative methods used in this study to give priority to the lived experiences of the people with whom I do research.

Three concepts informed my interactions with the Aboriginal women in this study, and influenced the final research design. These ideas are: (1) the cultural interface, (2) Indigenous standpoint theory and (3) decolonization of methodologies. Nakata (2007) coined the term cultural interface to describe Indigenous people's life experiences that occur at the intersection of Western and Indigenous knowledge systems. Colonisation of Indigenous knowledge has occurred through the continual privileging of the Western scientific framework over the Indigenous knowledge systems (Smith, 1999). Non-Indigenous researchers need to give respect to both knowledge-making systems and seek to incorporate Aboriginal research methods in the research process. The second term, Indigenist standpoint, or Indigenist framework acknowledges that as a non-Indigenous person, I come from a different epistemological background than that of the participants. Through our interactions, the women in this study have shared their experiences and viewpoints, which help me attempt to see the research through this alternate worldview. Rigney (1999) describes Indigenist framework as research that gives voice to Indigenous people. The final concept, decolonisation of methodologies emphasizes that much of the previous research with Indigenous participants was done from a deficit standpoint, framing non-European people as "the problem". By deconstructing and

decolonizing these methodologies, Aboriginal people conduct research on their own terms, for their own ends.

1.4 Research Methodology: Participatory Action Research

The aim the research detailed in this thesis was to explore how the use of ICTs could enhance the well-being of women in a particular Aboriginal group. The methodology chosen for this project was Participatory Action Research (PAR); a collaborative type of qualitative inquiry that promotes social analysis and democratic social change (Greenwood and Levin, 2007). PAR offers a methodology able to access the fine details that make up the Gugu Badhun women's use of / and desires for technological interactions.

PAR has a long history of use with people of disenfranchised groups that wish to change their situation from within. Indeed, much collaborative research with Indigenous people uses a participatory framework in order to give voice to participants (Kemmis and McTaggart, 2005). The goal of PAR is not only to investigate and report on a situation, but also to take action to improve it (Sørensen, 1992, as reported by Greenwood and Levin, 2007). Researchers and participants engage in systematic, iterative cycles of planning, acting, observing and reflecting prior to engaging in the next cycle. The method facilitates direct participation in a dynamic research process (Checkland, 1991). The emancipatory nature of PAR makes it useful in settings where disadvantage between groups exist, and where the goal is to empower group members to improve the situation (Reason and Bradbury, 2006). Much of the extant research regarding development with Indigenous people suggests that equal and collaborative methods that prioritise empowerment and self-determination for participants foster a sense of ownership in the research group, leading to better outcomes (Kemmis and McTaggart, 2005).

PAR ties action and research together in a series of continuous improvement cycles that contain four steps: observe, reflect, plan and act. The focus on "acting" during the research cycle avoids the issue of needing to initiate a second project to enact change after a potential solution is discovered (O'Leary, 2010). All group members make actionable decisions throughout the project that guide the direction of the research.

The research for this project occurred in three linked but separate cycles: 1) interviews and group workshops, 2) use of technology probe and 3) feedback from participants. These activities are described in more detail in the methodology section (chapter 3). Each of the cycles followed the "observe, reflect, plan and act" steps. Purposive sampling was used to establish a small cohort of Aboriginal women chosen from the larger group of women in the Gugu Badhun

group. The participants for Cycle 1 resided in Townsville and Greenvale (a remote town 150km from Townsville). In Cycles 2 & 3, five additional group members were added by the participants. A diagram showing the steps in the project is show in Figure 3 below.

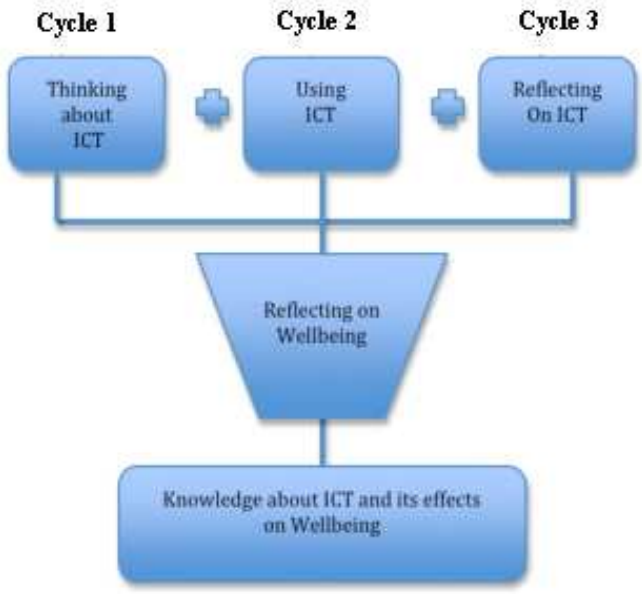

Figure 3 - Research methodology - PAR

In Cycle 1 (December 2007 – December 2008), interviews and group workshops were conducted over the course of a year. During that time the research team engaged in a number of data-gathering activities designed to flesh-out ideas regarding current ICT use, and to determine ways in which technologies could assist them in maintaining connections to community members and their country. At the end of the cycle, the group decided to implement a prototype website (via a technology probe). Cycle 2 consisted of use of the technology probe, dubbed the "Gugu Badhun Women on the Move" site. The participants extended the list of people involved in the project to include 5 other female relatives living in Darwin, Cairns and Brisbane. Prior to this point all of the participants were either located in Townsville or Greenvale. Use of the site occurred between July 2008 – August 2009, with most activity taking place in the first three months). In this cycle, the participants experimented with the use of the probe to send messages to each other, post photos (both new and old) and to tell stories. After the site had been used for a year, the group met again to discuss outcomes from this cycle, and next steps. Once these cycles had completed, Cycle 3 consisted of conducting recap interviews and soliciting feedback regarding the collected data to determine next steps and to confirm or refute theories generated

regarding the results of the research. The final group meetings during this cycle allowed the women the opportunity to voice their opinions regarding how they felt about the project, including any enhancement in their sense of wellbeing. A final output of this cycle was an updated list of functionality items requested for the Women on the Move (WOTM) site. Table 1 below describes the three cycles in the project.

Table 1 - PAR cycles for this study

Cycle 1		**Cycle 2**		**Cycle 3**	
Observe	Facilitate interviews and focus groups	**Observe**	Interaction patterns & content on probe site	**Observe**	Facilitate final interviews
Reflect	Hermeneutic analysis of data	**Reflect**	Hermeneutic analysis of data	**Reflect**	Generate results lists
Plan	Design probe site and demo with participants	**Plan**	Gain feedback regarding site	**Plan**	Decide what next steps should be
Act	Deploy probe site	**Act**	Arrange final interviews to confirm outcomes	**Act**	Create final report, deploy updated version of site

Technology probes

An important aspect of the design process for this research was the use of a collaboratively designed technology probe to discover how the participants would make use of this sort of ICT '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 (Suchman, 1987). Technology probes are low fidelity technology applications (i.e. requiring very little resources) that are designed with the role of collecting information regarding ICT use, usability and environment of the participants. In this study the technology probe provided a lightweight, application to support playful invention among the participants with the twin goals of recording interactions and sparking additional design inspiration (Boehner et al., 2007).

Technology probes offer a viable medium for generating insights into possibilities for domestication of Internet-based social networking and information-sharing applications by diverse groups of people. Their use in domestic and workplace settings offer glimpses into users interactions and experience (Clarke et al., 2002; Hutchinson, et al. 2003). As with open-ended technical products, technology probes support invention and record interactions. They enable ordinary activities to subsume the data-gathering device itself and may reduce the sense of nervousness about being watched associated with traditional ethnographic approaches (Fitton et al. 2004). One purpose of cultural and technology probes is to understand "the nature of everyday life at a sensitive setting in order to generate possible requirements for new technology design" (Graham et al. 2005).

When technology probes are used to investigate social issues, participants are often given specific information regarding how to use them. For example, PhotoVoice is a commonly used type of technology probe. A typical scenario involves researchers distributing lightweight disposable or digital cameras to a group of users. The participants are instructed to take photographs of things that express a certain quality to them, for example environmental issues or health and well-being concerns (Wang, 1999). At the end of the research period, the group members are interviewed and display their photographs to the researcher, giving an explanation as to why they chose to take each particular image.

In the case of the WOTM technology probe, the research team was not given any detailed instruction as to how they should use the site. The women were invited to use the probe in any way that seemed reasonable to them. Data gathered in this fashion can be particularly useful due to the open-ended nature of the probe tools, which can help designers and participants to "think outside of the box" when considering which functionality items to include in a new system. Analysis of the group interviews and technology probe showed that the group had a keen interest in utilising targeted ICT applications, especially those of the older generation who had no interest in social networking applications such as FaceBook and Twitter. Storytelling via the technology probe emerged as a common-place activity and provided a new mechanism of communication.

1.5 Significance of the study

This research examines the benefits to health and well-being that can be obtained by female Aboriginal Australians through interaction with custom-designed ICTs. While previous literature has described the issue of female empowerment in regards to the use of ICTs (Huyer,

2005; Sharma, 2003; Ng and Mitter, 2005), few have addressed the specific needs of Aboriginal women. Indigenous people often find themselves on the wrong side of the digital divide. Data from the ABS (2007) supports this, showing that Australian Aboriginal people lag behind in their uptake of ICTs compared with others of European descent. Anecdotal evidence reveals that Aboriginal women use ICTs less than males. Multiple reports show gender-based differences in the ways that people interact with technologies (Lim, 2003; Imhof, 2007). Hou et al. (2006) shows that these types of ICT use are often present by early adolescence. Women often prioritise communication and monitoring of children's activities online, while men focus on entertainment, finance and career-building applications (Ellison et al., 2006). Although stereotypes regarding female competence with ICTs are diminishing (Levin & Gordon, 1989; Whitley, 1997), women still report a feeling of inadequacy in regards to competency in computer use (Henwood, 2000; Hargittai, 2006). Indeed, this attitude was also reported by several of the women in this study. The safety of online interactions is also a concern to women. Barak (2005) reported that sexual harassment such as unwanted sexual attention and sexual coercion are frequently encountered by women in their use of the Internet. Griffiths (2000) reported that over 40% of women in the U.K. reported having been sent unsolicited pornographic materials or stalked while online.

In addition to male/female differences in the use of ICT, cultural assumptions and metaphors also can cause issues in computer use. Kroeber and Parsons (1958) suggest that the creation of artefacts or items is influenced by culture. Triandis (1972) states that the way people view the world, is often expressed in the items they create such as paintings, art, book and clothing. Thus, analysing something created by a particular group can give indications as to important aspects of that culture. This implies that a computer interface as designed by Western people is a reflection of Western culture and is suited for use of people from that culture. The research in this thesis seeks to understand if a group designs an ICT that is culturally appropriate for their group, can this aid in fostering wellbeing in that community?

In addition to the collaborative nature of PAR, the research made use of two cultural mentors who helped illustrate concepts that required more discussion than what could be made available in the workshops and interviews. One of my mentors, Yvonne Cadet-James was also one of my thesis supervisors. The other mentor Ailsa Snider was unique in that her location was much more remote than any of the other women, and prior to this research she had the least amount of experience with ICTs. Ailsa and Yvonne assisted in overcoming the unease the other Gugu

Badhun women might have felt in making their feelings known to me, due to concerns regarding trust or unequal power structures.

1.6 Validation and research limits

Throughout the length of this study, various means of establishing validity or correctness of the data were used. In particular, whenever possible the exact words of the participants were reported. The transcripts were reviewed by the participants prior to including the texts in the thesis. Although one of the limitations of this project is the small size of the sample group, the longitudinal aspect of consistent interaction with the participants over three years means that there were many opportunities to confirm the details of responses or to inquire further regarding meaning. An additional limitation to the study is that as a non-Indigenous person there were aspects of the data that I might not understand due to having a different worldview than that of the participants. This limitation was somewhat ameliorated by the length of time that I worked with the Gugu Badhun in the previous digital history project (two years) and the length of time that this project took (over 3 years). During the course of the these two studies, I spent much time getting to know the women and their culture. Yvonne Cadet-James, who is a Gugu Badhun woman also acted as a cultural mentor, and helped me to understand subtleties that I would otherwise have missed.

1.7 Summary of research results

A summary of the data obtained from each of the research cycles is reported below.

1.7.1 Cycle 1

Five areas of interest emerged from the group workshop; issues associated with distance, conducting family business, connection to ancestors, family and country, and concerns about engaging in the technology realm. The Gugu Badhun women reported that distance was not just an issue geographically, but that they experienced difficulty maintaining connections with family due to the fast-paced nature of modern life. These connections wwere also tied to the need to conduct certain types of work, i.e. family business. The term describes activities that should be done for the support of the group as a whole.The women report that maintaining their connection to their own country is of utmost importance. In this context “country” implies the area that their ancestors inhabited before they were displaced by colonialization. This connection provides a spiritual and emotional value that underpins their sense of well-being (Grieves, 2009). Concerns about engaging in the technology realm were reported in the areas of how they currently use ICTs, how they would like to use them to stay in contact with each

other, and fears over identity theft while online. Final interviews in this cycle discussed the need to have dual presences on the web: a private one to support group members, and a public one to disseminate information regarding their activities to the greater world.

1.7.2 Cycle 2

Results from Cycles 2 and 3 related to the participant's use of the technology probe, their comments regarding the site itself, and next steps that the group plan to take regarding ICT.

Four content areas were widely used on the probe: messages, stories, images and a "My Mob" area (related to genealogy). The message component of the probe was used for two months only, and was discontinued in favour of uploading images and posting stories. Over 270 original postings were created by the participants, and nearly 450 replies to each of those content items were made over the course of the year that the probe was in place. The members of the group engaged in storytelling in a complex manner that supported their individual personalities and status in the group. Older women related stories from their youth, and younger members requested additional information about family stories that they had heard previously. Participants often built up long message threads regarding important stories, at times adding photos or other data to supplement the telling.

1.7.3 Cycle 3

During the group meetings that formed Cycle 3, the team spoke about the importance of storytelling and the enjoyment that they received in having a safe, secure place to engage in this activity. Older women spoke of the healing nature of retelling the stories. The consensus of the groups was that the site should be opened to all Gugu Badhun persons now that the project was ending. Critiques regarding the functionality of the site surrounded issues with uploading images, and the need to provide some structure for the listing of the stories. These ideas, along with a brief presentation of the discussion of outcomes and implications for design are presented in the next section of this chapter.

1.8 Structure of thesis

This chapter has focused on an overview of the study as a whole. The research question for the thesis is "how can wellbeing in an Aboriginal community be enhanced through the use of culturally appropriate ICT"? The next chapter provides a review of literature in regards to use of ICTs by Aboriginal people with particular emphasis on wellbeing, culture and gender. Chapter 3 describes the methodology used to conduct the research. Chapters 4, 5 and 6 detail

the findings from the project. Chapter 7 offers the discussion of the results and Chapter 8 suggests conclusions to be drawn and future work.

Chapter 2
Understanding the background

2.1 Introduction

This chapter reviews literature around research that has been conducted in the cross-disciplinary area of female Aboriginal interaction with ICTs, and the implications that this has for enhancing wellbeing. It provides background information necessary to place the research for this study in context with previous work regarding design of ICTs for the purpose of enhancing community wellbeing with Aboriginal women. There is currently a lack of research that specifically targets Aboriginal female engagement with ICTs. While many studies have examined the issue of the empowerment of women through the use of technology (Huyer, 2005; Van Dijk, 2005), few have outlined the specific needs of Aboriginal women regarding ICTs in regard to cultural support. Much of the literature takes a deficit stance, inquiring into what should be done for women, rather than that, which can be done by the women themselves (Bidwell and Hardy, 2009).

First the literature concerning wellbeing is examined from the perspective of Aboriginal people. Next the issues involved in ICT research in this area are explored including the concept of culture as it applies to design. The chapter ends with a discussion of the conceptual and theoretical frameworks that come into play in post-positivistic, inductive research.

2.3 Interaction and interface design

The creation of ICTs does not often specifically target wellbeing, but generally has at its base a desire to improve the environment of users, either in a work scenario or a home setting. The branch of computer design that most strongly focuses on these aspects is called Human-Computer Interaction (HCI). Some authors sub-divide this branch further into interaction design, implying that design is the more important aspect of the discipline (Moggridge, 2007).

Interaction design has been defined as “designing spaces for human communication and interaction” (Winograd, 1997, p. 160). Sharp, Rogers & Preece (2007, p. 8) describe interaction design as “designing interactive products to support the way people communicate and interact in their everyday and working lives”. The repetitive use of the word “design” is not coincidental; this type of ICT development focuses deeply on the design aspects of the process. The field of interaction design developed out of the study of HCI, and from the need for developers to consider a broad scope of issues associated with how people use ICTs.

Increasingly designers have become more focused on the experience of the user interacting with a piece of software. Sharp et al. 2007 state

> Interaction design relies on an understanding of the capabilities and desires of people and on the kinds of technology available to interaction designers, as well as [a] knowledge of how to identify requirements and evolve them into a suitable design (p. xvii).

Interaction designers are interested in the user's experience, and strive to create a product that is not only efficient to use, but enjoyable as well (Cooper et al., 2007). Although early HCI designs took much of their guidance from cognition, more recent work focuses on the use of ethnographic methods (Hurtienne, 2009).

Designers frequently encounter difficulty in determining what another person or group needs from technology. Ascertaining these goals has variously been described as "gathering project requirements" or more simply as "getting inside the head of your client". The problem is not merely that the designer cannot read the minds of the client; the actual issue is that there is a gap between the knowledge systems of the client and designer. The client knows his/her domain very well and the same can be said for the technology professional. However, the ability to articulate the components of one's domain in a way that is understandable to another can present a problem.

HCI ethnographers use various activities such as participant observation and in-depth interviewing to attempt to overlap these two knowledge systems. A considerable portion of what ethnographers attempt to learn takes place within the information gap. When the designer is from a western culture but the client is not, the problem becomes more complex.

2.4 Culture

2.4.1 General definitions of culture

A major component of the research in this thesis concerns designing and using ICTs in a cross-cultural setting. Culture is a concept that researchers have had difficulty defining as it has different priorities in each research domain. As evidence of this, Kroeber and Kluckhohm (1952) identify a list of 164 separate definitions of culture, each one slightly different. The term culture has evolved over the centuries; first in the 18th century Europe as evidence that a group had formed an agrarian society, and then in the 19th century as the refinement of an individual through education and gentility. One of the first American anthropologists, Tylor (1871)

defined culture as “that complex whole which includes knowledge, beliefs, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society.” He suggests that a culture can be evaluated on a scale that progresses from savage to a civilized state. In the 20th century the meaning of culture moved on from this early ethnocentrism and it came to be thought of as “the sum of [people’s] learned behaviour patterns, attitudes and material things” (Hall, 1959).

Current debate surrounding culture focuses on behavioural and cognitive definitions (Fetterman, 1998). Harris (1968) emphasizes the behavioural side stating that culture is the sum of a social group’s patterns, customs and way of life. In contrast, a cognitive approach suggests that culture is made up of the ideas, beliefs and knowledge of a particular group. Taking a more centrist position, Hutchins (1995) defines culture and advanced cognition as “an adaptive process that accumulates partial solutions to frequently encountered problems.”

These definitions are all very general and reflect the difficulty in pinning down ideas that may not be generalisable across every group. Hofstede (1980) states that culture is “the collective programming of the mind”, suggesting that people may hold similar opinions based on the fact that they shared the same learning process. Trompenaars (1993) takes this a step further with the theory that culture is the mechanism through which a group solves problems.

For the purpose of this thesis, I will use the following definition from Evers (1999), which focuses on experience and interaction.

> Culture shapes the way people behave, view the world, express themselves and think. It is formed by historical experiences and values, traditions and surroundings (p.10).

Kroeber and Parsons (1958) suggest that the creation of artefacts or items is influenced by culture. Triandis (1972) states that the way people view the world, is often expressed in the items they create such as paintings, art, books and clothing. Thus analysing something created by a particular group can give indications as to important aspects of that culture. This implies that a computer interface as designed by western people is a reflection of western culture.Several authors have attempted to generalize cultural characteristics across a population leading to models that attempt to compare cultures across groups using cultural variables. For Hofstede (1991) these are power distance, uncertainty avoidance, individualism, and masculinity. For Trompenaars (1993) key attributes are significant others, diffusion and particularism. Hall (1997) adds polychromic time and high context. Using these attributes, these

authors suggest that a cultural profile regarding users of a particular culture can be developed (Dunckley and Smith, 2000). Table 2 below summarizes these cultural variables.

Table 2 - Cultural variables as proposed by Hosftede, Trompenaars and Hall (Evers, 2001)

[table removed due to copyright restrictions]

Although a fixed set of personality attributes would be convenient for designers, the concept of cultural models presents a number of difficulties. Extant literature that recommends localization of software interfaces does not give extensive information in how to exploit cultural models or profiles (Nielsen, 1990; Fernandes, 1995; del Galdo & Nielsen, 1996). In attempting to codify Hofstede's categories into hard numbers per country, Marcus and Gould (2000) note that few nations are mono-cultural, a point highlighted by LeBaron (2003) who reminds us that each person belongs to many mini-cultures, i.e. family group, gender, social group, socio-economic group, and religion which will also influence how we think and act. Jones and Marsden (2006) state that in their experience, the best way to target a culture is through direct ethnographic means. Additionally they suggest that there may be ethical ramifications to rigidly compartmentalizing ethnic groups into categories where there is a history of colonialization, such as in South Africa.

Thus, although it is appealing to consider that a set of design standards could be created for use with Aboriginal and Torres Strait Islander peoples, the diversity that exists in these communities makes such an endeavour problematic. In the next section, the complexities surrounding ICT design across cultures are presented.

2.4.2 Interface design and culture

The field of cognition explores how people gain knowledge (Hurtienne, 2009), and contains the subfields of philosophy, psychology, semantics, and linguistics, along with artificial intelligence and computer science. When paired with HCI and interface design, cognitive science focuses on two areas: learning, problem-solving and reading in relation to computers and the cognitive content and processes involved in any interaction with a computer (Gillan & Cooke, 1995). Computer interfaces are digital representations of the physical world; therefore how a user understands these objects in their own environment affects their interaction with them in the "virtual world". This understanding is based upon a person's lived experiences and cultural upbringing. Recent research into culturally appropriate interface design reveals that computer metaphors that rely on western classification systems affect the cultural usability of software. Many studies show that a person's culture directly influences how he or she understands and interacts with ICTs (Nielsen, 2000; Clemmensen, et al., 2009).

Cultural differences between designer and user groups

Nielsen (2001) gives a clear-cut example of a disconnect between the designer and potential software users by describing a simple to use computer game for small children designed by a

development firm in the U.S. An image of the main screen of the game is listed below in Figure 4.

[image removed due to copyright restrictions]

Figure 4 - Screenshot from "Give the Dog a Bone" on the JumpStart Toddlers CD-ROM (after Nielsen, 2000)

In the course of the game, the dog asks for various items and the child must use the mouse to drag the appropriate item to the dog's mouth. When the dog asks for the ball, a European child might click on the round shape by mistake, because they would not have experienced oval balls. North American children would guess that the round object is a cookie because it has dots (implying chocolate chips). Other American-centrist items on the screen are a rolled up newspaper tied with string, a hotdog on a bun, and flip-flops (thongs). The purpose of this discussion is to introduce the idea that cultural differences may be subtle enough to go unnoticed by the designer but be jarring to a user from another culture. Potentially, this reveals more about the culture of the designer than the potential users.

Collaborative and participative co-design methods have shown potential in alleviating some of these issues in the development of software, but must be tuned to meet the needs of users who may not belong to a western-based culture (Bidwell et al. 2009). This problem can be exacerbated in rural locations where lifestyle dramatically differs from the urban centres inhabited by the developers (Hardy et al. 2007). In this situation, "locale" includes not only the physical locations, but also the myriad social and technical aspects that determine how people interact (Fitzpatrick 2002). In addition to technical infrastructure limitations, cultural mores and

traditions may impact how an ICT can be utilised. Sacred knowledge pertaining to either initiated males or females may also need to be kept separate and private, even to the extent of placing it on separate databases or computers in different locations (Michael & Dunn 2007; Hughes & Dallwitz 2007).

In software design, developers rely on the user equating what they see on the screen with objects that they are familiar with in the "real" world. This is accomplished through the use of graphical icons and metaphors that are represented digitally in the computer application. The concept of computer metaphors is discussed next.

2.4.3 Computing metaphors and culture

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less travelled by,
And that has made all the difference
(Robert Frost, 1920)

A metaphor is a linguistic term described as something that comes to take the place of something else. In the stanza above, Frost likens his life to a journey, with many crossroads. To understand something as a metaphor requires that a person uses prior learning about his or her environment to understand a new situation. Interface metaphors combine familiar knowledge with new knowledge in a way that will help the user understand the system (Preece, 2007; Hudson, 2000). A well-known computer metaphor is the desktop analogy on windowing systems such as Microsoft Windows and Apple operating systems. Metaphors that work well help users bridge the gap between actions taken in the physical world (looking through a filing cabinet for a document) and using the virtual computer interface (using the browse feature to look for files in folders on a computer hard drive). Computer metaphors are most effective when they virtualize an existing problem space, adopting the concept, relationships and activities, such as using a shopping cart for an online store (Hudson, 2000). Erickson (1990) suggests a three-step process for choosing a good interface metaphor: understand what the system will do, understand which parts of the system are likely to cause users problems and generate metaphors to support those tasks.

A difficulty with metaphors, is that once they become deeply ingrained through use, they are difficult to update. One such issue is the concept of cut and paste. These terms apply to a

historical reality where all text and images were print based, and that removing something from a document meant cutting it and perhaps pasting it into another location. More than thirty years after the practice became obsolete in the physical world, we are teaching new users of computers this terminology. Additionally, some metaphors pass along poor design from the original domain to the virtual one, such as difficult to use online calculators (Sharp et al., 2007). Some metaphors have lost their original meaning due to repetitive use, such as the mouse. Although originally a small grey device with a tail, modern pointing devices can be wireless and come in many shapes. The "cuteness" factor has faded after nearly two decades of use, and the strangeness of selecting text on a screen using something named after a small rodent does not even occur to us.

Software that becomes particularly embedded in our culture can come to be a metaphor for actions taken. For example, consider the use of the words googling or photoshopping. Both use the names of software applications (Google™ and Photoshop™) that have come to be considered the de facto standard for searching or photo editing. In spite of this free publicity, both Google and Adobe (the parent company for Photoshop) discourage the use of their software as a figure of speech out of concern that it will undermine their trademarks (Ahrens, 2006).

Although the use of metaphors is common in software design, there are several issues associated with their use. A primary concern is that although a metaphor may be useful in helping a new user learn a potentially confusing interface, if the metaphor is too close to the original object, i.e. performs exactly in the same manner, this may limit the user in learning additional functionality that the new system offers (Hudson, 2000).

Just as in the case of the children's game mentioned above, metaphors often carry the stamp of the designer's world rather than that of the prospective users (MacCormac, 1985). Millions of computer users of click daily on icons of filing cabinets and folders based on American offices (Evers, 2001), even though these may not be present in their own culture. As a prime example of a non-translating metaphor, Duncker (2002) cites the example of the icon showing an American mailbox with its red flag up, signifying either access to an email program or that a user has an email waiting. During the early years of the Internet, most email applications had a variation of this icon, showing the connection between snail mail (physically delivered mail) and email (electronic mail). Unfortunately this icon failed to translate internationally because in some countries mail is delivered to the door, or the person must go to the post office to pick it up. Somewhat ironically, this icon was inaccurate in the U.S. as well (where it was designed),

as the raised flag on rural mailboxes implied that the household had mail to go out, not that some had been delivered (personal experience). The rustic, steel mailbox with its red flag has become a part of American pop culture, often depicted in movies and television programs. One might surmise that this is another situation where urban designers made assumptions about rural events without actually speaking to people who lived in an area where these mailboxes are used. In later years the icon has been changed nearly universally to an envelope with an "@" or an "e", while the place in the software application where the mail is stored is still named the "mailbox" (see Safari mail) or the more ubiquitous "inbox", reflecting the office metaphor (Gmail™ and most web-based email services).

In order to avoid such cultural errors, interface designers take steps to either globalize or localize their applications to the context where they will be used. Each model takes an opposing solution to interface design. Globalization is aimed at the avoidance of cultural terms, icons or metaphors that may cause insult to the user, often with applications that are rendered across many cultures. The process involves the genericization of interfaces (Aykin & Milewski, 2005). Localization, on the other hand, pertains to the translation of global applications into software that is designed for a particular local culture. The goal is to include culture-specific ideas in order to create a specialized design for a particular audience (Young, 2008). Conventional strategies include design that acknowledges the language, customs, beliefs and practices of the local group (Duncker, 2002).

In the literature, opinion is split as to the effectiveness of metaphors when implementing cross-cultural design. While some authors claim that the use of interface metaphors are inevitable (Neil and Carroll, 1997), arguments against their use point out that metaphors require that the user have previous experience with a real life object before he or she can relate it to the metaphorical object (Hudson, 2000). Globalization or localization of computer metaphors is more difficult than just redrawing an object in a more familiar shape. Nielsen (1999) states that the best way to work out these cultural differences is to spend time with the people you are designing for, and make use of local informants during the design process. This corresponds with Shen et al. (2006) who state "within the area of user-interface design, this concept would come down to the development of a product within a cultural context, instead of a global product adapted for a target culture' (p.825).

2.4.4 Problems with western classification systems

The classification systems or hierarchy that underpin much of western design take their structure from the classics and early European literature. The segmentation that systems such as

Dewey decimal or other library groupings use can make it difficult for people who view knowledge in a more holistic fashion to access their own data. Szekely (1997) states that Maori find English sub-groupings to be inappropriate, causing things that logically should be grouped together in their culture to be widely separated when conveyed with western categories. Aboriginal Australians report similar issues. The Australian Institute of Aboriginal and Torres Strait Islander Studies (AISATSIS) have published a subject headings thesaurus to assist libraries and Indigenous knowledge centres in cataloguing their collections using the most appropriate terms. The AIATSIS thesaurus contains headings for language groups and people, subjects relating to Australian Aboriginal and Torres Strait Islander studies, and place names. These headings are used to describe all items held in Mura®, the AIATSIS Collections Catalogue. Although the listing is still very hierarchical, the AIATSIS catalogue offers people the opportunity to add tags to items in the database to give additional information that may assist people in locating items of interest. Such schemes offer the benefit of flattening very deep hierarchies that may otherwise obscure data (Duncker, 2002).

2.4.5 Cultural usability of software

The usability of an interface is based on how well a user can accomplish their goals while operating it (Evers, 2001). HCI and interface design frequently employ usability assessment methods in order to determine software usefulness. Methods of usability testing include asking the user to think-aloud while using the interface, or using eye-tracking software to evaluate what steps the user took to complete a certain task. These sorts of tests do not differentiate between users from different cultures. Windshiers (2006) reports that some Indigenous participants in Africa have difficulty following these sorts of instructions. However, there have been several researchers who have suggested the creation of new models that facilitate improving the cultural usability of software.

Barber and Badre (1998) suggest the use of the term “culturability”, a conflation of the cultural and usability. The authors examined hundreds of Web sites to identify cultural markers that are used to help the person understand and interact with the site (Shen et al. 2006). The use of such items would theoretically improve the culturability of a site, making it easier for people from the target culture to use it. Bourges-Waldegg and Scrivener (1998) oppose this idea claiming it leads to a tendency to stereotype, insensitivity to multi-lingualism, and a latent paternalism (with the designer as culturally omnipotent). Instead they suggest a method called ‘meaning in mediated action’ that focuses on making the representations (i.e. the language and symbols that make up the interface) understandable to a particular culture. Yeo (1996) developed a scheme

called Cultural User Interfaces (CUI) that are created by the designer in tandem with experts from his user group. The process requires that all cultural items from the designers culture be translated into appropriate items in the target culture (example, metal garbage cans from the U.S. become wicker trash baskets in the Thai interface).

Young (2007) posits that, due to inadequacies in the design process to access cultural information, current information systems do not exploit technology in a full enough extent to suit the varied cultures that access the Internet. In her review of the literature surrounding the integration of culture in ICT design, Young (2007) lists the following as the most important in doing culturally appropriate design:

- Developing both generic and specialized designs (Aykin, 2005)
- Incorporating cultural variations tailored to learners (Chu & Reeves, 2000)
- Focusing on cultural research specific to learning strategies and contexts (Fleer, 1989)
- Considering the cultural demographics of learners
- Accommodating for culturally pluralistic designs

The multitude of models and frameworks suggested above show that the consideration of best practice for producing culturally appropriate interface design is still under development.

While this has not been an exhaustive review of the literature on the cross-cultural impacts of ICT design, the research described here show that the design space becomes quite complex when considering applications that are designed in one culture and used in another. There are wellbeing implications for this situation in that users are forced into a constant negotiation of unfamiliar metaphors and icons in order to use an application.

2.5 Gender – Women and interface design

Women in all countries of the world access ICTs less often than men (Huyer, 2005; Buchmuller et al., 2011). This lack of access also applies to being able to give input into the design of new ICT applications. In the next section the gender issues associated with ICT design are discussed.

2.5.1 The digital divide and gender

The existence of a digital divide has been suggested by many in regards to ICT access (Norris, 2001; Recabarren et al., 2008). Women in both developing and developed countries use ICT at a much more infrequent rate than men. ICT initiatives to diminish this gap often treat access as the ultimate goal for progress (Selwyn, 2004). Research has shown that access is far from the only cause for the gender gap that exists worldwide regarding ICT use. Gender and cultural-specific barriers limit many women's access to and exploitation of computers. Sterling (2009) among others such as Huyer (2005) and Subramanian (2000) cites literacy issues, training, cost, time, safety and gender segregation as the most pressing barriers to female ICT use in the developing world. In addition, software applications often do not support the needs of women in their everyday lives (Maier, 2008).

Even in countries with a high penetration rate of the Internet, female-use of the Internet lags well behind that of men.

> In general, women use computers and other ICTs less than men, access the Internet less and for shorter periods, don't have the same levels of access at work, and use community access points less (Huyer, 2005).

As access to the Internet becomes increasingly more ubiquitous in many parts of the world, this unequal use of the medium can become problematic. Cultural constraints such as the appropriateness of ICT use by women and assumptions about women's ability to comprehend ICTs inhibit some women in attempting to learn computing skills (Sterling, 2009). Environmental constraints may mean that applications designed for an urban setting may be unsuitable for use in a rural area (Maunder et al 2006). For example, more than half of Aboriginal Australian communities in the Northern Territory lack the capacity to support access to rich digital media via the Internet. This is not simply a case of lack of access to a high bandwidth Internet connection but a lack of access to reliable electricity and telephone service (Hardy et al., 2007).

2.5.2 Empowerment via ICT use

Multiple studies have shown that access and use of ICTs can provide real benefits in regards to empowerment for women (Huyer, 2005; Sharma, 2003; Ng, 2005). The Declaration of Agreement in Support of Girls and Women in Information and Communication Technology introduced at the U.N. World Summit on the Information Society in 2005 states

> ICT allows women increased participation in political, social, and economic arenas and supports empowerment for themselves, their families and their communities (p. 195).

In a review of the literature surrounding female empowerment and ICTs, among the benefits provided by access to computers listed by Maier (2008) are the development of marketable skills, increased personal autonomy through the ability to generate a separate income stream, increased self-confidence and agency, and opening new gateways for education, communication and information sharing. Nath (2006) defines empowerment of women through ICTs as

> ...the use of ICTs by or for women to further develop their skills and abilities to gain insight about actions and issues that affect them (positively or negatively), as well as build their capacity to be involved with, voice their concerns about, and make informed decisions about these issues (p. 195).

This empowerment may come with a cost, as access to information can alter the power structures previously existing in a community or nation. Maier (2008) notes that empowerment of women cannot help but to 'redefine traditional gender roles'. For this reason ICTs projects should be framed within the culturally appropriate standards of the community, lest it cause increased strife between gender divisions. As an example Maier refers to the Rupununi Weavers Project in Guyana. In this economic development project, two female weavers gained assistance from a non-governmental organization (NGO) to produce a website to sell custom, traditionally made hammocks. Their site became very popular and soon they were selling their products at a high price, garnering a large amount of respect as well. At this point, the more traditional regional leaders from the vicinity became uncomfortable with the upheaval in gender roles, took over the project and essentially ended it (Maier, 2008).

While many of the studies listed here were based in the developing world, similar patterns of ICT access and use can be seen in developed countries such as Australia as well. The next section discusses the differences between male and female use of computing technologies and its ramifications for ICT design.

2.5.3 Gender differences in ICT use

Although the studies of difference in ICT use have stalled in recent years (Hou, 2006), previous research shows that women and men often use ICTs for different means. In the home women tend to use computers for task-related functional reasons rather than entertainment (Imhof,

2007). As computers have come to be seen as a necessity rather than a luxury, mothers are often involved in managing the ICT activities of their children in regards to schoolwork. Mobile phones are used increasingly as a means of organising and monitoring schedules. In some countries the mobile phone has come to be called the 'electronic umbilical cord'. Lim (2010) suggests that mothers, due to their lack of free time 'tend to have a strong pragmatic orientation in their use of ICT and unlike men, are less inclined toward recreational uses (p. 215).

Imhof et al. (2007) reports on a quantitative study of university students which showed that while males and females spent nearly equal amounts of time accessing study-based materials, males were most likely to spend more time on the computer overall. The authors linked this to the increased self-efficacy claimed by the male students; i.e. more consistent use of ICTs leads to higher confidence in completing computer-based tasks. Other studies have noticed this trend, hence the interest in making ICTs available to users across a broad range of settings (Kelan, 2007; Levine and Gordon, 1989).

In the developing world, the reasons for lack of equal ICT use are often found not only in issues associated with low income, but in the gendered norms for male and female behaviour such as, restrictions on travel, restrictions on interactions with members of the opposite sex and patterns of male behaviour such as harassment and belittlement of women's abilities (Huyer, 2005; Sterling 2007; Subramanian 2007). In developed countries such as the United States and Australia where cultural restrictions between men and women are more relaxed, restrictions include preconceptions about the ability of women to understand technology and the double-shift often undertaken by wives and mothers to handle domestic duties in addition to those of income-generation outside the home that leaves them little time or energy to take on learning ICTs (Imhof et al., 2007).

Even when men and women have near equal access to the Internet, these offline restrictions are reflected in their online use of technology. Although early observations of Internet use implied that users could put on an entirely different identity due to the anonymous nature of the Internet (Turkle, 1995), subsequent research has shown this to not be the case (boyd, 2001; Shmatikov, 2011). Mores and attitudes from the offline world carry over to the online one reflecting deeply held beliefs about gender roles. For instance, women report being harassed with inappropriate sexual comments while using Internet chatrooms and forums when their identity is assumed to be female because of their username (Meyers & Cukier, 2006). This is particularly prevalent on sites with a high male participation rate such as gaming sites and technology forums. Walker et al. (2011) note that this has held true even with the move to mobile computing such texting.

Barak (2005) reports that the traditional forms of sexual harassment such as gender harassment, unwanted sexual attention, and sexual coercion are all encountered by women in their use of the Internet. Griffiths (2000) describes a study in the UK where 41% of female, regular Internet users reported having been sent unsolicited pornographic materials or stalked while online. Walker et. al. (2011) reported these forms of harassment as well. Issues such as these limit women to posting on sites that have strict guidelines as to content and are actively moderated to ensure safety.

Women tend to spend more time online in activities that heavily prioritise communication practices than do men (Pew Internet and American Life Project, 2000). Reflecting this trend, recreational social networking systems (SNS) like Facebook and MySpace tend to be more often used by women, while sites associated with finance and career-building (LinkedIn) are frequented by male users. Since research has found that people often use social networking services to stay in touch with their existing networks (Ellison et al., 2007), women may not benefit as highly from the use of these networking systems due to the more constrained nature of their offline networks (Hargatti,2008).

2.5.4 Design is not gender neutral

As demonstrated in the section above, demographic differences such as gender and culture have been long accepted as having a significant impact on how people make use of ICTs (Hou, 2006). Women can be limited in their ability to exploit improvements in technology by these differences and their exclusion from the design process, further perpetuating disadvantage (Sterling, 2009). Although a small percentage of employees in the ITC development workforce are women, they often cease employment in ICT careers within 10 years (NCWIT, 2009). Reasons given for withdrawing from active employment are found in the twin areas of lack of work-home balance and negative perceptions regarding their work from male co-workers and supervisors that limit their ability to gain promotions or more prestigious assignments within the company (Demaiter, 2009). In the IT field, women tend to be segregated into a few, “less desirable” jobs (for example, database analysts, web designers, documentation writers, and systems testing technicians) characterized by low pay and high unemployment rates, compared to other IT occupations (Demaiter 2004; Gunderson et al. 2005; Habtu 2003). Wright (1996) and Timms et al. (2008) claim that the masculine culture of work in the IT field drives women away, although Demaiter (2009) notes that those who stay develop a “thick skin” along with other methods of mediating the culture to their own benefit. Some of the mechanisms employed include starting their own companies or working as contractors to allow mobility within the

work environment. Additionally, longer-term female ICT workers tend to rationalize bad treatment from males not as gender discrimination, but as the personality flaws of particular individuals.

The effect that the marginalization of women in ICT careers has on ICT design can be profound. Wajcman (2004) states

> Every aspect of our lives is touched by sociotechnical systems…The fact that women have practically no voice in the creation of major technological innovations that control our lives is surely to the detriment of the industry and society as a whole (p. 111).

The situation is not getting better as women are increasingly avoiding careers in ICT fields. Pryor et al. (2009) report that female enrolment in computer science in universities in the U.S. has declined by 79% in the last ten years. Further, a report by the National Center for Women & Information Technology (NCWIT) states that more women are leaving ICT than are joining the field.

> Forty-one percent of women leave technology companies after 10 years of experience, compared to only 17 percent of men… Fifty-six percent of women in technology companies leave their organizations at the mid-level point (10-20 years) in their careers (NCWIT, 2009, p.).

Managers are keen to hire women in IT roles due to the "soft skills" that they bring to design teams. In an industry where the customer is king, the ability to intuit the project requirements from people who are not able to articulate them in a succinct technical manner is very important (Kelan, 2008). The key message from the literature in this area is that women are increasingly disconnected from the creation of new ICTs (as creators) and are seldom consulted (as consumers) and this has a detrimental effect on the design process as a whole.

2.6 Aboriginality and interface design

Although women as a group are somewhat marginalized in their ability to mould ICTs to suit their needs, Aboriginal people are even more so. Dyson et al. (2007) suggest that Indigenous people are currently finding themselves on the wrong side of the digital divide. Data from the ABS (2009) support this, showing a "lagging uptake" of ICT among Australian Aboriginal people. Anecdotal evidence suggests that this delay is larger among women of Aboriginal

groups. Radoll (2009) theorizes that unless Indigenous people engage in computer use at school or later in the workplace then they are increasingly unlikely to make use of it at home. While Dyson et al. (2007) maintain that Indigenous people in Australia express keen interest in ICT, they note that many are disenfranchised in their access to it due to economic factors. Satchell & Dourish (2009) add to this argument by specifying a typology of 'non-computer use'. This section focuses on the challenges associated with conducting respectful ICT research with Aboriginal people and then turns to the literature concerning Aboriginal peoples and interface design.

2.6.1 Digital divide and Australian Aboriginal people

Socio-political and economic disadvantage mean that some Australian Aboriginal people have not widely adopted and 'appropriated' Internet-based applications (Carroll 2002). 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" (Warschauer, 2002). Many Aboriginal people are not inherently disinterested in technology, but lack access to the equipment and infrastructure that enables them to domesticate it. They lack opportunities to adapt technologies to features specific to their domain and gain the experience that enables design. Such disempowerment is intensified by the relatively low population of Aboriginal people, at only 2.5% of Australia's total population (ABS, 2010) and low socio-economic status. They are a diverse, a frequently dislocated group of people displaced from their lands whose culture, social support (such as kinship), or identity through language has often been eroded (Bidwell et al 2007). 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 (Bidwell et al, 2008), although at the present time many Aboriginal people have had little opportunity to do so.

2.6.2 Wellbeing and Aboriginal Australian interest in ICT

While Aboriginal Australians have adopted ICTs at a lower rate than is present in the rest of the country, the many difficulties inherent in providing infrastructure and IT services often play a part (Brown and Venkatesh, 2005). Projects with Aboriginal Australians that are set in their immediate area, and are focused on the needs of their community often generate a high rate of interest and follow-through. Research from two such projects is described next in order to illustrate this point.

Dyson (2004) reports results from an "Indigenous Pre-IT Program" geared toward teaching web design. From a single two-week course offering at UTS, of the 11 participants, only one person withdrew from the course before completion. Of the remaining 10 participants, three students pursued and completed TAFE courses in IT, one entered tertiary study in the Bachelor of Adult Education at UTS and two students opened an ICT based business (Internet Café) following the conclusion of the program. The course was run using faculty funds at UTS and was not funded after four iterations of the course (Dyson et al., 2007). Interest, enthusiasm and completion rates were high in both sessions of the course. The opportunities that such programs offer toward self-empowerment and new careers should not be overlooked.

In another project in remote central Australia, the Anangu (Pitjantjatjara and Yankunytjatjara peoples) engaged with ICT contractors and the Pitjantjatjara Council to create a digital archive of their cultural history incorporating images, video and other multimedia. Metadata fields in the application allowed the Anangu to annotate these items in a way that was meaningful to their group (Hughes and Dallwitz 2007). Due to lack of network infrastructure the application is not web-accessible, but is installed at 10 different locations around the Northern Territory. After over 10 years of use, interest in the system is so keen that when the mobile station containing the application is taken from its storage facility there are often many people waiting eagerly to update the information in the archive, to the point of insisting on "their turn" the minute one operator takes a hand off the mouse. An interesting insight that might be revealed in such cases is not only that a project is important to people technologically but that the project also comes to serve some social function (e.g. the mobile station may act as a meeting place).

2.6.3 Previous Indigenous research projects in ICT design

Indigenous groups around the world have participated in ICT projects both limited to their locale and farther afield. Michael and Dunn (2007) note that the greatest gains have been made when the projects are collaborative in nature and the requirements are determined by the Indigenous members of the community and then applied to an ICT paradigm. This is often quite different than the usual design process followed in urban centres. Adding to this difficulty is the fact that Australian Indigenous peoples see themselves as independent groups and not one cohesive "diaspora" (Hughes and Dallwitz, 2007). This suggests that a methodology that fits with one community may need to be somewhat altered to deal with a different group. Carr & Kemmis (1993) discuss methods such as participatory action research that allow a cyclical inquiry that is pertinent to the local people rather than being generalizable across many peoples. Yunkaporta & McGinty (2009) state

> The emphasis of action research is on local rather than non-local, communal rather than individual, participatory rather than objective, which makes it a good match for the theoretical framework and Indigenous orientation to place and community (p. 56).

Moreover, Indigenous researchers such as Yunupingu et al. (1993) claim that participatory action research is a framework that can facilitate research which acknowledges Indigenous ways of knowing. However, Puri et al. (2004) caution that "there is no single algorithmic best practice regarding participatory design in information systems which is applicable to all situations"(p.1).

2.6.4 Concerns regarding ICT design with Indigenous people

Much of the existing ICT designs that have been created with and for Indigenous people use either a web-based interface for those with Internet access or the more traditional stand-alone applications for the Microsoft Windows or Apple operating systems, and recently mobile phone-based technologies. Increasingly, Indigenous people are utilizing web publishing tools such as blogs and websites to access the previously "elite" publishing stream used by the Western world to add their voices to the public discourse (Nakata, 2000). The interactive nature of the web with its embedded capability for networked communication (i.e. hyperlinks, comments, etc.) can do much to alleviate the previous Indigenous disconnection from the printed word as a one-way medium (Nathan, 2000). Some Indigenous people are by no means the late adopters of Internet technology. Polly (1998) relates a quote from Dan Ulmstead, one of the founders of the Oneida Indian Nation's website

> Our page went up in May of 1994. Very shortly thereafter, I was notified that we were given one of the first `Point Top 5% of the Web' awards. We were the first sovereign Indian nation to put up a web page and perhaps the first nation of all (there were only about 5,000 web pages on the net when we came up). Even the White House homepage wasn't up yet! (n.p.).

Landzelius (2006) suggests that the debate is still active over whether the Internet medium can/should be "indigenized" or if it will ultimately be an additional "colonizing" influence. An example of this issue can be seen in the use of geographic information systems (GIS) that are currently of great interest in many Aboriginal research projects. The use of such systems is problematised by authors such as Palmer (2007), who describes issues with forcing Indigenous knowledge into the narrow pigeonhole that is Western cartographic representation. In contrast

to this view, Turk (2007) argues that while the use of technologies such as GIS can lead naturally to a positivist (and scientific) approach to research, this does not always have to be the case. This is most easily seen in the current Native Title claims in Australia that require the claimants to detail traditional occupation areas. While general boundaries can be ascertained from knowledge passed down through the years, traditionally these lines were porous and open to group negotiation. This cultural information can be used by Aboriginal mapmakers to give a more legitimate look at these historic land use patterns to enable not only access claims to their territories but to map sensitive places of cultural significance in a method of conveying cultural history and knowledge.

2.6.5 Interaction design and the cultural interface

The area of overlap of influence between Indigenous and Western cultures has been labelled the cultural interface by Nakata (2002). Indigenous people's life experiences occur at the intersection of Western and Indigenous knowledge systems (Thomas et al, 2011). This cultural interface is the location where the contestation of various knowledges takes place (Nakata, 2002). For the Indigenous person, the influences of both value systems have had an effect on the complex realities of their history, politics, economics and worldviews. For a non-Indigenous person as myself, this space creates the necessity for a continual questioning of what I observe, in concert with what Indigenous people report as true or valid. To inhabit this cultural interface, it is not necessary to require that these knowledges be conflicting, with one true and the other false, but to have an understanding that how we see things is culturally relative (Nakata, 2007). Colonisation of Indigenous knowledge has occurred through the continual privileging of the Western scientific framework over the Indigenous knowledge systems (Smith, 1999). A substantial, and on-going reflexive effort must be made by the non-Indigenous researcher to acknowledge and investigate assumptions that contradict or are challenged by interactions with Indigenous people (Thomas et al., 2011).

Design and new knowledge creation occurs through the voluntary exchange of information between partners. This last point is especially necessary in research with Aboriginal participants, who have been the target of research that has been in the mildest form of no use to them, and in the worst case some of "the worst excesses of colonialism" (Smith 1999). To avoid this, the researcher should consider the concept of reciprocity, acknowledging that the researcher has

> Ethical responsibilities to share or disseminate findings of research to the people who have been researched…this may be seen as the corollary of responsibility to protect participants from harm; not only should research not harm participants, but it should benefit them also (Robson and Robson, 2002).

Researchers who work with participants from a different culture face the need to bridge these competing knowledge systems. In the past, much research on Aboriginal participants denigrated or ignored their worldview and cultural knowledge. Researchers should not only give respect to both knowledges, but also seek to incorporate Aboriginal research methods into the research process.

> The exchange of knowledge was a two way process as the researchers taught each other about their different experiences and explained things to each other that may not have been understood otherwise (Esler, 2008).

A considerable amount of previous work outlines the reasons for developing culturally appropriate research methods with Indigenous participants. This literature both informs this study and provides broad guidelines regarding research design. In the next section the focus turns to the context where this particular research was conducted, i.e. north Queensland, and examines the literature regarding past and present racism towards Aboriginal people.

2.6.6 The impact of racism on interaction design in Australia

Please note, the following section discusses racial conflict issues regarding treatment of Aboriginal Australians that may be distressing to some readers. These issues are not raised to sensationalize the situation, but to discuss problems that have led to distrust between Aboriginal and non-Aboriginal people, and how this affects interaction design conducted with participants from those groups.

Issues in cross-cultural design are caused not only by cultural differences in epistemology and worldview but also by historical and current racial attitudes. In looking at the setting for the research described in this thesis, racial conflict has been a part of Australian culture since the arrival of Europeans in 1788. Within the next century Aboriginal people were forced out of their home territories, murdered, and forced onto reserves or missions where they were subject to imported European diseases for which they had no immunity. Watson (2010) states that North Queensland Murris (Aboriginal people from Queensland) were looked upon by Europeans as ‘pests in the way of an inevitable and a sacred duty of the British to colonise in

the name of progress' (p.27). Further, she relates that in 1864, the *Courier*, Brisbane's lead paper printed an editorial stating 'nothing will prevent our native tribes acknowledging us as the superior race.' Although some people were sensitive to the plight of the Aboriginals, this attitude carried with it a sense of paternalistic superiority regarding actions to be taken to remedy the perceived "deficiencies" of the Aboriginal character (see 'White Man's Burden', Kipling, 1899). It would be over a century (in 1967) before Aboriginal people in Australia were counted as humans in the national census. During approximately the same period (1869-1969), Aboriginal children of mixed parentage, i.e. European and Indigenous, were removed from their parents homes and sent hundreds of kilometres away to boarding school and then on to low-paid work as domestics or other agricultural labour positions (Broome, 2001). Although Kevin Rudd in one of his first acts as Prime Minister of Australia in 2008 offered a nationally televised apology for the abductions (called the Stolen Generations), many Australians deny the systemic racism and abuse that had been administered to Aboriginal and Torres Strait Island people by white society, due to a substantial white-wash of these incidents in the official history books (Reynolds, 1999).

Current interface design with Aboriginal Australians is conducted against this backdrop of Aboriginal disenfranchisement and loss. Rigney (1999) states that the Fourth Report of the Aboriginal and Torres Strait Social Justice Commissioner (Dodson 1996), the National Inquiry into Racist Violence in Australia (HREOC 1991) and the findings of the Royal Commission into Aboriginal Deaths in Custody (Johnston 1991) all concluded that Indigenous Australians face racism in almost every aspect of their lives (p. 111). Aboriginal people in Townsville, Queensland where this study was situated still experience many incidents of racial tension and hostility. One telling incident reported in the local newspaper occurred in 2009 where a drunken white man in the suburb of Wulguru (an off-duty current Australian Defence serviceman) fired an unregistered air rifle repeatedly into a small group of Aboriginal children playing in a park across the street from his house, injuring two of them. He was later arrested by police, but released on bail to the MPs at Lavarack Barracks in Townsville, as he was not considered sufficiently dangerous to hold in jail. A white neighbour who was interviewed by the Townsville Bulletin on condition of anonymity claimed that he didn't see what the big deal was, because it wasn't like it was a "real gun" had been fired (Weatherup, 2009). One doubts that there would have been a similar outcome if a "drunken Aboriginal male" had done the same thing to a group of peaceful playing white children. As a newcomer to Australia in 2004, I was greatly surprised at the level of vitriol expressed by local townspeople practically on a daily basis towards Aboriginal and Torres Strait Islander people. Stories of Aboriginal people

being denied entry to night clubs in the city centre or being verbally abused in public venues are common (personal experience). As a researcher I found myself the recipient of sly jokes and sneers when I revealed that I was doing research with Aboriginal people.

While these overt expressions of hostility are deplorable, subtle racism also exists in the reshaping of what is considered knowledge (Rigney, 1999). The following section describes ways in which the subtle favouring of the European worldview colours research conducted with Aboriginal people.

2.6.7 Design is not culturally neutral

The idioms that "knowledge is power" and that "all knowledge is political" are very pertinent to the discussion regarding appropriate research methods with Indigenous peoples. In this section, I would like to consider how these ideas impact upon ICT research with Aboriginal people.

Decolonization of methodologies

Much of the previous research conducted with/on Indigenous people has consisted of research questions such as "The Aboriginal problem" or "The Aboriginal question", implying that merely being Indigenous is an issue unto itself. This deficiency model slants the research from the start. Smith reports that "problematizing the Indigenous is a Western obsession" (1999). From the point of view of the researched, this sort of investigation continues to colonize an oppressed people (Rigney 1999). Smith (1999) takes up this theme in her seminal book, *Decolonizing Methodologies*. Speaking to Indigenous researchers she says that decolonization of methodologies is about "centring our concepts and worldviews and then coming to know and understand theory and research from our own perspectives and for our own purposes" (p. 39). This allows the research to be evaluated in a way that is not subservient to the frame of Western epistemologies that are innately foreign and serve to further colonize Indigenous people. To decolonize methodologies is to take the reins of research projects and develop additional models that do not require a Western epistemological background on which to base reality.

Indigenous epistemologies and epistemological racism

The epistemology of our culture determines how we know what we know. Western epistemology posits objective, dispassionate observation through scientific investigation as the way that knowledge is formed. Indigenous epistemology on the other hand supports integrated, holistic, knowledge making paradigms such as that suggested by Martin and Mirraboopa (2003).They depict a triad consisting of "ways of knowing, ways of being, and ways of doing" that mediate how Aboriginal people learn about the world and operate within it. The authors

also raise the question of what effect race-based research epistemologies contribute to the discourse on research methods. Increasingly, Aboriginal researchers are insisting that research needs to be conducted and evaluated in ways that are inclusive of the worldview and ontologies of the group being researched. Krupat (1993) reports the words of Vernon Masayesva, chairman of the Hopi Tribal Council who stated

> Research needs to be based on the reality of our [Hopi] existence as we experience it, not just from the narrow and limited view American universities carried over from the German research tradition (p. xix).

Moewaka Barnes et al., (2009) name this privileging of the western worldview 'epistemological domination' (p. 442).

Culturally safe research – protection from misinterpretation

Keeping epistemological bias in mind, it is extremely important for researchers who work with Indigenous participants to create a cultural safe research area (Rigney, 1999). Not only can research which undermines the cultural reality of a participant cause damage to the people being researched, the results from such research can be irretrievably flawed. The outcomes of the study may be compromised if the researchers unwittingly transgress cultural boundaries and inaccurately describe the experiences of those researched (Smith, 1999). Wilson & Neville report that the 'privileging of western research epistemologies, processes and ethics to the exclusion of other approaches leads to an implicit construct about the truth observed.' Durie (2004) notes that it is imperative to create a culturally safe research environment in order to avoid reinforcing negative stereotype and to report findings that will be of value not only to the academy but to the community as well. Additionally, an important part of culturally safe research is the necessity to ensure that the findings reported are consistent with the participants viewpoints. Historically this has often not been the case, where Indigenous worldviews have conflicted with that of the researcher. The use of a "cultural mentor" can go a long ways towards alleviating this issue (Farelly and Lumby, 2009).

Cultural mentors provide many benefits to research in Aboriginal communities. Guilfoyle et al. (2008) suggest that in order for PAR to reach its full potential with Aboriginal participants, it is mandatory to include a cultural mentor. The mentor provides access to the community participants, but moreover helps maintain a sense of cultural security (NHMRC, 2006). Although the role can be filled by more than one person, a cultural mentor helps translate concepts or actions that may be unknown to the researcher, and point out ideas that may be

overlooked due to the difference in experience and worldviews between the researcher and the other members of the research team or participants. Although a person may have a certain amount of cultural awareness or cultural competency (Walker and Sonn, 2010), the use of a cultural mentor helps negotiate research conducted with a particular group. Fredericks (2006) showed in her research that although health workers had been given general cultural awareness training that this did not equate to any marked improvement in the services provided in a health care setting or the care being significantly more attuned to their needs.

2.6 Summary

This chapter has focused on the complexities of doing interface design research with female Aboriginal participants. There are currently gaps in the literature concerning ICT research targeted to the needs and aspirations of Indigenous people in general and Aboriginal and Torres Strait Islander people in particular. These gaps are present in three main areas: (1) cultural usability, (2) female engagement with ICTs and (3) culturally respectful research methodologies. The tri-fold themes of culture, gender and Aboriginality provide a complex architecture that informs the research for this study. HCI and interaction theory are increasingly looking to the insights that Indigenous cultures provide in order to create designs that are usable and of value to localised communities. In the following chapter, I will describe the methods used to explore how ICT can be used to enhance wellbeing with the Gugu Badhun participants, and describe how the framework of participatory action research was used to explore potential solutions to this issue.

Chapter 3
Making a Plan: Research Design

3.1 Introduction

This chapter describes the research design for this study. The research in this project was a participatory action-research study examining how ICTs could be used to enhance wellbeing in an Aboriginal community. Using a collaborative approach, the research team members (made up of Gugu Badhun women and myself) conducted research activities together to determine ways in which this research aim could be realized. This study is a continuation of previous research endeavours initiated by the Gugu Badhun.

First, the methodology and research methods are described, followed a discussion about the rationale for choosing the particular methods that inform the data gathering and interpretation activities. The chapter concludes with a discussion of the data analysis methods, ethical implications of the study and a review of the research question.

3.2 Research Methodology: Participatory Action Research

As discussed in the previous chapter, research with Aboriginal participants has a very chequered history. Esler (2008) states "research is a dirty word for many Indigenous Australians, particularly when research is disengaged from the needs of the community and makes only a small contribution " (p. 457). For several decades participatory action research has been used to not only understand the realities of issues in communities, but to assist people to create change from within their groups. A basic description of PAR was given in Chapter 1, but this section provides a more in-depth examination of collaborative ICT design methods, the history of the action research paradigm giving special emphasis on how it has been used in both social research and ICT development, and why it was chosen for this project.

While PAR has become increasingly more common in social science research there are similar collaborative approaches that have been used in ICT research. These approaches are described next, with a view to show how the use of collaboration is necessary for successful ICT design.

3.2.1 Collaborative ICT research

Participatory Design

Participatory design represents a branch of computer design where the people destined to use the computer system take a large role in designing the system. The theory comes out of design practice in Scandinavia, and has had broad acceptance in Europe and the United States (Schuler and Namioka 1993). The theory hinges on the premise that workers in a group have the greatest potential to define what technology efforts will have the most benefit in their arena. Participatory design projects often include the following characteristics: participant access to relevant information for the project, an independent voice in decision making, user-controlled development resources, active involvement of users and increased learning and communication among the design team and participants (Clement & van den Besselaar 1993). The practice developed out of the Scandinavian trade union movement, with the idea of involving unions in the development of systems, although interest by the unions was minimal, and over time the focus moved to using individual employees in the design activities. This history also reflects the emergence of an increased role of users in system development in order for the systems to be of long-term benefit for the users (Hackos & Redish 1998).

Participatory design requires that the users of the specified systems be involved in each design stage of the application. The need to stay in contact with the participants for the duration of the design and implementation process can present a risk to the project unless this issue is managed well (Epstein & Yakura 1992). In order to encourage continued dedication to the project for all concerned it is critical that the design team does not misinterpret or disregard the input of the participants (Bowers & Pycock 1994). This is particularly important when considering all of the design choices; it is vital that the design team does not become fixated on a particular design too early (Jansson & Smith 1991). While these are important considerations it must be stated that involving users in design decisions can be a complex manner, especially when cultural differences are added into the mix (Sharp et al., 2007).

Agile Development Lifecycle

While Participatory Design can be considered a methodology, i.e. a general framework for the type of research being done, a lifecycle denotes the stages of activities conducted and how they are related to each other. A lifecycle is by nature an abstraction of a real-world situation, giving only the most basic information needed to convey the concepts. Four general lifecycles have been defined and used in software engineering: waterfall, spiral, rapid or iterative development

and agile development (Preece et al., 2002). Each attempts to solve the problem of how to best utilise the existing resources in order to build an ICT.

Older software design processes such as the waterfall lifecycle prioritized extensive documentation of the "programming problem" before design and coding began. This type of development model did not make provision for the concept that not only could the problem change during the length of time necessary to get to the end product, but that the original understanding of the problem itself could be flawed. These two issues led to the waterfall method being largely abandoned by the late 1990s in favour of more flexible or "agile" models of software development such as eXtreme Programming and Scrum (Beck, 1999). These models specify the importance of handling emergent requirements that arise during the length of the project and in facilitating ongoing face-to-face collaboration with the customers and end-users during the development cycle. Short iterations (sometimes as short as one to four weeks) are common; each iteration leading to a complete functionality item or sets of items. Customers and users meet often with the design team to provide immediate feedback. At each stage of the design process, product owners are asked to comment, and suggest more appropriate design trends to make the completed application tailored toward the user group (Svensson and Höst 2005). Criticisms of this approach are that as there is not a concrete design plan upfront in the process, scope creep (adding an endless list of new features) can result (Stephens and Rosenberg, 2003). A recent literature review by Kautz (2011) reveals that although Cockburn (2002), one of the leading members of the agile development movement took much inspiration from the work of Ehn's (1992) research in participatory design, this has not resulted in much research that uses both methodologies.

A review of participatory design and agile development shows that many of the individual empowerment ideas that underpin PAR are found in the collaborative design methodology in ICT literature. However, when conducting research in a community environment versus a corporate one, PAR may be more useful. The reasons that PAR was chosen as a methodology for the research in this study are presented next.

3.2.2 Choosing PAR

The term action research was first defined by Kurt Lewin in 1946 as a process where building theory and creating practical change were combined (Gray, 2004). The most common methodologies proposed under action research are critical action research (Carr and Kemmis, 1985; Kemmis and McTaggart, 1988), action science (Argyris, Putnam and Smith, 1985), soft systems methodology (Checkland, 1981) and evaluation methodologies (Suchman, 1967; Guba

and Lincoln, 1989). Participatory Action Research (PAR) falls under the critical action research methodologies.

Two general types of PAR are described in the literature, sometimes called northern and southern PAR. 'Northern' PAR focuses on education research, and improvements that educators design to improve their own practice. 'Southern' PAR (meaning southern hemisphere) takes a decidedly emancipatory stance advocating for improved situations for community members who may be marginalized or oppressed (Fals-Borda, 1997; Freire, 1972). The research described in this thesis is of this second type. In his description of the methodology, Fals-Borda (1997) argues "PAR is a philosophy of life as much as a method, a sentiment as much as a conviction" (p. 111). PAR originally developed in countries in Latin America, Africa and Asia (Conrad and Campbell, 2008; McIntyre, 2008). The common themes for the use of this approach were concern about the distribution of resources and the marginalisation and oppression of economically disadvantaged peoples.

In Australia, much of the recent PAR studies have involved empowerment through education and improved health (Liamputtong, 2009). PAR is becoming much more common in research projects with Aboriginal participants as it easily facilitates the flow of two-way knowledges between the researcher and the community. Collaboration is enhanced by providing an environment where members can create their own solutions to issues that they identify (Israel et al, 1998, Esler, 2008). Greenwood and Levin (2005) advocate that action research is an important approach when dealing with issues of social justice. Since the 1990s there has been an increased interest in using ICTs to enhance community wellbeing (Fleer, 1989; Herring, 1994; Christie and Verran, 2010). In a literature review in 1997, Lau and Hayword (1997) reported that of the few qualitative action research studies that were conducted using action research, none of them examined the effects of communication systems in groups or organizations (O'Brien, 1998).

Participatory action research (PAR), participatory design (PD) and agile development all contain components of user-centred research; the main differences between them are found in the activities prioritised by each method. The features of PAR that recommend it for use in community-based ICT projects are the importance it gives to the current lives and situations of the participants, its assumed imperative for change and iterative cycles that emphasize planning, acting, observing and reflecting (Coghlan & Brannick, 2001). Dual focus on research and pragmatic solutions balance the development efforts of the researcher and the wider community. The focus on "acting" during the research cycle avoids the issue of needing to

initiate a second project to enact change after a potential solution is discovered (O'Leary 2010). All group members make actionable decisions throughout the project that guide the direction of the research.

3.3 Data gathering tools: focus groups and a technology probe

The research design for this study used a multi-methods design in order to ensure that the varied aspirations, viewpoints and voices of the participants were honoured. Two sets of focus group meetings sandwiched the use of a custom-designed technology probe. The first set of focus group meetings occurred during research Cycle 1. These meetings were held to enable the group to come to a consensus regarding the type of ICT that would be designed in order to help enhance their wellbeing, how it would be deployed within their community, and the general design characteristics of the ICT. During this time the group stated that since storytelling was an important aspect of their face to face meetings, this should be a part of the new system. The idea of creating an online system developed during our initial focus groups. After doing some research regarding technology probes, I suggested that perhaps it would be helpful to make a simple web-based program that could integrate the ideas the group had come up, and then we could analyse how the system was used. This information could then inform further development. During Cycle 2, the project team made use of a specially designed technology probe, created using the information gained in the first cycle. The final cycle of the research again used focus groups, this time to obtain feedback from the participants regarding their feelings about the usefulness of the probe site as it pertained to wellbeing, to ascertain how the site should be used in the future, and any further steps that the group would like to take. The remainder of this section details the rationale for choosing the combination of focus groups with the use of a technology probe.

3.3.1 Focus groups

The focus group method developed out of market research, but has been widely used in social research in the last decade (Barbour, 2007). Differing from a group interview where each person is asked similar questions, a focus group uses a facilitator to initiate dialog and interaction between all members of the group around a certain topic or issue. Hennink (2007) suggests that focus groups are particularly useful in situations where the researcher and group members do not share the same cultural background and the research is attempting to discover the perspectives and experiences of the participants. Dawson (1993) states that focus groups are often used in health research looking at solving specific program problems and exploring health

issues. Although focus groups can be used as a stand-alone method, they are often employed in combination with other methods in order to gain a complete picture of the issue under investigation. Miles and Hubmerman (1994) among others describe this multi-method emphasis as 'triangulation' (Patton, 2002; Barbour, 2007).

Liamputtong (2009) describes four advantages of using focus groups that have particular bearing on this research study. Firstly, focus groups allow researchers to gain an in-depth knowledge about a situation or issue in a much quicker fashion than is possible with individual structured interviewing. Secondly, focus groups are very useful when a researcher needs to access sensitive information that a person may feel insecure about revealing without group support. A third aspect of focus groups is that due to their flexibility, discussion often uncovers unexpected information due to the group dynamic. Finally, the use of focus group discussion can help alleviate misunderstandings regarding the purpose of research as the participants can ask questions as the meetings continue. Focus groups are particularly useful in PAR as the interactive nature of the meetings lends itself to group problem solving (Dick, 2003).

Focus groups can be very useful in gaining an in-depth understanding of the opinions and attitudes of people regarding a topic under investigation. Two limitations on this method inspired us to take a multi-method approach in the study. The first is that due to the complexity of the research area (enhancement of wellbeing with Aboriginal female participants using ICT) and the cultural differences between myself as a researcher and the women in the study, a substantial amount of time would be required to reach the saturation point in collection of the data. Glaser and Strauss (1967) and Krueger & Casey (2009) define saturation as the point where additional information obtained from the research will not generate new understandings. Morgan (1997) argues that in general, three to five focus groups are needed to explore each research concept (such as gender or economic status) potentially leading to a situation where the number of focus groups needed may exceed the time and resources available for the study. A second limitation of a focus group only method is that there may be differences between what people say in group meetings (in front of peers or others) and how they actual behave away from a research setting (Kitzinger, 1994; Liamputtong, 2009). These two issues led us to choose an additional method of data collection that would allow us to continue to obtain information from the participants after the end of the initial focus group sessions and that would aid us in discovering how the women would interact with each other through the use of an ICT within their own homes. In order to gain this additional information, we designed a technology

probe that was made available to the participants for a year. A description of technology probes and the rationale for their use in this study is presented next.

3.3.2 Technology probes

Over the last decade, various types of ICT probes have been used to explore design ideas with people. Bill Gaver and a group of designers initially developed the idea of a cultural probe to explore the design space for the elderly (Gaver et al.1999). In the EU Presence Project (which explored how to better involve older people in the everyday life of their communities), Gaver and his team attempted to move ICT design away from focusing merely on production and efficiency to concentrate on support for 'ludic pursuits'; i.e. those that emphasize the enjoyable, playful, commonplace activities that people take in their lives (Randall, Harper & Rouncefield, 2007). In this research the group provided people with a physical 'probe pack' containing activities for the participants to complete at their leisure, asking questions about their home environment. These packs were then returned to the research team at a later date. The purpose of the research was to help inspire future design in ICT and engage the participants at an early stage in the design process. While the original idea for the probes was to inspire design for future projects, recent projects have used cultural probe as an umbrella term to include anything from photo diaries to long-term ethnographic studies (Boehner et al., 2007).

The concept of technology probes developed out of the extension of the probe method from physical materials to the digital realm. Technology probes are low fidelity technology applications (i.e. requiring very little resources) that are designed with the role of collecting information regarding ICT use, usability and environment of the participants. Theoretically this information should inspire design of new technology. Boehner et al. (2007) note that the tension between information gathering and future design leads to research that either opens up the design space with new ideas or focuses on 'one single design application' (p. 2). That single design can often be a reflection of the researchers vision rather than one created by the participants themselves. The participatory stance taken by Action Research projects aims to diminish this result in favour of a more collaborative elicitation of the design specifications.

Although the technology probe was used during the second cycle of the PAR project in this study, in effect the concept of it was present in each part of the study. In Cycle 1, we as a research team decided what functionality aspects would be most the most helpful in enhancing wellbeing in the group. In Cycle 2, the probe was deployed and used by the participants albeit with some on-the-spot adaptations to ease usability. In Cycle 3, the team evaluated the benefits

and liabilities of this particular design with a view to understanding how it fit in their lives and what modifications would be required to make it sustainable in their environment. This iterative method of using a technology probe along with design time and post deployment focus group enabled us to keep the design space open for innovation.

The use of a technology probe does have its limitations. As a result of the choice of this type of method, only those women with Internet access and sufficient training to use computers were able to participate. Although one of the participants was provided with a computer and in-home ICT support (Ailsa), due to a lack of funding and other time constraints only one person could be accommodated in this manner. The use of this method did allow additional team members to be sourced from other Gugu Badhun who lived at a distance from Townsville.

Screenshots of the probe interface and index of content created by the participants are listed in Figures 5 and 6 below.

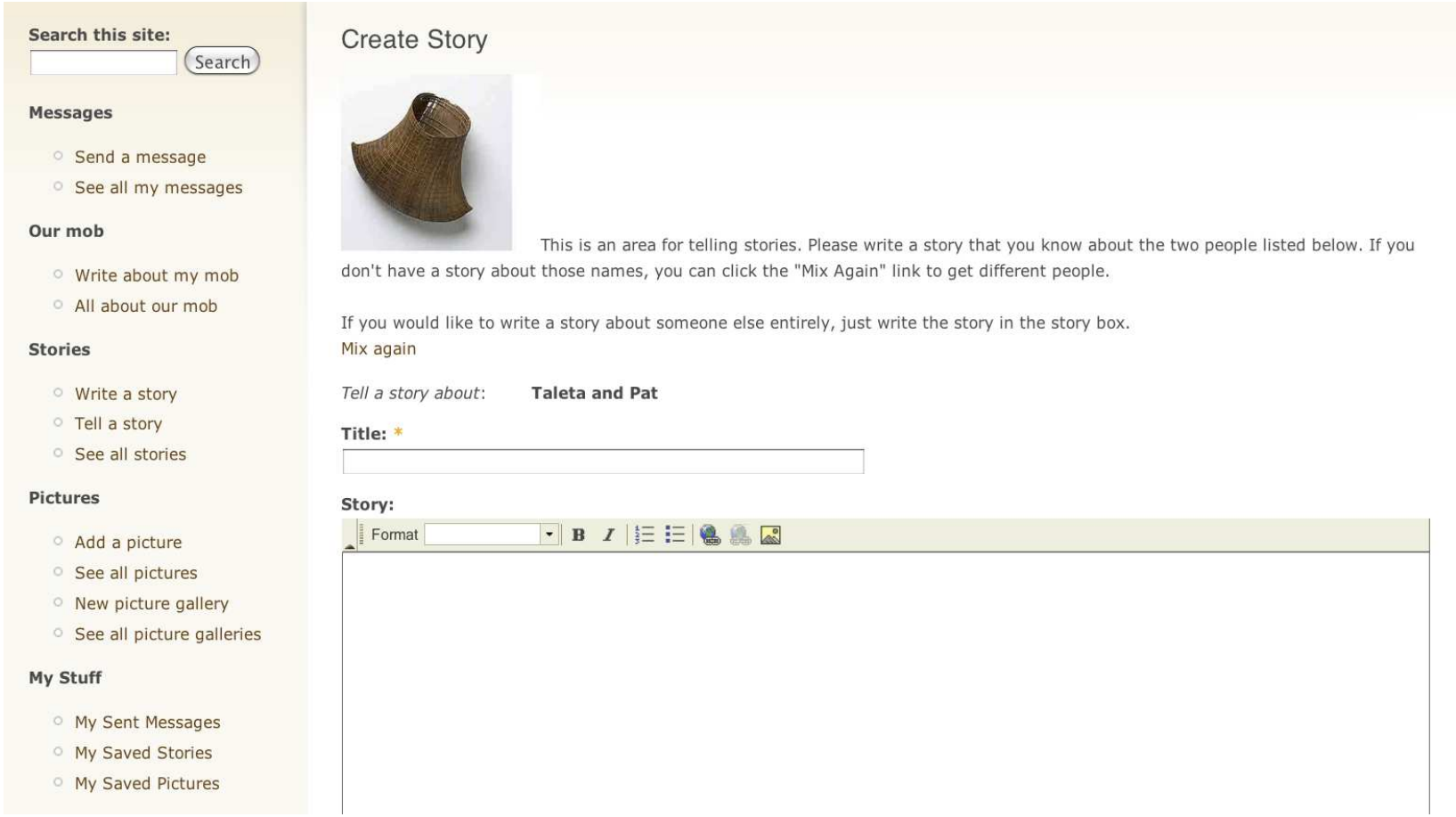

Figure 5 - The create story interface on probe site

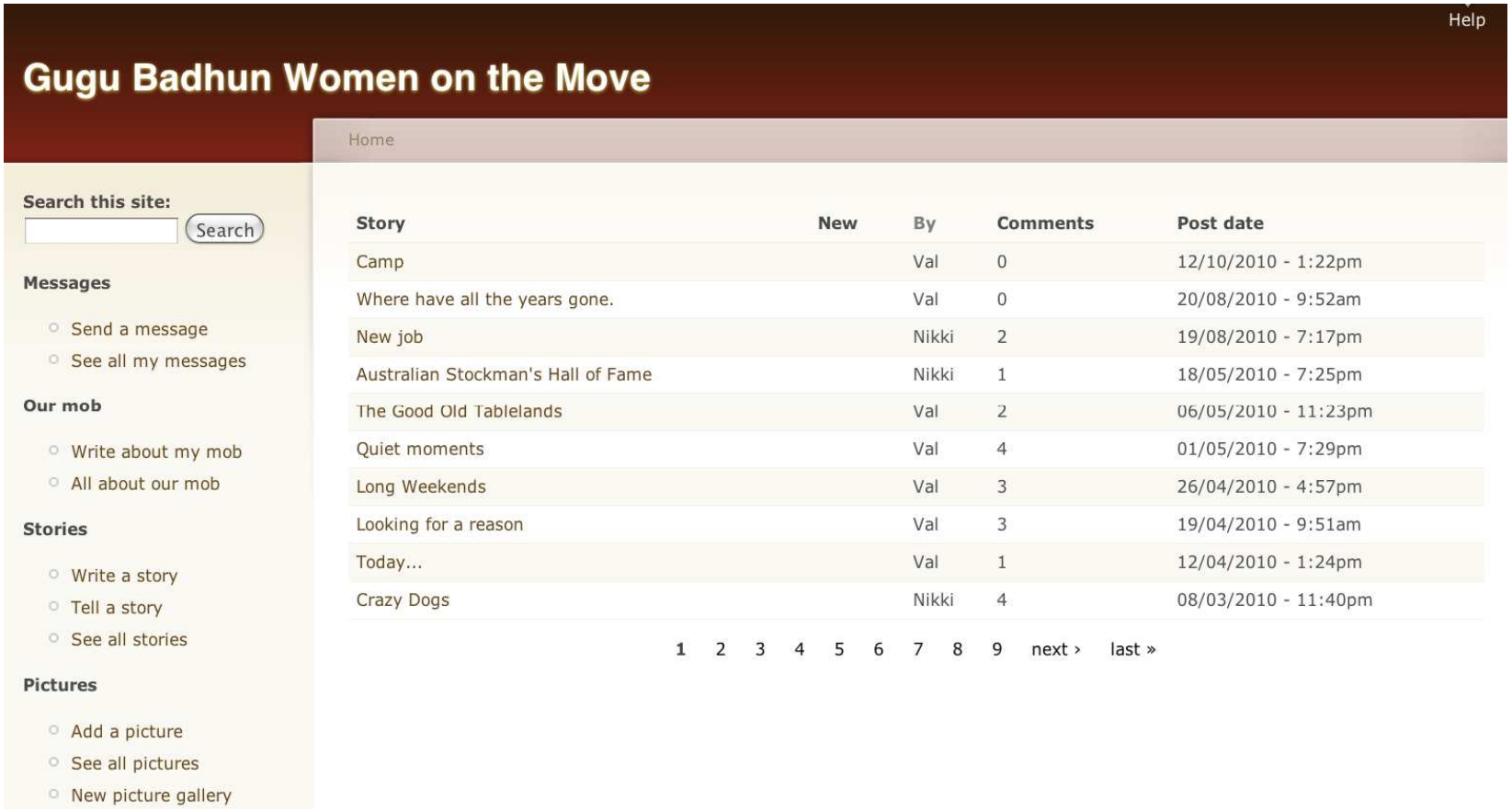

Figure 6 - The story index on probe site

3.4 Selecting the participants for the study

Purposive sampling was used to establish a small cohort of Aboriginal women (10) chosen from the larger group of women in the Gugu Badhun group (around 150). The purposive sampling in this study provided the opportunity to access specialized cultural knowledge held by this group of women (Mason, 1996; Silverman 2010). The criteria used for the purposive sampling are identified in the table below.

Table 3 – Purposive selection criteria

	Criteria for selection
a	Gugu Badhun women
b	Knowledge about others use of ICT within their group
c	Willingness to participate for 2 years
d	Located with driving distance of Townsville, QLD
d	Varying levels of ICT ability
e	Authority to speak within the group
f	Knowledgeable about communication practices within group

As discussed in Chapter 1, prior to beginning this research I asked Professor Yvonne Cadet-James to act as a cultural mentor for the project. With her assistance, we chose individuals meeting the characteristics listed in the table above. A primary criterion used for selecting participants was based on gender and ethnicity, i.e. each person self-identified as a Gugu Badhun woman. Seven of the participants were born into the community, although others (3) were members by virtue of marriage. The use of "natural groups" of people (Kitzinger, 1994) such as family members increased the chance that the participants would be able to converse casually about family communication and their use of ICT, rather than feel constrained to meet my expectations as a researcher. The choice of using only female participants was made for two reasons: (1) to avoid any cultural difficulties surrounding gender issues such as what information was acceptable for me to hear as a female researcher (Mead, 1986; Bernard, 2005) and (2) there currently is a dearth of literature surrounding Aboriginal women's opinions

regarding the use of ICT. An additional consideration for participation in the study were individuals who had varying levels of knowledge about the current cultural practices in regard to maintaining family ties and traditional knowledge (with or without the use of ICT). Schensul et al. (1999) suggests that such knowledgeable people are highly valuable as key informants, especially in exploratory studies where the researcher does not have much initial information regarding the domain. Another criterion in the choice of participants was the location of group members who were chosen to be part of the study. Financial considerations mandated that the research would need to be conducted at locations within a few hours drive of Townsville. The inclusion of one Gugu Badhun woman from Greenvale (a tiny rural community in NW Queensland, population 100) allowed us to tentatively investigate the differences in experience between the women who lived close to major towns and cities versus those with less access to ICT infrastructure. The participants were chosen based on these criteria.

The research plan for the study was divided into 3 phases which corresponded to the three action research cycles: (1) group interviews and focus groups, (2) use of the technology probe web site and (3) concluding focus groups. Seven women participated in the focus group interviews, and five additional women were added in the technology probe phase of the project. The composition of the larger group was based on a “snowball” approach to participant selection (Gray, 2004) where the members of the first group of Gugu Badhun women suggested additional people to recruit In this case, all of the women added were either sisters or daughters of the women who participated in the previous group interviews. All of the new participants lived at a distance from Townsville, which made it too difficult for them to engage in the group activities conducted in the first part of the project. Figure 7 shows the three cycles of the research.

Figure 7 - Action research cycles for study

3.4.1 "Everyone will know it was me anyway" - anonymity

Although it is common practice in qualitative research to anonymise the names of the participants in order to maintain their privacy, the Gugu Badhun participants chose to list their first names in this thesis. Attempting to maintain anonymity in the first place can be quite problematic in Aboriginal communities, due to the small size of member groups. People are often very aware of each other's personal histories and beliefs (McKennitt & Fletcher, 2007). In the words of one of the older participants in my study "everyone will know it was me anyway" (Ailsa, personal communication). There are often complex reasons behind the request of Aboriginal people to have their names used in studies. A frequent criticism by Aboriginal people of the data reported and published by non-Indigenous researchers is that "they got it wrong." In studies where actual names are not used, these errors can pass without question. Svalastog & Erikson (2010) suggest that when a story or bit of information is taken out of context it may be unintentionally misread and transferred into politics. Thus, the choice to use or not use real names can have political as well as cultural ramifications. Moreover, protective gestures such as anonymisation can be seen a paternalistic act, done under the subtext that some groups are endangered and in need of protection by those in power (Smith, 1999). Uhlik (2006) notes that "communities who actively participate as partners in the research may not only wish to be identified but also be acknowledged in the research." In addition, the women gave permission for me to use the names and images of their children. Every activity that we engaged in as a group included the children of the participants, therefore it was correct in their view to include them in this written record of the research (both in the hardcopy and other digital versions of it). Taken as a whole, these points solidified my decision to not anonymise the data I report here.

3.5 Data Collection

The data gathering process for the study followed the four-step action research cycle: observe, reflect, plan, and act (Greenwood and Levin, 2007). While these steps took place on a global level for the project, they also were enacted in each individual research activity that we engaged in as a participatory research team. The initial focus groups offered the chance to learn about the worldview and priorities of the group members regarding ICT and how ICT could be used to enhance wellbeing. During each analysis phase of the data collection, I reflected on thematic patterns in the data I observed (Blaxter, Hughes and Tight, 2001). Following the focus groups we made plans to implement an online technology probe to gather more information. After gaining the groups approval for the design of the probe, I made the website available and the women used it for a year. Following the observation of their use of the probe, I met with the women again at the concluding focus group meetings where we reflected on what we had jointly learned so far. We then developed a plan for the deployment of a final version of the website, and a means to sustain it at the end of the research process. The aim of the data collection process was to document the Gugu Badhun women's current use of ICT and explore options for using it to enhance wellbeing in their community. The activities for each of the PAR cycles are listed in Tables 4-6 below. Refer to Figure 1 for a map of locations for the research.

Table 4 - Cycle 1 activities

Cycle 1 – Focus Groups	**Location**	**Date**
Focus group 1	Greenvale	16 Dec 2007
Focus group 2	Townsville	18 Dec 2007
Workshop 1	Townsville	26 Mar 2008
Workshop 1	Greenvale	9 Apr 2008
Workshop 2	Townsville	24 Oct 2008
Workshop 3	Townsville	2 Dec 2008

Table 5 - Cycle 2 activities

Cycle 2 – Technology probe	**Location**	**Date**
Probe demo	Townsville	15 May 2009
Probe demo	Greenvale	21 Jun 2009
Probe demo	Townsville	18 Jul 2009
Began use of probe site	Internet (used wherever the participants were)	19 Jul 2009
Native Title meeting	Townsville	15 Aug 2009
Cultural camp	Reedy Brook	27-29 Sept 2009

Table 6 - Cycle 3 activities

Cycle 3 – Concluding focus groups	**Location**	**Date**
Conference call	Townsville	15 May 2009
Focus group	Greenvale	21 Jun 2009

The data gathering sessions for Cycle 1 were held in Townsville and were repeated with Ailsa and Yvonne in Greenvale. All sessions were audio-recorded and then transcribed following the meetings. In an effort to gain a more complete picture of the interactions between group members, I attended family outings, native title meetings, and the annual Cultural camp with the larger Gugu Badhun group. At these meetings rather than stand off to the side observing, I was pulled into the thick of the activity by group members. I asked many questions that were fielded by the participants, but then I was questioned in return about my background, reasons for doing this sort of research and my plans for the future. When one of the women learnt that my fiancé and I had our wedding ceremony a couple of weeks before, she quipped 'where are the pictures?' In addition, I frequently encountered the some of the women at shopping centres around Townsville. While I had initial concerns about maintaining a separation between the

group members and myself as a way of ensuring objectivity, I gradually came to understand that this sharing of experiences and everyday activities enhanced my understanding of the research context and led to an increased level of trust between myself and the participants that was vital to the success of the study (Fredericks, 2007).

Field notes regarding PAR activities as well as data related to the project in general were kept in a research journal. All of the research activities were based up a desire to allow the women to participate in ways that were comfortable to them. In order to give visibility to the members' views and words, in-context excerpts from the interview transcripts and my research journal are listed throughout the thesis. The next sections describes the data gathering activities for the project.

3.5.1 Cycle 1: Focus Groups

Focus groups were held to introduce the project to the participants and to gather preliminary information regarding their communication and interaction practices in regard to ICT (Dick, 2003). The overall research questions that we were exploring were:

1. What is the context for the use of ICTs by this group?
2. What goals would the group like to achieve?
3. How might ICTs be used to help meet these goals?

While each of the focus groups used different activities, each meeting helped advance our understanding of the answers to the above questions.

Introductory focus groups

The first focus group in Townsville had 7 Gugu Badhun women in attendance: Yvonne, Diane, Karen, Tracey, Nyree and Toleda, and then was repeated in Greenvale with Ailsa. She lived a considerable distance away from Townsville, and so the interview was repeated at her home in Greenvale so that she could participate.

The focus group in Townville took the form of a round table discussion, although we asked the same questions to each of the participants. In Greenvale the discussion was a semi-structured interview where the participant answered the same questions as the Townsville group.

The questions posed fell in the following categories:

1. Personal background

2. Description of their current usage of computers

3. Discussion about their feelings regarding computer use

4. Description of their methods of staying in contact with family members

A few questions not related to technology were added in an attempt to elicit information regarding the participants' home situations, and what things they considered important. These questions explored hobbies and asked them also to give a description of their favourite room at home. In the interview in Greenvale, because the participant has said before the interview that she did not use computers, we spent a little time discussing the non-technologically driven ways that she used to stay in contact with family outside of Greenvale, and whether she found this difficult. The list of questions is located in Appendix C.

In this first interview, my goal was to start to build a rapport with the participants. Since all of the women were related either by group membership (all Gugu Badhun) or by familial connections, the conversation among the group members was very relaxed. The session was held in the home of Diane, one of the participants, after sharing dinner together. This appeared to make the participants feel quite at ease. A secondary aim was to ascertain a rough understanding of what were the abilities and interests of group members regarding ICT. I also intended to discover what ideas (if any at that moment) that the group had regarding design and development of a system for the group.

One unintended aspect of the meeting occurred when I asked the group to list their names, whether they were related to anyone at the table, and where they grew up. I went first, and I gave my name, described where I grew up, and added details of my current employment. The participants each dutifully followed this pattern in their answers. Although it was not my intention to uncover the employment details of each woman, this information was of benefit in scheduling further meetings. As everyone worked outside the home during the day, meetings would need to take place at night or on the weekend. In addition, the fact that I had not realized that they all were closely related to each other caused great merriment to the group.

This introductory meeting paved the way for our further interactions in doing software design. The women appeared to have a good time in the large group, and spent a lot of time laughing, exchanging inside jokes and catching up on family news. This led me to believe that the use of the focus group as a data-gathering tool was an appropriate one to take. My one-on-one meeting with Ailsa at her more remote location in Greenvale allowed to me get a detailed look at the

physical infrastructure issues she dealt with on a day to day basis that might impede her participation in the project.

Figure 8 - Townsville participants: Yvonne, Diane, Karen, Tracey, Toleda and Nyree

Another issue that came to have a bearing later on what we designed, and how we went about it had to do with the fact that since most of the group were mothers, and because we held the meetings in people's homes, the mothers had to deal with many interruptions from their children. Although these interruptions seemed distracting to me at times, the participants did not seem to mind. My original understanding of this situation was that mothers everywhere must manage the many competing interests for their time and energy. However, this assumption was in error.

An excerpt from one of the transcripts may illustrate this situation. The women were discussing places to meet (an activity from one of the design workshops). Diane, one of the participants was trying to manage getting her children to bed as well as to contribute to the discussion.

> Diane (talking to daughter): Be careful of Nanna's cup darling…Just have a quick sip and go, its time you were in bed.
>
> Yvonne: What are you girls doing out of bed?
>
> Daughter: Mum, you said we were going to build a hammock! (whines)…

> Yvonne: Of course now everything happens now because we find all the things so we don't have to go to bed. In another minute now there'll be something else.
>
> (Design Workshop 1 – Townsville)

At a later date I was able to query Yvonne regarding these consistent 'interruptions'. She quickly set me straight, and said that it is important for the children to be accepted as part of the project because their inclusion is based on how they socialize and conduct family business (Yvonne, personal communication).

Focus Group Workshops

Following the initial group interview, the next phase in the data collection entailed collaboratively working with the participants to explore their feelings regarding ICT with a view toward determining how wellbeing in the group could be improved, through creating a potential design for an online system. Three design workshops were held in Townsville (with 5-7 women attending each one), and were repeated in Greenvale (with Yvonne and Ailsa). The methods used were a combination of questioning and hands-on activities to elicit information regarding the participants' needs and aspirations toward a system. Activities during the design workshops included discussion about a video about their country, brainstorming activities using pen and paper, sorting ideas and concepts that had been raised in previous meetings, and continued discussion of ideas for the site design. These activities took place during three workshops, labelled here as Workshop 1, Workshop 2 and Workshop 3. In keeping with the participatory action-research paradigm, initial outcomes are reported here as they had a direct bearing on the design of the following activities (Kemmis & McTaggart, 2005).

Workshop 1

In the previous focus group with the Gugu Badhun women, I noted that quite often issues relating to contact with family members and the furtherance of cultural history were mentioned. This information helped me to realize that these items would need to take an important place in the design we were endeavouring to create. Therefore, I tailored the activities for this workshop to delve further into these ideas. The tasks for this session were to watch a video of the Gugu Badhun's cultural camp, to diagram some of their ideas, and to brainstorm some early functionality ideas for the system. These exercises are described below. For this workshop three of the women from the previous group interview attended (Yvonne, Diane and Karen), as well as three new people (Teneal, Pat and Nyree). The workshop was repeated in Greenvale so that Ailsa could attend. The pattern of shifting participants was repeated throughout the life of the

project and did not seem to bother the women in any way. People attended as often as they were able, given time constraints. The meeting was held in Diane's house after we enjoyed a leisurely dinner of roast chicken, stuffing, cake and coffee.

Cultural camp video

Several times during the previous meetings the participants spoke of a "Cultural camp" that they take every year, back on their traditional country. This event seems to hold a substantial amount of meaning for them, and a couple of the women (Ailsa and Yvonne) stated that communicating with everyone to get them together for this week-long event was becoming a difficult chore. Keeping this in mind, for the first activity of the evening, I asked the ladies to view a video that had been taken at this camp a couple of years earlier, and to discuss what feelings and thoughts they had regarding the camp. This discussion took place while watching the video that had no audio other than background music.

As with the initial interviews with this group, my goal in this meeting was to encourage the women to discuss their feelings around a variety of topics associated with their daily lives. The "Cultural Camp" was a concept that was frequently mentioned by the women, so I felt that having them think aloud while watching the video would be fruitful. The concept of "think-alouds" is a common HCI activity (Ericsson & Simon, 1993), usually chosen in order to evaluate a participant's use of an interface. It was useful in this instance to gather information regarding this group's feeling about an important activity, i.e. the annual camp. While watching the video the group members also aired a continued grievance regarding limitations to access to their country. The participants reveal a deep unhappiness with a leaseholder who was operating a cattle station on their traditional lands. Although they had been able to visit their home country in the past, this particular owner has for the last several years been denying them this right. Ailsa explained the importance of the act of going back "on country" in the excerpt below.

> My heart and spirit will always belong to Gugu Badhun country on the [name removed] cattle station, it is something inside of me that I can't explain. When I see familiar places where we camped with the Elders, went fishing, or a story place, it is almost like a happy sickness if there is such a thing (Ailsa, Native Title statement).

This issue was to remain a consistent issue raised by the group members for the length of the study. At the time of this writing, the situation has still not been resolved.

Diagramming likes

After the video concluded, I divided the 6 women into two small groups, and gave each group an A3 sized sheet of poster board along with some drawing pens. I then handed each group a list of 3 topics that I requested them to write answers to, or to draw pictures about. These questions were designed to get the women talking in a more informal manner, and for me to learn more about their background. The topics were drawn from things that had come up in conversation during the initial focus groups. For group 1 the items were: animals, ways to communicate and what is important to me. For the second group the items were: favourite foods, kinds of technology and places to meet. Once the groups had written down their answers, and in some cases drew pictures, I handed out some stickers and asked the women to put a star next to the items that seemed the most important or popular to them. After they had finished with this activity, I asked for a spokesperson for each group to describe their choices.

Having the women write down ideas that were important to them allowed the use of alternate senses in addition to oral. After the group wrote their choices, I had them read them back to the group. Although I did not request it, in addition the spokesperson for each group gave a reason why each choice was made. This additional information proved to be quite valuable later in the project.

Figure 9 – Ailsa and Yvonne, diagramming likes – Greenvale

Figure 10 – Townsville group – Diagramming likes plus two "helpers", Diane's daughters

Brainstorming ideas for site

In order to gain further information regarding ideas that the participants had regarding our project, we then brainstormed around the idea of things that they felt would be useful for the site. The items they brought up reflected their needs for data sharing, communication, and a general feeling that technology could be harnessed to meet their needs. These preliminary ideas were later compared to feelings expressed in the recap session, to see how their perceptions changed. It is noteworthy to mention that some of the early functionality requests were abandoned in this project as they had been met through other research projects that the Gugu Badhun group were participating in such as Native Title activities relating to genealogy.

Brainstorming ideas for the system allowed people to jump in with early ideas that they had regarding the project. This also permitted them to theorize about what should be the "main point" of the system. Ideas surrounding communication, collecting information from various sites, and educational support mechanisms were often mentioned. Each of the activities from this meeting (watching the camp video, diagramming likes and sharing early functionality ideas) provided us with an insight into the sort of system that the participants were interested in creating. As well, the talk around things that they described as important to them allowed me to understand how they envision themselves in the world. These steps were necessary in order to be able to begin to develop an image of what functionality would be needed in a potential system. From these three activities we obtained a wealth of data regarding the day-to-day activities of the group as well as accessing more information regarding important issues in the

group. The on-going discussion of the issue regarding access to country featured largely in the following meetings. Another important output of these activities was to give the women an opportunity to air their feelings and wishes in a comfortable fashion, even though some of the topics under discussion, such as access to country, caused considerable angst among the group.

Design Workshop 2

In this workshop I continued to gather the participants' ideas regarding connection, community and use of ICT. Towards that end, this workshop had two sorting activities, addition discussion about the importance of country, continued exploration regarding site functionality, and considered some project housekeeping issues such as distribution of computers and broadband accounts. Although there were 6 attendees to the prior workshop, at this meeting only 3 people were able to participate (Yvonne, Diane, and Pat).

Sort the people

In preparation for this activity I printed up photos of the participants taken during the initial group interviews (see Figures 11 and 12), and placed them on individual index cards. At this workshop meeting, I laid the index cards on the table and asked the participants, as a group to sort them in whatever order seemed most appropriate to them. The purpose of this task was to see whether there were any self-categorizing ideas that the group held that I might not have considered. While in a westernized system, sorting people's names alphabetically is the norm, the Gugu Badhun women showed preference for two alternatives: by generation, and by family. The images below, taken during the workshop depict these two sorting schemes.

Figure 11 - Sorting people by family group

Figure 12 - Sorting people by generation

Although these schemes seemed novel to me at the time, additional work with the Gugu Badhun emphasised that these ways of ordering people made logical sense based on their family interactions.

Sort the ideas – categorizing

In this activity I provided the participants with snippets of paper on which were printed brief statements that the women had expressed in the prior meetings. Some were taken from direct quotes; each item is found in the transcript of that meeting. I asked the women to sort the ideas into categories that made the most sense to them. This activity is known as "card sorting" in the usability literature and is designed to assist the potential users of a system to develop a category tree or folksonomy (Tullis & Wood, 2004; Fincher & Tenenberg, 2005). I had previously done the same thing on my own, and part of the data analysis involved doing a comparison of these two efforts at categorization. The participants sorted the items into five categories which they named: computer training and skills, computer uses, computer complaints, kids and computers and miscellaneous.

More group interviewing

In previous meetings, the group members often mentioned that access to their country was very important to them. To explore this idea further I asked the group to describe what attending the annual cultural camp meant to them. We followed this with a discussion about what they meant by the term "being on country", and what their feelings were regarding this topic.

Following on from our discussion regarding "what we might build for a computer system" in previous meetings, I raised the issue of who might be in charge of such a site. The unanimous answer was "everyone!" Radoll (2009) discusses this issue in some detail where he explores the problem of the "God" password. The one owner nature of the password created huge issues between the elders and members of the community. Arguments over exactly who should be allowed to view, edit and update the existing information became common (Radoll, 2009). By requesting that everyone be able to manage the site we were developing, the Gugu Badhun women were forestalling just such a problem. Further discussion with the women revealed that although they requested that anyone could post data, only certain members (elders) would be able to edit or delete data to conform to rules that they would establish. Before reviewing the list of items from the previous meeting where the women described what sort of things they would like to do with the system, I asked each person to specify one item thing that they would like the system to do. Each topic related to an activity that the participants were interested in pursuing. For Diane it was surrounding items to do with educating the children, and keeping track of people's activities. For Pat it was to create a place to store their cultural history and language. For Yvonne it was to create a video of a cultural walk-through of their country for their grandchildren and to put it on the system. I then provided them with a list of the items we had discussed previously, and asked them to star the most important ones.

The final activity of the evening was to take care of some housekeeping issues regarding the project. As part of the reciprocity agreement for the project (see the ethics section below for details of this understanding), we came to an agreement that anyone who needed a computer or a broadband account to participate would be given one, so long as there were funds available to do so. To fulfil this request I obtained two older desktop units (one computer came from the university as it was no longer needed in a lab, and another came from a friend's garage), and made arrangements to deliver them to two of the participants, Karen and her mother Ailsa. We attempted to provide broadband access for Karen at her request, but found the regulations regarding provision of funds from my research account too difficult to arrange. In the end, she decided that she was willing fund this expense herself.

The activities from this session helped to solidify the actions that the group wanted to take regarding design of an online system. Many of the ideas generated in this meeting are present in the final version of the website, while others were later dropped as they had been provided through other avenues that the Gugu Badhun were pursuing.

Workshop 3

The final workshop for Cycle 1 took place in an alternate venue than the previous meetings, i.e. rather than at one of the participant's homes, we met at a conference room at James Cook University. This workshop took place prior to another meeting that the Gugu Badhun were attending in Townsville. Due to this situation, Ailsa drove to Townsville for larger group meeting and was able to attend the workshop with the other women. The change in location for our workshop provided a different dynamic to those previously held in the home. Although Yvonne seemed quite at ease, as this was her workplace, the rest of the women were somewhat more constrained in their actions. The workshop was planned for early December as earlier dates had fallen through due to the difficulty we experienced in trying to get multiple, very busy people to the same place at the same time. The goal of the meeting was to gain a little more information regarding the Cultural camp, and to get approval for a preliminary set of sketches that would be used to design the technology probe.

Sort the camping icons

For the first activity of the meeting, we viewed a set of clipart icons that I had created around the idea of camping. Examples of these images were tents, campfire, cameras, bicycles, and boats. I asked the women to look at the pictures, and decide which ones had resonance with them regarding the annual cultural camp. After selecting these items, I asked them to group them together in categories. The reason for this was to get some additional information regarding the camp without inquiring directly. One interesting pairing was a camp shovel with a roll of toilet paper. Nyree mentioned that those were important because the guys were always talking about "*getting back to basics*". The women divided the icons into main categories that they named: land, people, swimming and holiday.

For the remainder of the short, 30-minute meeting we went over 3 sketches that I provided giving an example for how the web site that we were creating might look. There was some discussion again about the need to keep it limited to the current group of participants. I asked the women if they would like to come up with a name for the site, and they agreed to keep that question in mind for the next meeting.

Although the workshop was brief, it provided us with a deeper understanding regarding the women's knowledge of ICT and their feelings about it. Based on their comments regarding the web site sketches, I could ascertain that they had varying levels of knowledge surrounding the use of Internet technologies. Nyree, perhaps the most technically adept of the group, was quite

vocal about recognizing certain functionality items in the sketches. Ailsa, who had little experience with the Internet or with computers in general, did not contribute much, and made few comments. Based on the responses that I received regarding the web site sketches, I realized that the probe site would need to handle these two very different levels of familiarity with ICT. The focus of this cycle was to determine which aspects of ICT use the women felt comfortable in researching in order to build community wellbeing. Important details emerged from these discussions that were using in building the web interface (technology probe).

Figure 13 - Sorting the camping icons – Researcher, Nyree, Ailsa, Yvonne, Diane and her daughter

3.5.2 Cycle 2: Technology Probe

The next cycle in the research entailed the development and implementation of a technology probe. The purpose of the probe was to continue to gain information regarding the Gugu Badhun women's use of/interests in ICT and to explore how this could enhance wellbeing in their group. The underlying research questions for this cycle of the research were:

1. How was the probe used?
2. What type of content was posted?
3. How does the usage of the probe relate to items prioritized in Cycle 1?

As mentioned previously, one of the tactics that I used in coming to understand the women and their viewpoints was to attend as many of the meetings and social outings with them as I could. Toward that point, shortly before the probe was launched, I attended the pre-completion seminar for a scholar who had just finished writing "*A contemporary history of the Gugu Badhun*" (James, 2009) for his Master's thesis. Many of the Gugu Badhun elders attended, and during a break Ailsa pulled me aside to tell me that she'd come up with a name for our project: 'Gugu Badhun Women on the Move'. This label was roundly approved by all of the participants and the name continued through the length of the study.

Technology Probe Specifications

The probe web site was established on a web server outside of the university, so that upon completion of the research, the files could be easily turned over to the group. The probe itself was developed using Drupal (Wiersma, 2009)), an open-source content management system based on PHP (hypertext pre-processing language), a general-purpose scripting language that is especially suited for Web development because it can be embedded into HTML (Ullman, 2005). The use of content management system software allows users to create web content using a Microsoft Word-like environment. The supporting ICT architecture for Drupal is a "LAMP" stack (**L**inux operating system, **A**pache web server, **M**ySQL database and **P**HP scripting language). The probe website uses a Drupal installation which has been customized with additional modules and script to suit the needs of the Gugu Badhun.

Drupal separates the structure of the web site from the content making it easy for the site to be redesigned as needed. The application uses a set of core libraries which are available upon installation, and allows additional customization through the use of modules and API coding. The flexibility and extensibility of the software as well as its Web 2 style functionality (including tagging, user interaction and comments) make it useful for community web sites. As with most OpenSource software, the primary expense in deploying a Drupal site is encountered in the cost to develop the site design and customizations of the software rather than the purchase of the application (Coombs, 2009).

Access to the site was limited to the female members of the study via a login and password scheme. Additional women were suggested as potential users using the snowball approach listed in section 3.4 and were added to the study and the probe site. The technology probe offered the following functionality:

- Secure login & web site

- Send a public or private MESSAGE
- Write STORIES and MY MOB descriptions
- Upload an IMAGE
- Create comments regarding others postings
- Receive updates about new content on the site
- Access technical support via a Help link

A brief description of each of these functionality items follows below. Additional details regarding the implementation of the technology probe and how the participants used the site will be presented in Chapter 5.

Secure login & web site

When a participant navigates to the url for the site, she is presented with a login screen. Upon entering the correct details, the person is redirected to the site's home page. Along the left side is a navigation area offering access to all areas of the site. In the centre of the page is a list specifying if there have been any new messages, stories, or images posted since their last visit. To the right of this list is an image of a reed basket, with a link to jump to the "Write a story" section of the site.

Send a public or private MESSAGE

If the user sees a link in the new message area, the link can be clicked to take the person to the messages area. This link is also available in the left navigation bar. The MESSAGES are presented in a table, listing all of the new MESSAGES. To read the message the user clicks the "view" link. To create and send a message the person clicks the "Send a Message" link in the left navigation area. Once at the Send Message page, the user selects one or more recipients in the left side box labelled "Pick some names here". These names then appear in the right side box with the title "I am sending this to". An icon representing each name then appears in the white space below the two boxes. For instance, if the user selects Ailsa a bettong appears, and for Diane an echidna is listed. The significance of these icons is discussed in Chapter 5. The text of the message is entered in the text area below the icons, and then user clicks the Send button to route the message to the appropriate people. Only the person(s) to whom the message was sent have access to read the content. A MESSAGE is the only sort of probe content that

can be restricted to a particular person, all other content is freely visible to any authenticated user of the site.

Write stories & My Mob descriptions

The two main public content areas on the site are the STORIES and IMAGE areas. The stories archive is accessed via the 'See all stories' link in the left navigation bar. The archive consists of a paged display of links to stories that also include a tally listing how many comments have been made regarding each story. To navigate to a particular story the user clicks on the name of the STORY. The stories are presented in descending chronological order, with the newest story listed first. To write a STORY, the user clicks the 'Write a story' link in the left navbar. When the page loads, two names are presented to the user, with the instructions,

> This is an area for telling stories. Please write a story that you know about the two people listed below. If you don't have a story about those names, you can click the "Mix Again" link to get different people.
>
> If you would like to write a story about someone else entirely, just write the story in the story box.

The "mix again" link generates two new names for the user. The participant then fills in a story, and clicks the "Save" button to save the content. At this point the story is now available via the various stories links throughout the site.

The purpose of the MY MOB section of the site was to gather details regarding the Gugu Badhun women's families. The term "mob" is a term used to describe a group of people. I had previously heard various Gugu Badhun people use the term to describe their family. The MY MOB section is a listing of genealogical information regarding a person's family. This section is accessed via the 'All about our mob' link in the left navigation bar. Users can create a new "My Mob" story by clicking the appropriate link in the navigation bar. Functionality is similar to that for a regular story.

Upload IMAGES

Shortly after the probe site went live, members of the group asked for a way to upload images to WOTM (Women on the Move). This functionality was provided through a simple image gallery module, which allowed the participants to choose an image from their hard drive, and

upload it to the web server. Once stored there, the image was available for viewing in the IMAGES section. This part of the web site proved to be extremely popular with over 150 images being uploaded.

Create comments regarding others postings

To enable asynchronous dialogue, the probe web site allowed users to add comments to any type of content that was posted by another person such as messages, images, and stories. The comments were placed directly beneath the content item, and were labelled with "new" if the person who was currently logged into the system had not yet viewed the comment. Much of the rich detail from the WOTM site was embedded in the form of these contextual comments which enabled women to yarn together about their remembrances of a particular event depicted in a story or image.

Receive updates about new content on the site

During the period that the probe was in use, a daily email was sent to the users detailing any new content or messages that had been placed on the probe site. The email provided the participants with a way of keeping track of new content without requiring them to visit the site multiple times a day. The participants requested to be alerted once a day rather than receive numerous emails in their in-boxes.

Access technical support via a help link

Technical support was provided to the participants through a help link that was connected to an online web form. If the women encountered any difficulties in using the site, or had any other questions regarding the project they were able to use this form to contact me. Ailsa and a few of the women used this feature when the site was first rolled out.

Screenshots of the technology probe are provided in Chapter 5 that details the findings from Cycle 2 of the study. The following section describes additional cultural events that I attended with the participants in order to gain a better understanding of their group.

Additional data gathering meetings

In addition to designing the probe interface and evaluating the participants' use of the site, the overall purpose of this cycle was to come to understand the women's needs regarding ICT use. In order to do that, I needed to come to understand as well as I could, the issues associated with the women inhabiting the cultural interface . During the length of the research study, I attended many functions and cultural meetings with the participants. Two of the most important were a

Native Title meeting of the North Queensland Land Council (NQLC) and the Gugu Badhun Cultural camp.

NQLC Native Title meeting

While I was doing research with the Gugu Badhun women I was invited to attend a Native Title meeting with them. The purpose of the meeting was to review a lengthy report concerning the history of the Gugu Badhun and their connection with their traditional country. The meeting was chaired by the solicitor that was assisting them in their preparation of a Native Title claim along with an anthropologist that wrote the report. I observed part of the lengthy process that is involved in such a legal proceeding, and was introduced to a number of other Gugu Badhun people (mostly elders) who were outside of my group of female participants. The information that I gained from this meeting helped inform my understanding of the importance of the Gugu Badhun's connection to their country.

Cultural camp

Every year, the Gugu Badhun hold a "Cultural camp" on their country, near the [name removed] station. Due to difficulties in arranging access with the station owner they are prevented from camping in the area that holds the most importance to them. However, they spend time nearby at an undeveloped campground called Reedy Brook. After 10 years of camping in the same spot they have developed traditions regarding the site and the activities that take place there. In the morning after a hot breakfast of bacon, eggs and toast, one of the Elders gives language instruction. The rest of the day is spent fishing, hiking, canoeing and learning about their country.

3.5.3 Cycle 3: Concluding focus groups

The technology probe remained accessible to the Gugu Badhun women for over a year. During this time members were able to communicate with me regarding the general usefulness of the site, or other technical issues that arose via either sending a message from the probe site, or by phoning me directly. At the end of a year, we held focus with as many of the users of the site as we could (by teleconference), and interviewed them regarding their feelings about the probe. An in-person interview was also held with Yvonne and Ailsa in Greenvale.

The primary questions that we were investigating in this cycle of the research were: (1) how did the probe fit into the participants' lives and (2) what were the effects on wellbeing?

During the conference call with Yvonne, Val (Cairns), Col (Darwin), Tahnee (Darwin), Ros (Darwin) and Nikki (Brisbane) and in the meeting with Ailsa in Greenvale, we discussed the following topics:

- How did you feel about using the WOTM site?
- Could you give a description regarding where and when you used it?
- What meant the most to you about using the site?
- Where did the photos come from that you posted?
- How useful do you feel the site was in combination with the Cultural camp?
- Was there anything about the site that you found difficult to use or to do?
- What do we want to do next with the project?

3.6 Cultural mentors: mediating the cultural interface

As this was a participatory action research project, each member of the research team provided input into the trajectory of the study, and gave their insights into the data obtained from each cycle. In addition, two of the participants, Yvonne and Ailsa, acted as cultural mentors. In this role they helped me come to understand the differences in worldview and priorities that they and the other women brought to the project. Through ongoing and lengthy conversations over the course of the four years of the research, I came to a more nuanced view of what I was observing than would otherwise have been the case. These discussions occurred while driving to and from Greenvale (at least two hours each direction) and over the course of days at the cultural camp. By attending group meetings such as Native Title meetings and other community activities, I became familiar with not only the women themselves, but other members of their families. Their guidance was particularly useful as I began to write about my observations, and they were able to correct details that I had misunderstood or otherwise overlooked.

3.7 Data analysis

In action research studies such as this one, the task is to “open horizons of discussion, to create spaces for collective reflection in which new descriptions and analyses of important situations may be developed as the basis for new actions” (Greenwood and Levin, 1998, p. 86). This process begins with the initial group meetings and informs all of the following actions. Thus, an iterative sequence is developed whereby each activity informs the choice for the next one

(Bryman, 2001). In a general qualitative research project these choices are an ongoing form of analysis where the researcher decides what to focus on and what items are of interest to the study. In an action research study, the participants themselves determine the trajectory of the research, oftentimes aided by researcher input. The sheer volume of data generated in even a small qualitative research study makes it necessary for the data to be "crunched" or organized into summaries of data that can then be examined to discover patterns or themes in the resulting information (LeCompte & Schensul, 1999). This process involves applying codes to a set of data drawn from observation, noting reflections or remarks in the margins, sorting these notes to identify patterns, themes and common sequences, isolating patterns and taking them to the field to inform further data gathering, gradually developing a set of generalizations that cover these patterns and then developing theory based on this knowledge set (Miles and Huberman,1994).

The data gathering and analysis activities for this project were consistent with those described above, i.e. initial observations and interviews, followed by analysis which then informed the following data gathering occasion. After each interview or design workshop, I wrote detailed field notes regarding my interactions with the participants, and transcribed the audio recordings of the meetings. At times I encountered difficulties with the transcription due to a lack of familiarity with place names or ideas that the participants expressed, but I was able to resolve those by discussing them later with my cultural mentor Yvonne who was also in attendance at most of the group interviews. For instance, one of the activities discussed during a workshop regarding favourite foods was "*kup murri*", meaning food cooked in an underground oven. During the transcription process I wrote notes in the margins of the transcripts describing information that had bearing to the discussion at hand, often-times data that had been shared with me during a previous conversation that had not been audio-recorded. The remainder of this type of information was also reported in my field notes, which I annotated iteratively as I transcribed the recordings. Once the transcriptions were complete I entered them into a computer aided qualitative data analysis software (caqdas) program called HyperResearch™. I used this program to append codes to each of the pertinent sections of transcript following an open-coding process (Silverman, 2010). The program generates a master list of codes applied across all transcripts and I used this list to discern patterns in the data. Following each meeting I then reported these patterns back to the group to verify that my understanding of the situation was correct.

After completing the analysis of the in-person interviews and design workshops, I analysed the data from the technology probe. In the first pass over the data, I obtained descriptive statistics regarding use of the probe: how often accessed, by whom, what time, numbers of stories or messages, and numbers of comments. Much of this data was generated through the use of Google Analytics that had been enabled on the probe at the beginning of the probe phase of the research. Once this data had been obtained, I performed the same sort of steps on the stories and messages placed on the probe site as I had with the in-person data: i.e. open coding on the documents, looked for patterns, and then generated categories based on this information. The final analysis step for the study was to combine the information gathered from the in-person observations with that gathered from the probe site, and the design requests gathered during the recap interviews and the demo of the final web site.

3.8 Verification

Qualitative research, with its focus on the perceptions of the individual participants in the study can suffer from claims that the research can be biased or inaccurate. Ways to avoid this perceived bias include triangulation, member checking, and to situate any reading of the data within the broader context of the study (Silverman, 2010). I have endeavoured to use these methods in the analysis of the results to ascertain a view of the data that is as close to the realities that the participants describe as possible.

Various methods of triangulation have been described. Method triangulation is defined as a researcher attempting to get a valid "fix" on a situation by combining different ways of looking at it. Data triangulation is achieved by examining different findings together (Silverman, 2010). The mixed activities in this study along with a reliance on consistent interaction with the participants, and then analysing our meetings and the data from the probe enabled both types of triangulation. Participatory Action research provides ongoing member checking or respondent validation (Reason & Rowan, 1981), as each step must be vetted by the group. This qualitative method is not without its detractors as some authors feel that "there is no reason to assume that members have privileged status as commentators on their action" (Fielding & Fielding, 1986). In keeping with the action of giving credence to the views of the women in my study, I am accepting their right to comment on their own words as a further proof of their ownership of their research data. The final check for validation of the data is to ensure that the words of the participants are not cited out of context, but are embedded within the larger discussion at hand. To ensure that I have not "cherry-picked" quotes to suit my claims, I have made extensive use of the participants words and contextualized them by describing the situation where they were

stated. I have asked the participants to verify that I have reported the correct meaning of their words before placing them here in this thesis.

3.9 Ethical Considerations

Many Australian Aboriginal people claim to be the most researched people on earth (Fredericks, 2007). This view is supported by Smith (1999) who has defined much previous research done "on" Indigenous people as further colonization of a marginalized people. For these reasons it is very important that any research that is engaged in with Aboriginal Australian participants should not do harm, and further that there must be some benefit in it for the people involved. In conversations with the female Gugu Badhun elders before the start of the project, we agreed that in the course of the research I would provide computers for those women who needed them to participate, make myself available to provide phone-based computer support as needed, and that I would ensure that the system that we would develop would have a lifetime after the end of the project. In addition, I agreed that in any papers or conferences where I presented information regarding this project that I would first request and receive their permission to discuss details of the research with people outside of their group. With these provisos in place, I sought and was granted approval was granted approval to proceed with the study by the James Cook University Human Research Ethics committee (H2738). The research was conducted in compliance with the National Health and Medical Research Council's "Values and ethics: guidelines for ethical conduct in Aboriginal and Torres Strait Islander health research" (2003).

Other ethical issues for this project included the recording or uploading of information into an Internet accessible data repository (web site). Participants were able to set access permissions to the data to precisely define what parties have access to this material. As details of a historical nature were a part of the project, participants were informed prior to the beginning of the study that they might be able to be identified by video, audio, image or other files that they choose to make available to the data system. Participants were notified of this possibility, and although we informed them that we could assist them to restrict access to such data, since the system was only accessible to Gugu Badhun people they felt this restriction was not necessary.

As information that the participant would be posting could be culturally sensitive, the Gugu Badhun people made decisions on what information was made available to groups within the Gugu Badhun people (e.g. significant sites; men's/women's business) and also what information was be made available to others. This issue was discussed with the Gugu Badhun people and

they have taken responsibility for dealing with such matters. For some Indigenous people there are issues about keeping information that portrays images and/or stories of people after they have died, however discussion with Gugu Badhun people revealed that this was not an issue with them.

Following these approvals, I then created and distributed to the women a letter of information detailing the proposed study, the women's rights as participants and that they could withdraw at any time if they chose to do so. Prior to beginning our first interviews I provided an additional information form that I asked them to sign to show that they understood these rights (Appendix A and B). During our first meetings I asked if they preferred to be kept anonymous, and as a group they decided that they wished their names to be given.

3.10 Limitations and delimitations

Research is said to not occur in a vacuum, and this applies doubly for the research in this study. Qualitative research varies from experimental quantitative research in that the boundaries are sometimes not clearly delineated. This section details the scope of the project, and explains where consideration needs to be given to the parameters of the research. The major limitations for this project are encountered in the areas of trust–building and worldview, the small sample size of the study, and the lack of wider comparative data.

This was not the first project that I had worked on with the Gugu Badhun, although previously my interactions with them were limited to conversations with Yvonne Cadet-James and the viewing of videotaped interviews with Elders in their group. Therefore, I had some idea of the issues that surround their ICT development efforts, and other projects. This prior work established a bond of trust between the group and myself. I began to be considered a researcher who could be trusted to deal fairly with them and to show respect for their culture and people. However, no matter how much time I spent in discussions with the participants, there are still inevitable differences in worldview and thoughts that I cannot fully understood or share with them. These limit the analyses and interpretations that I can make from the data I have collected. The choice of action research as a framework for this study provides a safety net that keeps the research from veering back to being merely another project where an outsider comments on Indigenous topics. The Gugu Badhun have decided upon the outcomes for this project themselves with myself as facilitator.

An additional limitation of the study is the small sample size of the group, and the fact that they are mainly members of Yvonne's family. One reason for this is pragmatic, as there were limited

funds available to pay for travel. Once the technology probe was implemented this restriction was removed, as people from more distant locations could be added. However, it must be stated clearly that the input of members outside of the Gugu Badhun was not sought, and the information from their group is solely obtained from interviews and workshops with females. Therefore, one should not assume that the male members of the group would have identical responses. Generalizability across Aboriginal groups in Australia is limited in that living conditions, aspirations, educational standards, and economic background vary widely across the groups, as do cultural ideas and mores. The outputs of this research might vary if the project was conducted with a different group instead of the Gugu Badhun. A comparative study of the different reactions and inputs of other Aboriginal groups must then be left as future work.

3.11 Summary

In this chapter I have described the methodology and methods used to conduct the research in this participatory action research study. Background into the study was given, and a description of, and rationale for the sampling methods were detailed. The data gathering and data analysis activities were described and again a rationale was given for their use. Each of these activities was geared toward answering the main research question, “how can ICT be used to enhance wellbeing in an Aboriginal community”. The next 3 chapters report the findings from the three action research cycles for the project.

Chapter 4
Understanding the Environment: Focus Groups

4.1 Introduction

This chapter will outline the findings obtained from the first action research cycle. Cycle 1 is reported in this chapter and Cycles 2 and 3 are provided in Chapters 5 & 6. In this chapter the findings from the group interviews are described in relation to the primary research question and four sub-questions. Each of the sub-questions pertains to the participants' understandings, feelings and beliefs regarding the use of ICTs. Analysis of the findings in regard to wellbeing in their community is also presented. Findings are reported in thematic groupings that cross the interviews and focus groups held with the group. At the end of the chapter a summary of the findings is provided along with a description of how these results were integrated into the next research cycle.

Each member of the research group collaborated as a team to provide the information detailed below. The interviews and group meetings in this PAR cycle were audio-recorded and transcribed in order to ensure accuracy in reporting the views of the participants and decisions made. The participants specified four areas of interest regarding ICT use: 1) distance between group members, 2) family business activities, 3) maintaining connections to ancestors, families and country and 4) concerns about engaging with technology. The next section describes the findings from the interviews and focus groups as related to the main research question and the four sub-questions for this research cycle.

4.2 Description of activities for this Cycle

The main research question for this project was to determine "How can well-being be enhanced in an Aboriginal community through the use of culturally appropriate ICT"? Before undertaking to make an improvement to the situation via PAR, it was first necessary to understand the environment for this group. This led us to consider 3 additional questions:

1. What is the context for the use of ICTs by this group?
2. What goals would the group like to achieve?
3. How might ICTs be used to help meet these goals?

These questions formed that basis of interviews and focus groups with the participants. The research team members were comprised of members of two generations of two of the five

families that make up the Gugu Badhun language group; the Gertz' (Yvonne & Diane, Ailsa & Karen), and the Hoolihans (Nyree, Pat, Tracey and Taleta). In the following sections, the findings from the interviews are described in relation to the research questions.

The interviews and group workshops for research Cycle 1 took place over the course of a year (from December 2007 – December 2008). These meetings were held in Townsville, and were repeated in Greenvale in order to involve one of the participants (Ailsa) who could not attend with the rest of the group due to distance. The first interview provided the opportunity for the research team to come to a general understanding as to what direction the project should take. Subsequent workshops focused on refining that consensus, and gathering ideas that would inform the future direction of design and use of an ICT that we would jointly create. Details of the particulars of these group activities were related in Chapter 3, therefore this chapter reflects on the data obtained and decisions made during this part of the research. The interviews and focus group meetings were audio-recorded and transcribed. The data described in the next section are taken from those transcriptions. In order to specify the particular interview or group workshop the codes used are listed in the table below.

Table 7 - Transcription codes used to identify data

Activity	Location	Date	Code
Initial Focus group	Greenvale	16-Dec-07	G1
Initial Focus group	Townsville	18-Dec-07	T1
Focus group 1	Townsville	26-Mar-08	T2
Repeat Focus group 1	Greenvale	9-Apr-08	G2
Focus Group 2	Townsville	24-Oct-08	T3
Focus Group 3	Townsville	2-Dec-08	T4

4.3 Presentation of data from interviews and focus groups

Five areas of interest emerged from the meetings with the participants: distance, family business, connection to ancestors, family and country, and concerns about engaging in the technology realm. These thematic data are reported below in relation each the three research questions for this cycle.

4.3.1 What is the context for the use of ICTs by this group?

In describing how ICTs are used by themselves and their families, the group members focused on three themes: (1) the complexity of distance, (2) current use of computers and (3) concerns about engaging in the technology realm. These data are presented next.

The complexity of distance

The participants in this study trace their ancestry from the Aboriginal language group who were the original inhabitants of the country around the current town of Greenvale in NW Queensland (see Figure 1 for map).

The women name this area as their traditional lands, and express their connection to it. Prior to the entrance of European settlers to the area, the Gugu Badhun followed a land use regime much like that described by other Aboriginal groups in the area, comprised of a hunter/gatherer lifestyle based around the availability of food stuffs; vegetable or animal. After being forced off their lands by invading pastoralists Gugu Badhun members developed a relationship with the owners and managers of one of the cattle stations that were created on their traditional lands. For many years the people earned money for food and supplies by working for the station owners as drovers and household domestics. Following World War II, most of the Gugu Badhun left their area and found work in the cities and towns around Queensland in order to provide better educational and work outcomes for their children. At present, the members of their group are spread throughout Queensland and Australia.

During the interviews and group workshops, the participants described issues that they have in maintaining family and group connections via commonly available ICTs. Due to the large distances separating many group members, frequent communication is difficult. Members are located throughout greater Australia with the bulk of the group residing in Darwin, Cairns, Townsville and Brisbane. In addition to the participants who live in those major regions, many other Gugu Badhun live in more rural areas such as Greenvale, Atherton, Mt. Isa, Charters Towers and Tully.

In our first interview in Greenvale, Ailsa discussed the difficulty of staying in touch with extended family members. She related that she has two adult children who live in Townsville and Atherton, while her other family members live in Darwin, Cairns and Brisbane. Her only means of communicating with them at a distance is via a landline telephone; as mobile phone service is not available in her area. At the time of this interview she did not have Internet access as she was not a computer user. Ailsa's description of this issue is listed below.

> Dianna:
> Do you find that it's easy to stay in touch with your family by phone, or is it difficult to get a hold of people?

Ailsa:

No, it’s reasonably easy, but it's only your immediate family in the immediate area. Like Yvonne's got two sisters in Darwin. Unless they come down here, it’s awful to say, but you kind of like forget that they're there. You know they're there, and you know that if anything would go wrong that Yvonne would tell me, and she does have another sister in Cairns, so all their families you sort of don't get to meet. So when we have the camp, everyone tries to make an effort, and this next camp we're having, we're hoping to try to make it a family reunion as well. So, it gives them more incentive to come (G1).

Ailsa reveals that although communication with her immediate family is possible by phone, keeping up with the other members of her extended family and group are more difficult. The cultural camp is mentioned as a way of mediating this issue by physically gathering everyone possible in one place. This camp is described in more detail later in this chapter. Although Ailsa lives at a distance from most of her group, even the women who are located in Townsville quite near to other members of the group find it challenging to stay in touch due to the fast-paced nature of modern life. During a group workshop one of the women talked about the fact that even though she lives literally blocks away from a cousin and his family, she rarely sees him (Pat, personal communication).

These two situations; distance and the lack of opportunity for interaction with extended members of the family, combine to make it difficult to sustain and support the group. Currently the women use telephone, mobile phone and email to maintain these connections, with younger members of the group adopting FaceBook for casual conversation. Feeling dissatisfied by the use of email and phone as a communication mechanism, prior to this research project the Gugu Badhun had considered the creation of a website to facilitate communication but had not yet undertaken that task due to a lack of resources (Yvonne, personal communication).

Current level of use of computers and Internet

The women in the study described varying levels of computer proficiency and comfort with the use of ICTs. Some were up-front about loving technology, while others were similarly fervent about disliking it. The following comments from the first interview in Townsville reveal that participants fell on a continuum from non-use to highly competent in their employment of computers in their daily lives. The first dialog shows the difference between the comfort-level of a parent (Yvonne) and her daughter (Diane).

Dianna:

Let's just go around the table and so I can get an idea of when it comes to computers if you like them, if you don't like them, or if you're comfortable using them. So, Yvonne?

Yvonne:

Yeah, well I use them all the time for work; I actually sometimes have to look around for pen because I seldom write. The whole of my work is done by computing. So, it mainly, all work comes via email. I use the computer to write reports, submissions and that sort of thing. Mobile phones, Internet, look up information, electronic libraries (T1).

Diane:

My dad actually gave me a computer when I was studying to help me, but I just used it for word processing and I was frightened a bit to go exploring here and there on it, and so I kind of missed the boat and I only use it for word processing…I feel a bit of a reject you know with this and when I went back for work, every job they ask for it, and so I felt a bit um, well like it was a bit of a hindrance because I didn't really know and then I find a long way to do something and that's what I stick at and people come up and say "why are you doing it like that! You just do this" and bang, bang, bang, bang and they left and I'll be going what did they do wow, and I could never do that again. So in the end I just stick to the basics. But I get frustrated and feel like you know; you need to use it in this day and age (T1).

This exchange shows that while her mother is quite competent with completing her work through the use of technology, Diane is not. Furthermore, she feels like she has "missed the boat" when it came to the opportunity to learn computers. She also relates that she feels inferior based on this lack of computer ability. Co-workers and other friends attempt to assist her with computing tasks, but she feels out of her depth with the rapid-fire explanations of her peers.

Later in the interview Diane reveals that this discomfort surrounding technology applies to other types of high technology such as mobile phones and digital cameras.

Diane:

I have a basic mobile phone that does, nah, see maybe I was thinking it was just computers and now I'm thinking that I have a mental block with technology in general! See that's what I wanted, it doesn't take photos it doesn't do much at all turns itself off and on regularly. But you know, I don't want to take it in because

they're gonna say "ah well this, this is how it evolved" and it's just going to go over my head.

Yvonne:
I've got a camera but I don't know to use it, Tristan uses it. (laughter) (T1)

Diane states that she experiences insecurity in negotiating the area of communicating about high tech devices. This reinforces her feeling that she cannot learn new devices, and so it is better to stick with what you know. Yvonne, although she is very well trained on computers as needed in her job, has not learned how to operate her own digital camera, and relies on her grandson in this area. This conversation showed in this particular case, unlike what one might expect, ICT ability was not based on age, with younger people being more technically competent. Approximately half of the women in the study were 55+ years old, with the others being 20-40 years old.

This mother – daughter pair showed the greatest gulf between ability and confidence with ICTs, however most of the group were clustered near the middle when it came to their experience with computers. Tracey described many actions that she took via the use of the Internet, but still expressed a feeling of not being competent in using the medium.

Tracey:
I do it at work but that's all.

Diane:
But you can download music and all that kind of stuff.

Tracey:
I can do that, but that's about it

Dianna:
Do you use it for anything else?

Tracey:
Ah, well when I was at work, just to read the emails that the principal used to send

out, all the data the teachers used to send me, that's about it.

Tracey:
Yeah, I'm not very good on computers at all (T1).

In her comments, Tracey reflects a common viewpoint of women concerning computers, that regardless of how well they use it, that they are not very competent.

The table below lists the most common activities engaged in by the women through the use of computers or the Internet.

Table 8 - Common types of computer use by participants

Current activities
Surfing the Internet
Downloading music
Sending emails
Research about movies stars or pop stars
Research holiday destinations, locate accommodation
Internet banking
Use of Microsoft Word, Excel or PowerPoint
EBay, YouTube
Compuer games
Antivirus software

Concerns about using technology

The Gugu Badhun women express concerns about the impact of ICTs on the lives of themselves and their families. In the group workshops these concerns centred around three themes: personal competency with ICTs, maintaining a family balance in use of ICTs and safety and security of computer use. As shown above, some of the participants expressed concerns about their ability to learn new technology. This attitude also manifested in other members of the group. During a later interview with Ailsa, where I was showing her how to insert a photo in an email she claimed “I don’t know whether I’ll be able to remember all this”. Later in the afternoon, when I showed her another option for formatting text she said “Gosh, you better stay here for a couple of weeks I think”(G4). These issues not-withstanding, during the course of the project Ailsa progressed from being a complete non-user of computers to someone competent in the use of e-mail, Internet and Microsoft Word.

The women in the study reported a need to monitor how much time their children spent on the Internet. They also had issues with their partners spending “too much time” on it as

well, but stated that they had much less luck in moderating a spouse's behaviour. Nyree starts out talking about children's use of the Internet, but conversation soon spreads to adult male use of the technology.

> Nyree:
> They're addicted to it. It's like when they're not on it they have withdrawal symptoms, everything is revolved around it. Well, the other thing I find interesting is when they're off, and the kids are out playing like they're doing the things that they don't normally do, they're outside, not fighting, there's less fights, they have to communicate with each other, they have to find other things to do.
>
> Yvonne:
> We have a technology free day, where you have to go to the gym.
>
> Diane:
> But it's not just the kids, because when Tristan is away, my partner, he'll play his General game, and hours will go by, the kids are saying "Dad, Dad!" and he's "in a minute, in a minute!"
>
> Yvonne:
> That's your father as well!
>
> Nyree:
> Yeah, my Mum says the same thing about Dad. He's always on the computer, and she said she hates always seeing the back of his head. And he's all doing solitaire, so when she sees me doing it she goes off her nut (T1).

While the women expressed some exasperation with their children and spouses over excessive computer use, they were on the whole accepting of this aspect of life. The women also discussed the need for protecting their children from harmful sites, such as those where hurtful racial comments might be made. Yvonne related that her grandchildren had been taught how to handle such things, but others might not have that support (Yvonne, personal communication).

Other serious concerns were based on fears regarding privacy, both on the Internet and on computer networks. Yvonne and Pat discussed the prevalence of the social networking website FaceBook in the comments below.

Yvonne:
So explain to me what FaceBook does. A lot of my colleagues do it.

Dianna:
It’s a website where people can go put up pictures and basically type messages to each other and do chat.

Yvonne:
And it’s not putting your own profiles there is it?

Dianna:
You can put things up there for people to find out about you. And they build different little applications for things you can do on there, like you can play games and it seems to be lots of quizzes and personality things.

Yvonne: People are going on about it, and saying what's your FaceBook...

Pat:
I'm just scared about like putting your photos and identity thing on there, where people can actually hack into your computer and get that information.

Yvonne:
Identity theft (T3).

Although FaceBook seems to have near universal penetration of all segments of the youth market (greater than 80% of FaceBook users), in reality less than 30 percent of people over the age of 45 use it (Telenow.net). Pat and Yvonne show reluctance to share information in a way that may open them up the danger of identity theft. This caution is also expressed in their concerns over the implications of personal position tracking via an individual’s mobile phone.

Pat:

I was at work today and an advert came on the TV, it said that if you type in this number and go online you type in, it must be something you type in your partner's phone number and it can give like a GPS location of where they are.

Yvonne:

God, it's like bloody stalking.

Pat:

They said its "Partner tracking", partner tracking. I mean "HELLO!" You could have a stranger's phone number and start tracking them. That's stalking, invasion of privacy! There are nuts out there, and you give them another tool to do whatever (T3).

Continuing the discussion about privacy, Yvonne relates a worrisome occurrence that happened while travelling for business, which as a university academic she is required to do often.

Yvonne:

We had this big fight with this hotel that we stayed at in Melbourne. I came in the middle of the night, my plane was late, so I didn't get in until 3 o'clock in the morning. Apparently the people that came during the day were asked for their drivers licence photo ID, which the hotel photocopied and also then took an imprint of their credit card. Now for all things they tell you for identity you should never give your photo and your personal details like your license, because of what can happen.

So anyhow the next day they were talking about it, and I said they can't do that. I know the privacy laws, cause we had issues with giving information about students, So when they went back the hotel manager, he said "well, this is standard practice in all hotels", and we said that's bullshit because we all travel regularly like every three weeks and we've never been asked to do it before. They then inform us that they keep this information for 5 years and store it, just in case there are any

incidents and the police need to know about it. I mean, I said that's just absolutely bullshit. And they said well if we, if you want your information back you will have to remove yourself from our hotel, that's our policy (T3).

Yvonne's anger over the situation, which was shared with the other women at this meeting, is fuelled by the fact that the hotel is abusing its rights to retain information. The descriptions of these incidents combine to paint a picture that shows that the women are well aware of the dangers of identity theft, and loss of privacy. This concern over security had implications to the design of the software for this project, as creating a safe space online for the women to participate became extremely important. In the following section, the data related to goals for the group is presented.

4.3.2 What goals would the group like to achieve?

A major part of the research for this cycle of the PAR study was to determine concrete actions that could be taken by the group. Many of the findings in line with this question pertain to activities that are prioritised by the group members. These items are described below and are categorized as: (1) conducting family business, (2) connection with an access to country, and (3) spiritual connections to ancestors and country.

Conducting Family Business

For the participants in the group, communication was tied to the need to conduct certain types of work, i.e. family business. This term denotes activities that must be done for the support of the Gugu Badhun as a whole. Many of the older women in this study described being actively engaged in pursuing these responsibilities. The younger women spoke of learning how to conduct these activities themselves.

This section describes the actions that the members of the group are currently taking to establish and support their identity as an Aboriginal people and sustain their existence as a group. Identity is commonly used as a method to claim membership in a particular group (LeBaron, 2003). A person may have many different types of identities such as social, educational, employment or religious. During the first group meeting in Townsville, one of the first requests made of the women seated around the table, was to introduce themselves. Each person gave their name, and included a comment where she claimed identity as an Aboriginal person via her connection with the Gugu Badhun; either by birth or by marriage.

Yvonne:
I'm a Gugu Badhun person (T1)

Diane:

I'm Diane, daughter of Yvonne, I'm obviously a Gugu Badhun (T1)

Karen:

My name's Karen. I'm also Gugu Badhun, but I have my Tablelands side that's Ngadjon (T1)

Taleta:

I'm a Gugu Badhun woman (T1)

Tracey:

I married into the Gugu Badhun tribe (T1)

Nyree:

I married a Gugu Badhun man. I'm Aboriginal and Torres Strait Islander on my mother's side (T1)

Two of the women acknowledged their non-Aboriginal heritage.

Diane:

My dad is like a white person. I kind of grew up with both backgrounds, but I followed Mum's way mainly because Dad's family didn't really have anything to do with us at all (T1).

When Ailsa was asked the same question in the first interview in Greenvale, she referred to herself as Gugu Badhun. Additionally, when I asked her how long she had been living there, she claimed residency to the area by cultural heritage.

Ailsa:

This [Greenvale] is our traditional country. And this is why we purchased a home here (G1).

These comments show that while all of the participants describe themselves as Aboriginal women, they also acknowledge other aspects of their identity, whether Aboriginal or European. During these meetings the research team began to consider how ICT could be used to support the survival of their cultural identity.

The second part of this theme, sustainability looks at what actions the Gugu Badhun are currently taking to survive as a group. Sustainability has long been considered in terms of land use or other business practices, however in the last decade this term has been expanded

to include actions taken by groups to ensure their viability or sustainability over time. McGrath et al (2005) give the following definition:

> Sustainability is a framework of principles, a philosophy of practice that engages at multiple levels, places and cultures in a systematic way towards the achievement of better environmental and social health outcomes whilst simultaneously allowing the necessary economic improvement that this may require (p. 2).

In order to sustain themselves as a group, the Gugu Badhun have engaged in a number of projects with stakeholders, both internal and external, with the end goal to maintain their existence as a living and thriving group. The sustainability actions described here belong to a group that is actively striving to improve outcomes for their members via interaction with the greater world. These actions can be generally categorized to cover the following areas related to their people: communication, culture, history, social, ecological and economic well-being. While the participants in this study discussed many activities that they engage in to stay in contact with one another and to support their culture, there are many actions they take to maintain these things in an external way. The next part of this section discusses these projects with a view to understand how these activities require the use of ICTs.

The Gugu Badhun are no strangers to research, and indeed have been active participants in collaborative projects since the early 1970s. Many of these projects have made wide use of ICTs that prioritise multimedia. Peter Sutton, a well-known linguist, based his Masters research on the recording and analysis of the Gugu Badhun language. These tapes are now stored at AIATSIS. In 2006 portions of these language tapes were reformatted and placed on a specially designed language CD which included photographs, language lessons and other oral history information. Elders from their group provided narrations on the CD. The repurposing of multimedia objects also took place in this study as well. For example, one of participants took old photographs that were in digital form on the CD and uploaded them to the probe site. This is described in more detail in the following chapter.

In the Gugu Badhun Digital history project (2008), in collaboration with researchers from James Cook University, the group conducted videotaped interviews with senior Gugu Badhun people as well as other Aboriginal and non-Aboriginal people who have been associated with them in the past (Hardy et al eResearch paper). These videos were uploaded into an online repository at JCU, and indexed with metadata provided by the members of their group (http://plone.jcu.edu.au/gugu). This work was conducted under a grant from AIATSIS, who were highly interested in the final digital outputs. Comments from the funding body included remarks stating that they hoped that in the future other research projects would add public access material similar to that provided by the Gugu Badhun

(Patrick Sullivan, email 21/11/08). In addition to placing the content online, the complete videos were saved to DVD and deposited with the JCU library. Flowing from this project, the Gugu Badhun obtained an ARC Linkage grant and conducted further interviews in order to produce a history of their people. This history was documented in a Master's thesis by Robert James (a JCU Masters student) in 2009. The history of the Illin family (one of the 5 main family groups in the Gugu Badhun) was recounted in a book by Elena Gover (2000) called My Dark Brother: The story of the Illins, a Russian-Aboriginal family. This book was made into a documentary called "Pioneers of Love" (Nimmo, 2005) that was aired on SBS2. The heavy use of multimedia has required that the Gugu Badhun form connections with ICT professionals.

Many of the sustainability activities described above have required the assistance of technicians skilled in the use of ICTs. While the Gugu Badhun have had a measure of success with these endeavours, they still report a feeling of apprehension that the time available to document and record their culture and history for their descendants is slipping away. This adds to their feeling of sadness that much of their traditional knowledge has been lost already. Although some of their cultural knowledge is irretrievable, the women feel it is vitally important to ensure that what is left is saved for their children and community.

In the third group workshop, Pat described this combined sense of sorrow and anger.

> Pat:
> I feel…ripped off because we've lost so much of our old culture, our generation of stories and songs and the language being taken away from us by the government, and not knowing that sort of thing, I mean we're hanging on to the little bits we've got. (wipes away a tear) Just get very upset… we've lost so much (T3).

Supporting this point, in a later workshop Ailsa also reports feeling that although she is thankful for all that has been recorded to this point, time is running out.

> Ailsa:
> Yeah it's such a pity we didn't get so much more off those old people.
> Yvonne:
> People just running out, running out of time
>
> Ailsa:
> And everyone thinks they'll be right, nothing's going to happen to them.

Ailsa:

I'm sure our grandkids and whatever to down the track will be very grateful for all that sort of stuff, otherwise you lose it. Gosh we must have been that far away from losing it. …Yeah, and that sort of stuff keeps it alive, it's there, and um yeah, people have access to it (G4).

The comments by these three participants show that preserving their culture through digital means is vitally important, and that there is no time to lose in accomplishing this goal. The participants feel that ICTs can be exploited in order to pursue this aim, but they believe that they do not have the skills at the present time to do so. This situation provides the impetus for their participation in this project. During the second Townsville group workshop, while we were discussing proposed functionality options for the new system, the idea of sustainability of the information was raised.

Dianna:

The thing to remember about this is once we get it put up then you guys can put in whatever you want, but obviously you'll have to be the ones to go in and do it.

Yvonne:

So I think that what we do is get a team of people with the expertise and some training by the young ones, I mean I'm sure you know how to do these things, Tris sure does. And they're responsible for maintaining it.

Dianna:

One of the things I want to make sure we build into this is some sustainability after this is all done. So that once I finish my research then you guys can keep this up and so that means getting you guys an actual website that's not hosted at JCU but is backed means that it's all yours and you can do it yourself.

Pat:

Well there you go, tell Tris he needs to study IT! (T2)

Pat's retort about Yvonne's grandson Tristan is meant to be humorous but there is some validity in it. The Gugu Badhun realize that to take control of their own data they will need to have someone "in-house" with ICT experience, hence Yvonne's comment about a cadre of young ones who would have responsibility to train the older people in managing the system.

Connection with and access to country

The Gugu Badhun women report that maintaining their connection to their own country is of utmost importance. This connection provides a spiritual and emotional value that is present in their every-day lives and enhances their wellbeing.

This section reports on the responses made by the participants regarding connection with and access to country. The women in the group are currently being restricted from returning periodically to a significant part of their traditional country due to issues with the current lease-holder of a cattle station that is situated on an area of great importance to them.

Ailsa comments that whenever they ask to visit the station, the manager always says that they cannot come on whatever dates because "they are mustering". A request a month later will garner the exact same response. The next snippet of conversation (from a Townsville workshop) references this issue.

> Yvonne:
> (pointing to a particular area on a video of their traditional lands) This is where we'd like to be camping. This is where our families used to live. But, because of the relationships with the current owner…
>
> Dianna:
> How long has he been there?
>
> Yvonne:
> About 5 years now (T2).

The following week in Greenvale, I discussed the issue with Ailsa as well, in reference to the concept of Native Title claims.

Dianna:

Does he have some worry that if they let you guys come on the land more often than that will give you more of validity to any Native Title claim?

Ailsa:

I think it's that, I do. I really do. You know, like the government really frightened people about Native Title. They really frightened the landowners and all that sort of thing. Like 'the blacks want to come in and take everything off you' and probably in some instances they did try that stuff…But, the last thing I want to do to run a bloody cattle station (G3)

Ailsa's comment about the government scaring the landowners shows that they realize that emotions can run high in regards to this issue. Yvonne related that the Gugu Badhun had tried to set up a meeting with the landowner to allay his fears regarding their intentions, but he refused to attend (Yvonne, personal communication).

The fact that there have been previous altercations with the pastoral lease-holder regarding access to their traditional lands adds frustration to the situation. The women discussed this past history during a group workshop in Townsville. Pat describes the last time they were able to visit the area where [name removed] station is sited.

Pat:

Oh, he did let us access it one day. We were really excellent, we made sure there was absolutely no rubbish whatsoever, the only thing we left were footprints and he cracked a mental.

Karen:

He [the station manager] come back up, and that was the same week wasn't it, he come back up and had a go at Mum (Ailsa) yeah. He's a nasty piece of work (T2).

Although Ailsa related concerns about the potential actions of the leaseholder, she appeared to take it in stride when we discussed the situation at her home in Greenvale. In the segment below, Ailsa talks about pursuing access to the site through cultural heritage laws.

Ailsa:

Through cultural heritage, you can go on, if you got a site that you want to visit and

> maintain, they cannot stop you going in there. And I need to know about the legalities of all that before I do that, [laugh], risk getting thrown off, or chuck me in a gully somewhere (A3).

The emotions present in these conversations show that resentment is felt by all stakeholders involved. Rather than rely on a frontal approach alone, Ailsa who still lives on their country in Greenvale mentioned that she was not sure whether the actual pastoral lease-holder was the manager or if this role was held his father. In one of our meetings she related that she hopes that another person might be more amenable to negotiation.

> Ailsa:
>
> I'm not holding out any great hopes. But it would be lovely to have the next camp be down at the oaks.
>
> Yvonne:
>
> Yep.
>
> Ailsa:
>
> And everyone thereafter! (A4)

With the backing of her group, Ailsa is pursuing governmental forms of discussion via the Delbessie Agreement and Indigenous Protected Area (IPA) scheme. The Delbessie Agreement (named after the property where the original legislation was signed in 2007) is a framework of legislation, policies and guidelines supporting environmentally sound and sustainable land use practices for rural leasehold lands for agribusiness. Those graziers who sign on, have the potential to have their leases extended by 10 years with the option of extending it up to 50 years if their development plans that include an Indigenous Access and Use Agreement.

> Ailsa:
>
> John R, did you meet John? Yeah, and his boss and them, they were in that Delbessie business. Delbessie agreement that I often talk about which is an agreement between all the cattle people with their leases and that they have an agreement with their Indigenous people, they get extra years on their lease.
>
> Yvonne:
>
> What we've got with [name removed] station.

Ailsa:

Yeah. But, I could see with cultural heritage, IPA (Indigenous Protected Area) and Delbessie, those three combined and put something together, you can have an agreement, with your traditional, your people, traditional owners can have an agreement with your land holders, and they're the IPA is a non-threatening thing, it's not as strong as a ILUA (Indigenous Land Use Agreement), but it will allow you access to country and do your business on country and all that sort of thing too.

Yvonne:

I think the only reason people feel threatened by ILUA's is that it's Native Title.

Ailsa:

We… they're doing up an agreement thing the Delbessie mob, but they said that it'll take a little bit of time because they want to be absolutely sure that what they put in it is going to help the Indigenous people, they want it to be able to um, be a form of access for them…You know but, I would like certainly for all our kids to have the right to be able to visit…To me, it's part of their heritage, a part of their, well where culture's wrapped up over there. We go to Reedy Brook which is a certain amount of importance to us, but it's more important on the [name removed] itself (A3).

All of these activities are more efficiently handled using ICTs. However, one of the issues associated with this was that Ailsa, the person most ideally suited to more these activities forward (due to her status as an elder, consistent connection with country, and location in Greenvale) had the least training and access to ICTs.

Spirituality: connection to ancestors and country

Part of the knowledge that the members of the study want to convey to their descendants is tied up with the concept of spiritual connection to their ancestors and to the spirits of those who have gone before who still reside on their country. This makes it doubly important for the group to gain access to their country to fulfil duties associated with these ties. The women made many comments during workshops regarding the importance of spirituality and respect for their Ancestors.

One the first trip that I took with Yvonne to interview Ailsa at her home in Greenvale, as we drove along, Yvonne pointed out an emu that was standing very near the road in the middle of the afternoon. Yvonne commented to her granddaughter who was dozing in the

backseat of the car, “Look Mariah, it’s one of the ancestors welcoming us back on country”. Discussing this statement later Yvonne said that this was a very significant event, as it is quite unusual for emus to be found so near the highway, especially at that time of day, when they normally would be resting in the shade. Thus, this observance has spiritual connotations for her.

Belief in the concept of spirits causing misfortune is shown in the comments below, taken from a workshop where Pat and Yvonne relayed to me a series of misfortunes that occurred at the previous cultural camp the month before. First, one of the young women there experienced a emergency medical problem that required an ambulance trip to Atherton. Her husband rolled his car while in a hurry to direct the ambulance to the scene, rendering it nearly inoperable. Ailsa, who at the time was enduring a bad case of the flu coughed so violently that she nearly cracked a rib and was in considerable pain and needed medical attention. Finally, Val’s grandson tangled his arm up in a rope swing, sustaining a bad sprain.

> Dianna:
> Dangerous camp to go on.
>
> Yvonne:
> Yeah, exactly, so.
>
> Pat:
> We haven't even had to use a band-aid before this.
>
> Yvonne:
> No, no, I know, so we're saying, God, I wonder what's upset the Ancestors or something.
>
> Pat:
> Oh my goodness.
>
> Yvonne:
> Yes, so apart from all that it was good (T3)

An additional component of culturally appropriate respect is found in the belief expressed by the women that you should not view items which do not belong to your people or for which you have not been given permission and appropriate training to view. Yvonne related

a story where a parcel containing a piece of Aboriginal artwork was sent to her office in the mistaken belief that it belonged to the Gugu Badhun. Upon opening the package she realized that it was a "message stick"[1], and hurriedly closed it back up again. She tried without success to return it where it came from, but as the sender did not know the appropriate party to send it on to, they asked her to retain it.

I queried her as to why it would be inappropriate to examine the message stick.

> Dianna:
>
> So why would it be wrong to look at that?
>
> Yvonne:
>
> Well, it doesn't belong to me, and it wouldn't be respectful to look at it since I haven't been given permission. If people look at sacred things that they have not been given the training to understand, if they are of that belief, it can make them sick or even kill them.
>
> Dianna:
>
> So, as a modern person, do you believe that?
>
> Yvonne:
>
> Well, I don't have those beliefs, but it wouldn't be respectful. And either way, there are lots of things in this world that we can't explain (Yvonne, personal communication).

The belief that a person needs proper instruction before they have the right to view content is integral to the Gugu Badhun's ICT endeavours. In their view, it is as important that people be kept from viewing things that could potentially harm them as it is to protect their cultural knowledge for their descendants. This has implications for security requirements on ICT projects with Aboriginal participants.

4.3.3 How might ICTs be used to help meet these goals?

The preceding two sections have described the context for use of ICTS and the goals of the group in relation to maintaining identity and sustainability. The following section describes the participant's comments regarding their ideas about how ICT could be used to better

[1] Message Sticks were commonly used by Aboriginal people as communication device for conveying information when travelling through another group's area. Carved symbols served as a mnemonic to remind the bearer of the message to be relayed.

meet their goals. These concepts are grouped into three themes: (1) coordinating the cultural camp, (2) actions to support group engagement and (3) an overall sense of how they would like to use ICTs.

Annual Cultural Camp

The participants in the study often discussed activities designed to keep the group together and to foster connections with their cultural heritage. These activities centre around family occasions (such as birthdays, graduations, weddings, funerals) and an annual meeting on country that the members call their "Cultural Camp". This camping event is the focal point of activity for the year and is held during school holidays in the spring, generally around late September. The camp is held on their traditional lands, at Reedy Brook. The importance given to this event is shown in the comments below, made by the participants at the third Townsville group meeting.

> Dianna:
>
> How does it make you feel to go and do that, and be around your family and other people? What sort of place does the Cultural Camp take in your life?
>
> Yvonne:
>
> Well, I guess this year it was nearly not going to happen because people were sick and people were working. And it was sort of like from my point of view, well, no, it can't not happen. You know it's too important even if a couple of people go there cause that's sort of how strong a feeling it is now. Yeah, someone needs to get there each year, yeah.
>
> Dianna:
>
> So it's very important.
>
> Yvonne:
>
> We need to get that connection happening and so if only one or two people can get there, that's what needs to happen, basically. It's a strong connection to the land and to family, just being on country.
>
> Pat: And being together united as a family again, as a traditional family again, back on country…is just so important (T3).

Yvonne's description of the situation this year is contrasted by her emphatic decision that she would ensure that it occurred. The importance of this event is shown by her comment that even if only a few people go, the connection would still be maintained.

Frequent communication between members is necessary to facilitate this event to happen; these discussions are made over telephone and email for those with Internet access. Currently it is difficult for the group to keep in contact with various family members, as they are located throughout greater Queensland. At the time of the research project there was not a reliable mechanism for contacting all members to arrange the logistics for attendance at the camp. Responsibility for making the arrangements, which include liaising with over 150 people that make up their group, falls heavily on a small group of female elders, one of whom prior to this study did not have email or Internet access.

Younger members of the group have started talking about taking on more of a leadership position in making sure the event happens. Diane, Yvonne's daughter talks about the importance of taking on this role.

> Diane:
> I think everyone else as a broader group needs to really get behind the camp and help out a lot, because it really is like you know a lot of the oldies running around doing it, and sometimes I think they're the oldies and then well what happens when they go. So I think more as a family we've gotta try and share it and get involved in it. Yeah, more of a family effort, to unite and we're going to make it. But I'm just going to make myself go, even when they're little (her children) or else it's so easily it'll just...
>
> Yvonne:
> Lose the momentum
>
> Diane:
> You know when Mum and Auntie Ailsa go and all that, I just see it, yeah (T3).

Her aspiration to take responsibility for the camp after the passing of the older generation is clearly stated here, but currently, these tasks fall on two or three of the female elders. The camp is partially subsidized by the mining companies that have access to the land around their traditional country. These activities all require access to and experience with ICTs in order to manage a smooth-running operation for the weekly camp.

Actions to support engagement

The participants take very seriously their responsibilities to their immediate family and their larger group. These obligations fall within the spheres of individual, family and group involvement. The participants, especially the elder women make great efforts to keep in contact with all of the members of their immediate family and those to whom they are related. Although priority falls with their immediate family, the women feel an obligation towards improving the wellbeing of everyone in the group.

A primary goal as identified by the participants, is to ensure that as many Gugu Badhun who are capable of attaining higher education or training do so. This includes seeking out scholarship opportunities for younger members and keeping an eye on what grant opportunities exist. Another area where the elders (male and female) provide oversight and assistance is employment. During the time that the participant's children are finishing high school, they receive advice by family members as to their possible employment paths. It is expected that at the end of high school all family members will be working or studying. In explaining this activity Yvonne stated "we have the connections and know how things work".

As part of this plan, the Gugu Badhun are very keen to make employment opportunities visible to all the members of the group. This was a concern when the women were discussing what type of functionality to put on the probe site. During the second Townsville workshop, I asked the participants to brainstorm with me ideas that they had regarding the new communication system that we would design.

> Dianna:
>
> Now that we've all kind of thought of what things are important to us in all of this, if we think of some sort of a thing that you might use to communicate with each other, what sort of things would you like to do?
>
> Yvonne:
> Well the whole thing is employment, if we had a section about employment that would be really good.
>
> Nyree:
> And if there were things about what sort of ILUAs (Indigenous Land Use Agreements) are current and all that stuff…

Yvonne:
That we have with the mines, and so an update on that and from that there's links about the uh giving some like first go at employment or some scholarships and that sort of thing.

Pat:
And that'd be a really good place for the employment.

Yvonne:
And scholarships cause often the scholarships come up try to get that information around.

(T2)

For the Gugu Badhun, 'word of mouth' supplemented with email has not been sufficient to convey information regarding these opportunities, and they are interested in using ICTs to expand these interactions with younger members of the group.

One of the primary issues associated with ensuring the wellbeing of group members is in regard to the constraints of time. While many Gugu Badhun in the later generations have secured better jobs and enjoy a higher standard of living than their ancestors, not all branches of the family are experiencing this sort of economic benefit. Yvonne expressed regret at the fact that her priority needs to be with her immediate family due to the demands of her career. In her words, "you can't help everyone". An example of this type of situation is described in her comments below.

Yvonne:

Well, it's like the family that we have in other places. They're not doing well due to too much drinking and the smoking. But because of our jobs there's only so much time you can dedicate to it, there's only so much you can do.

Dianna:

So, do you think this situation is caused by personal decisions on their part?

Yvonne:

No, I think it's based on the leftover effects of being removed from our lands. Plus the lack of education, and the lack of good role models over the last few generations (Yvonne, personal communication).

This comment expresses the feelings of the elder women that there is much work to be done in raising the health and well-being of all sectors of their group. The Gugu Badhun would like to use an ICT system to keep in contact with all of their group members even those whom they do not get to see on a regular basis. Although some people might not have computers in their homes, the women hope that they might be able to access a site through other means.

Diane:

So I like the message boards at uni, you know when someone puts something … when anyone can have a bit of thing of things updating, you can just go and have a suss or have a talk or whatever.

Taleta:

Barbecue at my house kind of thing

Yvonne:

I think if we could you could use for lots of different things it could be 'hi how are you going in the Territory or in Canberra or whatever, but also with a lot of us working for professions, just 'have you seen this information about this conference you know', so it might be professional as well.

Nyree:

Yeah all the things that Angie's doing with the family history.

Yvonne:

If she can put that on in a common place rather than trying to get everyone to send it to. Cause right now we just have an email list and if we can get it out to as many sort of people and then get it onto your email list sort of thing. But if we had somewhere where people could know where to go for that information, that would be good.

Nyree:

Something that would be passworded or something in order to go in so that otherwise you'll get all types of idiots on there.

Yvonne:

And even people of our mob that don't have computers can go into a cafe or something or go into the library and get onto it.

Nyree:

Yeah, and you don't need to download any special (T2).

In this exchange, the women reveal their thoughts about the benefits that a proposed system could offer: options for social interaction (i.e. family outings and barbecues), a place to store family history and genealogies, a central repository for data (replacing the need for multiple emails), and a space where members could interact from anywhere in the world, even if they did not have Internet access at home. Nyree, who has considerable ICT experience, reminds the group that security will be a necessity.

Proposed ICT use

While members of the group held varying opinions about the use of ICTs, the group as a whole, agreed that there were two layers to how they would like to use computers. One

view is strictly internal, for their family groups. The other view is external information that they would like to publish about the Gugu Badhun and their activities. The table below lists these ideas, arranging them by audience, i.e. Gugu Badhun or the outside world.

Table 9 - Suggested functionality items from group interviews

Internally viewable – Gugu Badhun only	**Externally viewable**
Discussion boards	Links to associate organizations
Employment notices	Link to Digital History project
Scholarship information	Current events - news
Chat functionality – instant message	Sustainability information
Area for stories	Environmental protection of land
Area for children / teens	
Photos	
Blogs	
Address book – contact details	
Profiles with pictures	
Language tutorials	
Bush tucker tutorials	
Family trees	
Administrative features	

Most of the functionality items that were mentioned during the group interviews were those things that would be internally visible, providing them with a safe space for communication and connection.

This cycle was focused on determining how ICT could be used to improve wellbeing in the Gugu Badhun women's community. Much of the information obtained from this cycle supported the idea that there were essentially three things that the women wanted from ICTs:

1. Use of technology to stay in contact with each other
2. Recording of cultural heritage/history
3. Conveying their history to their descendants

These three goals were present in each of the research cycles for the study.

4.4 Planning next steps

In this research cycle the project team explored aspects of their lives related to communication and considered how these are impacted by the use of ICTs. Based on interviews and focus group discussion the participants specified four areas of interest regarding ICT use: (1) distance between group members, (2) family business activities, (3)

maintaining connections to ancestors, families and country and (4) concerns about engaging with technology. All of the participants agreed that a lack of communication among group members was impacting their sense of belonging as a group. This was tied to a sense of having lost important cultural information due to the effects of colonization and being widely dispersed geographically. The group expressed an interest in engaging with ICTs on their own terms, i.e. in ways that would prioritise their aspirations and needs.

In deciding on next steps for the PAR, the group discussed how the information we derived from this cycle would have an impact on the next one. We examined the situation from both sides of the equation: what did the participants need and also, what information did I want to look at in the next phase. While the women talked about having a website that they could use to communicate and record important cultural history, I was equally interested in looking how they might make use of a system. We jointly agreed to design and implement a small web site that would act as a technology probe to further examine the group's feelings about ICT use in their current situation. After discussion, it was decided that the most appropriate type of probe for this scenario would be small, easy-to-use web site that the women could use to communicate with each other. The participants specified that the site would only be accessible by Gugu Badhun women and the primary researcher. The use of a web site would allow additional family members who lived at a distance of Townsville to participate as well. The original plan called for the probe site to be actively monitored and used for 3 months by the project team.

4.5 Summary

This chapter has described activities that occurred during the first research cycle of the action research project. Data obtained during the six meetings with the research team (4 in Townsville and 2 in Greenvale) were reported and categorized in order to evaluate the group's current situation in regard to ICT use. This information was gathering in order to answer three research questions: (1) what is the content for the use of ICTs by this group, (2) what goals would the group like to achieve and (3) How might ICTs be used to meet these goals. At the end of the research cycle, the data was analysed and next steps were proposed, in this case to design and deploy a technology probe. Further description of the technology probe, and the data obtained from it are presented in the following chapter.

Chapter 5

Storytelling: Using the probe

5.1 Introduction

This chapter focuses on the results obtained from the second cycle that consisted of use of a technology probe. The participants described the type of activities that they would like to engage in on the site and these were translated into the design of the probe. The purpose of the probe was not to act as an actual prototype, but to help inspire further design ideas with the group and to provide a mechanism for observing the women's use of an ICT. The design of the probe reflected a sub-set of the functionality request and was engineered to be as simple to use as possible so that little training would be required and to allow the technological aspects of using the probe to be minimized. The probe was deployed in the community for a year. Three research questions were used to thematically interrogate the data.

The structure of this chapter is first a description of the activities for this cycle, then the presentation of the data from the probe, followed by an analysis of the data in regard to the three research questions examined during this phase of the research. Analysis tying the findings from Cycles 1 and 2 are discussed, and the chapter concludes with a summary of the main themes that emerged from the usage of the technology probe.

5.2 Description of activities for this cycle

As some of the women had expressed frustrations regarding the complexity of other ICTs, one benefit of technology probes is that they can be engineered-down to the competency level of the least computer-literate members of the group. The design intent of the probe for this project was to create an interface that would be so non-threatening and easy to use that it would require very little learning on the part of the participant. In some types of technology probes, participants are instructed to use the probe package in a prescribed fashion (Castledan, 2008). In contrast to this previous work, the participants in this study were not required to focus on a particular social or environmental issue, but were free to innovatively use the site in whichever way seemed the most reasonable to them. The goal for this change in method was two-fold: to examine how the women might domesticate this ICT without external prompts and to flatten the researcher-participant power structures by acknowledging the participants' right to direct the context of the research (Smith, 1999). The purpose for this was to not restrict them from using it for purposes that I might not have envisioned. One of the participants' first moves toward claiming ownership of the ICT

was to provide the name for the site: “Gugu Badhun Women on the Move”. This name was used by the research team for the remainder of the project.

The probe was in use by the research group from July 2009 – July 2010. Five additional members of the community were added to the project through a snowball selection approach. The new members were sisters, daughters or nieces of the original group members who lived at a distance from Townsville. These additional participants were located in Darwin (3), Cairns (1), and Brisbane (1).

5.3 Description of the probe structure and functionality

Space for the probe software was obtained from a web-hosting company and Drupal, an OpenSource Content Management System (CMS) was setup on it. The reason for the use of a CMS was to enable the members of the research group to easily create content and interact with each other rather than requiring technical. The probe was developed on the Drupal platform which stores the data in a MySQL database.

During the design of the probe the research team discussed having a picture of each person next to her content. The members were not enthused with this idea, and the group decided to let each person pick an animal that they felt symbolized their character or had some meaning to them. Being the only American, I picked a chipmunk, while the others chose Australian animals. Many of the women chose an animal avatar that was their particular totem. For example, Yvonne picked an emu, an animal that has a symbolic connection with her ancestors and Ailsa chose a kangaroo rat. Other choices by the women were generally fish and birds. Roz was the only Gugu Badhun woman to select a non-Australian animal; her choice was a wolf.

The probe provided four types of interaction possibilities for the participants: (1) create or respond to a MESSAGE, (2) create or comment on a STORY, (3) upload or comment on an IMAGE and (4) create or comment on a MY MOB posting. These content types are capitalized to differentiate them from other uses of the same words throughout the rest of the thesis. A description of each of the four contents types is listed next.

Before the probe was deployed for group use, it was demonstrated to three different pairs of participants. Based on this input, slight modifications to the interface were made such as adding functionality for creating an IMAGE. The project team discussed the idea of having each person’s picture accompany their postings, but this was roundly rejected, as no one was happy with pictures of themselves. An alternate suggestion that was approved was to let each person select an animal avatar instead.

5.4 Presentation of data from the probe

In this section the data obtained from an examination of the probe usage and content is presented. The data are categorized in reference to the research questions for this cycle.

1. How was the probe used?
2. What type of content was posted?
3. How does the usage of the probe relate to items prioritized in Cycle 1?

5.4.1 How as the probe used?

This section reports the usage data for the probe. Queries against the underlying MySQL database were made using Drupal to discover usage statistics. In addition, Google Analytics was used to access web server log files and compile access and usage data. The data below describe the use of the probe by the participants, the frequency of use, and the types of content created.

Table 10 below shows the locations of each of the participants.

Table 10 - Locations of participants

Location	Participant
Townsville	Diane, Nyree, Pat, Yvonne, and author
Cairns	Karen & Val
Greenvale	Ailsa
Darwin	Coralie, Roz and Tahnee
Brisbane	Nikki

There were thirteen women in total who participated in the project. Two of the original research members (Tracey and her daughter Taleta) moved away from Townsville and become unavailable for further participation. When the probe was made available, five additional women were added to the team.

Table 11 below presents a numerical representation of the amount of content posted to the site. Content items are shown to be either: original postings, i.e. the participant initiated a discussion, or a reply to a content item, where a participant replied to a communication initiated by someone else.

Table 11 - Types of postings and comments

Content type	# Original Postings	# Replies
MESSAGE	48	52
STORY	90	299
IMAGE	132	84
MY MOB	3	7
Total	**273**	**442**

This data shows that by far the most popular type of original posting were IMAGE (48.3%), followed by STORY (32.9%). However the pattern is reversed when looking at replies to these original postings. STORIES were responded to the most (67.6%), followed by IMAGES (19%). Replies to stories made up over two-thirds of the responses to original postings. The MESSAGES and the MY MOB section garnered significantly less interest. The reasons given for this by the participants are presented in the Discussion chapter.

Next the data for frequency of usage over the cycle is presented. Tables 12 and 13 below detail the type of content posted for each month that the probe was used. It should be noted that although original postings continued through March 2011, the last reply to a content item occurred earlier in August 2010.

Table 12 - Original postings by type and date

Year	Month	MESSAGE	STORY	IMAGE	MY MOB	Total Postings
2009	May	1	4	0	0	5
2009	June	3	1	0	0	4
2009	July	19	5	2	0	26
2009	Aug	14	40	52	2	108
2009	Sept	5	14	21	0	40
2009	Oct	1	3	0	0	4
2009	Nov	0	3	0	1	4
2009	Dec	2	5	24	0	31
2010	Jan	0	2	0	0	2
2010	Feb	1	2	6	0	9
2010	Mar	0	2	0	0	2
2010	Apr	0	3	11	0	14
2010	May	0	3	0	0	3
2010	June	0	0	4	0	4
2010	July	0	0	0	0	0
2010	Aug	1	2	2	0	5
2010	Sept	0	0	0	0	0
2010	Oct	0	1	0	0	1
2010	Nov	0	0	9	0	9
2010	Dec	0	0	0	0	0
2011	Jan	1	0	0	0	1
2011	Feb	0	0	1	0	1
2011	Mar	1	0	0	0	1
Total		**49**	90	132	3	274

Table 13 - Replies by type and date

Year	Month	Message	Story	Image	My Mob	Total
2009	May	0	0	0	0	0
2009	June	2	0	0	0	2
2009	July	20	5	0	0	25
2009	Aug	18	106	25	3	152
2009	Sept	9	82	15	2	108
2009	Oct	1	14	1	0	16
2009	Nov	0	23	0	0	23
2009	Dec	0	16	0	2	18
2010	Jan	1	15	0	0	16
2010	Feb	1	11	11	1	24
2010	Mar	0	8	0	0	8
2010	Apr	0	8	13	0	21
2010	May	0	7	4	0	11
2010	June	0	2	7	0	9
2010	July	0	0	0	0	0
2010	Aug	2	2	9	0	13
		54	299	85	8	**446**

The highest frequency for posting on the probe site occurred between July 2009 and December 2009, although it continued in use for another few months into the following year. The participants requested to have it remain available and to not close it down at the end of this research cycle. The months with the largest numbers of postings were in August and September of 2009, indeed over 58% of the postings for the site occurred during those months. The probe remained in active use over the next 6-8 months at a much lower but steady rate. Although the probe remained available for the entire year, the highest level of use occurred at the beginning of the deployment period. When the participants were queried as to the reason for this drop-off in use, lack of time was offered as the cause. The fact that site was only available to a small group of people may be another factor.

After the first few months of use, the participants ceased to use the MESSAGE functionality to any great amount. In examining this pattern it appeared that the purpose of these sorts of communications were being adequately handled by traditional email, and this assumption was confirmed during our later feedback sessions in Cycle 3 (detailed in the next chapter).

The other section that was used only briefly was the MY MOB area. In this space participants were able to create a listing of their family history. As the family groups involved in the project were quite small there were only two MY MOB entries created (not including the sample one posted by the author). At the time the probe was being used the Gugu Badhun had participated in a Native Title claim that resulted in a detailed genealogical record being created. This may be why the focus of the probe site did not continue to prioritise a written genealogy.

Table 14 below describes the frequency of posting by individuals, and Table 15 shows types of replies by individual.

Table 14 - Types of original postings by individual

Name	MESSAGE	STORY	IMAGE	MY MOB	Total
Ailsa	15	7	2	1	25
Coralie	2	8	20	0	30
Diane	0	4	0	0	4
Dianna	2	1	0	1	4
Karen	1	0	0	0	1
Nikki	6	13	109	0	130
Nyree	1	1	0	0	2
Pat	3	0	0	0	3
Roz	0	0	0	0	0
Tahnee	1	0	0	0	1
Val	6	20	0	1	27

Yvonne	11	36	1	0	51
Total	48	90	132	3	273

Table 15 - Types of replies by individual

Name	MESSAGE	STORY	IMAGE	MY MOB	Total
Ailsa	13	32	3	0	48
Coralie	3	38	13	0	54
Diane	0	8	0	0	8
Dianna	4	8	0	0	12
Karen	1	0	3	0	4
Nikki	4	56	16	2	78
Nyree	3	0	0	0	3
Pat	1	0	0	0	1
Roz	2	18	7	0	27
Tahnee	0	4	0	0	4
Val	4	70	22	2	98
Yvonne	17	64	20	3	104

Ailsa, Coralie, Nikki, Val and Yvonne were the most prolific content creators on the site. These women were also the most common posters of replies to the probe site. Roz, one of the younger sisters of Yvonne was more likely to reply than to post original postings on the site. All of these women with the exception of Nikki are contemporaries and share the same generation. Nikki was notable in the number of postings that she participated in because very few of the younger women of her age posted to a similar extent. This difference in posting patterns is discussed in the following chapter.

When the site was first deployed Google Analytics was setup on it to monitor statistics regarding access. The report for the entire time period the probe has been accessible shows there were 2,025 visits to the site, and that 987 pages on the site, were viewed a total of 17,862 times (an average of 18 times per page). While there were only 720 items posted on the site, the additional pages measured by Google Analytics include forms, index pages and the results of searches on the site. The average time spent on the site was 6 minutes and 28 seconds. The most common way of accessing the site was via the home page. The average number of pages viewed on each visit was 9.87.

Property	Value
Visits to site	2,025
Pages accessed	987
Times pages viewed	17,862
Average time on site- new visitor	00:14:34
Average time on site – returning visitor	00:6:28
Average pages viewed - new visitor	21.13
Average pages viewed - returning visitor	9.87

Figure 14 - Access statistics for probe site

Figure 15 - Probe site visits July 2009- Aug 2010

The access data shows that while some participants often posted content on the site with each visit, others spent much of their time reading other's postings. This feature of use is supported by further interviews with the participants in cycle three (reported in the next chapter).

5.4.2 What type of content was posted?

The results presented so far have been drawn from statistical analysis of the use of the probe. This section details the contents posted on the probe by reporting the results obtained from qualitatively analysing the content posted on the site using three analytical techniques: (1) descriptive coding, (2) values coding and (3) thematic analysis. In the case of this study, these techniques helped in ascertaining an overall idea of what items were important to the participants. The next section lists the results of the analysis using the 4 content types from the probe as a framework. Following this, section 5.4.2 provides a thematic analysis of the probe content as a whole.

Results from the probe content by type

MESSAGE

As discussed previously, the MESSAGES area of the website allowed participants to send a MESSAGE to each other. The participants could choose to have the MESSAGE be public or private. Once a day, the website sent an email update to each member of the research team alerting them to any new content on the site, including any new MESSAGES waiting for them. The text of a sample update email is listed below (viewed using a GMAIL client).

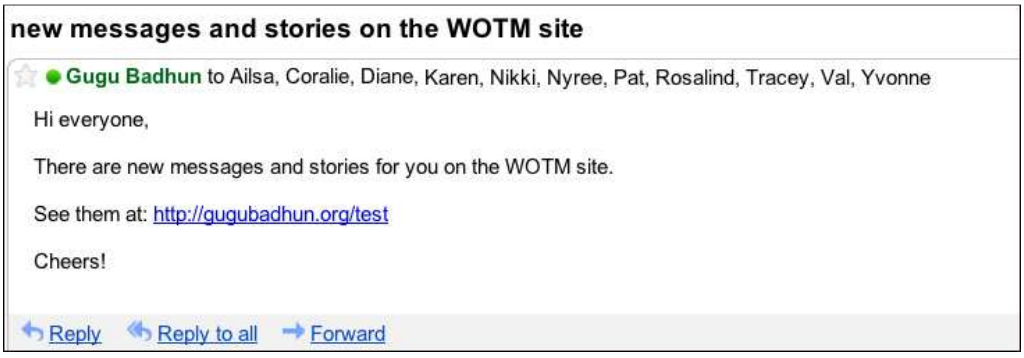

Figure 16 - Email alert from the probe site

This email shows that there were new STORIES that were public, and that each person had a public MESSAGE sent to the probe.

Early MESSAGES from the site were related to testing the site, and letting the participants get used to the interface (Figure 17). However, quickly the women shifted to using the facility to communicate news. Ailsa, being in a remote location used the MESSAGE feature to update her Townsville relatives on her movements and to coordinate visits with them that were in the planning stages (Figure 18). Ailsa also had much of the responsibility for scheduling the Cultural camp, and so some of the messages surrounded this topic (Figure 19 & 20). Additionally, when she knew that someone was coming out she would arrange for them some grocery shopping for her and to send them back with some preserves or other home-made items. Other messages from the participants centred on reports of items discussed at Gugu Badhun meetings or other family news.

Ailsa was the most active user of the MESSAGE feature. Other than introductory messages to show interest in using the probe, most of the other members of the group used the STORY and IMAGES section of the site more often. The similarity of the MESSAGE feature to that of standard email may have made this feature relatively uninteresting those who had already had substantial experience with email. Ailsa, as a novice user of ICT was the only participant with little training in email at the time of the start of the probe, perhaps explaining why many of the original MESSAGE entries were posted by her.

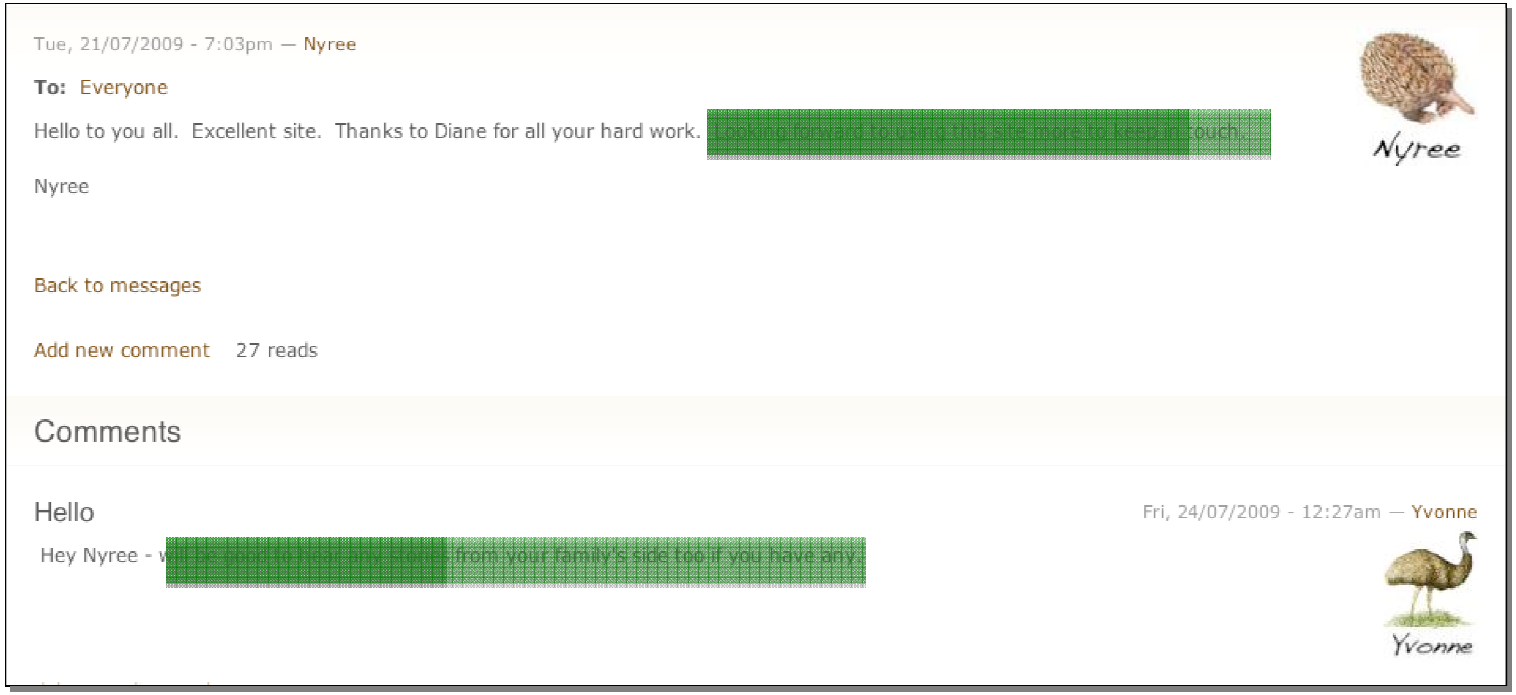

Figure 17 - Introductory message using probe

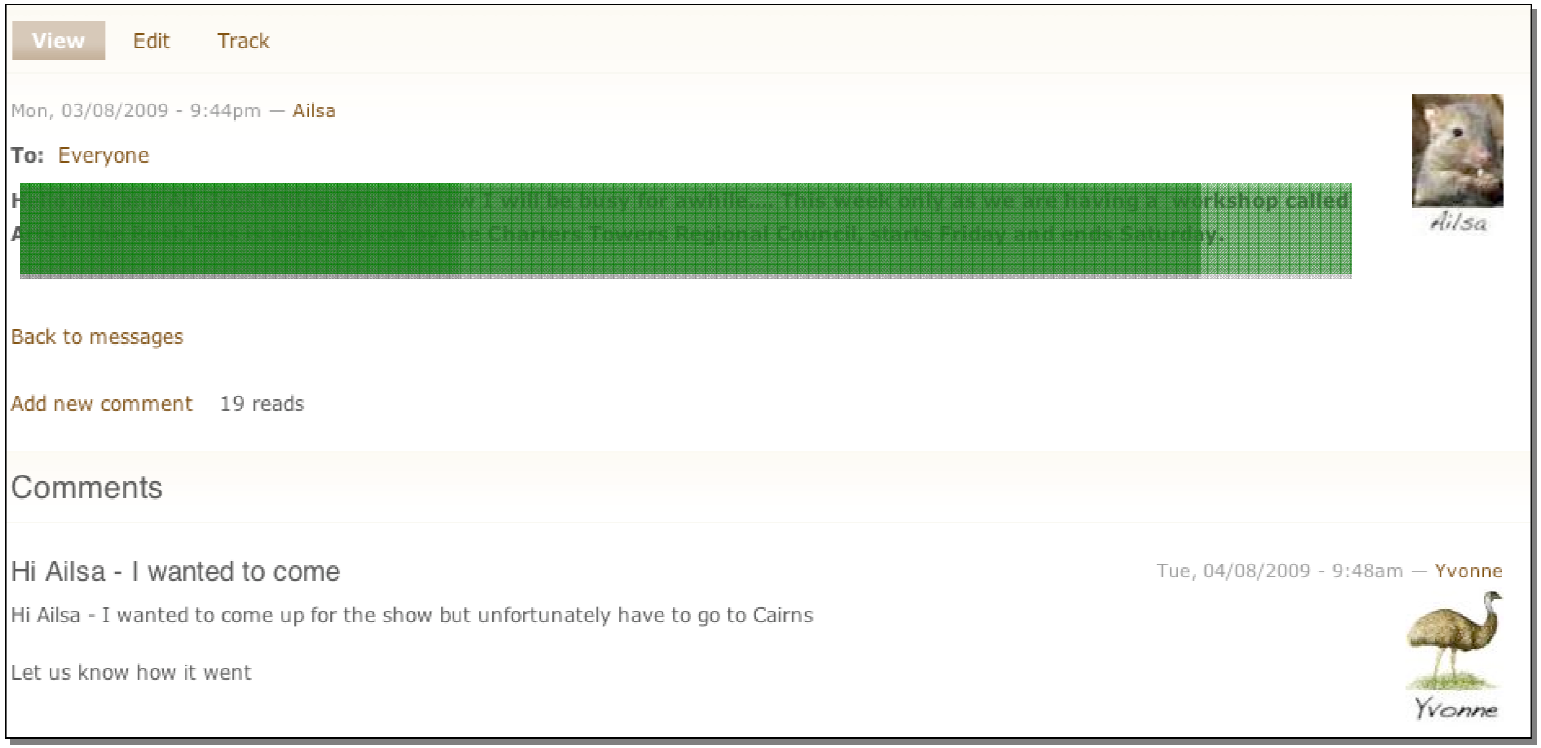

Figure 18 - Scheduling on the probe

Figure 19 – Camp scheduling

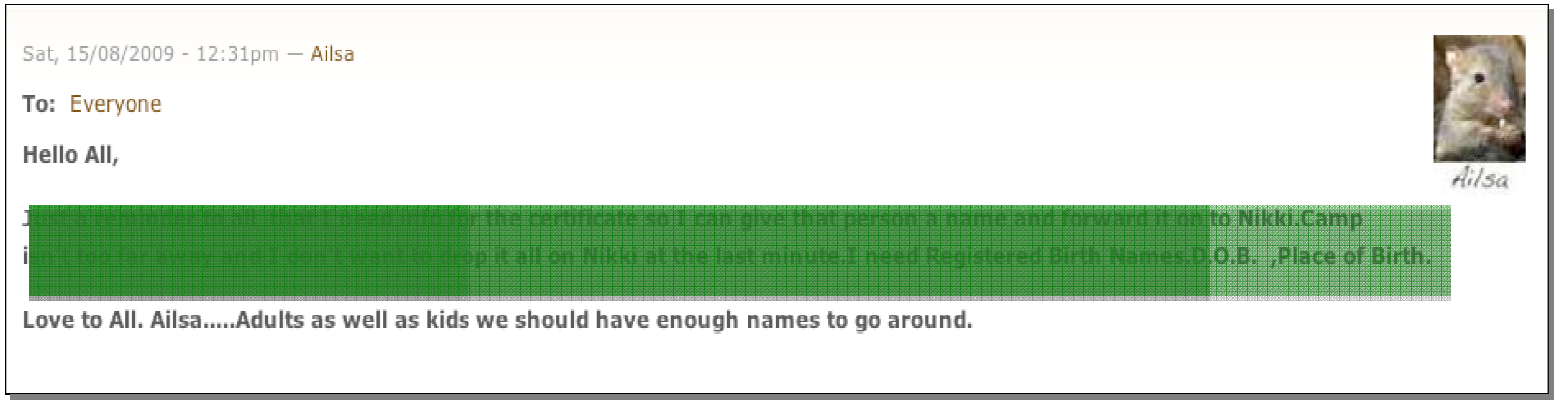

Figure 20 – More camp scheduling

The probe site also contained a HELP link, that enabled the sending of a MESSAGE requesting information regarding the functionality on the site, or to add additional functions for the probe. One of the early requests was to add the ability for images to be uploaded. Additionally, Nyree requested that the To list on the potential recipients for a message be reorganized so that the "Everyone" choice was at the top of the list, rather than buried alphabetically.

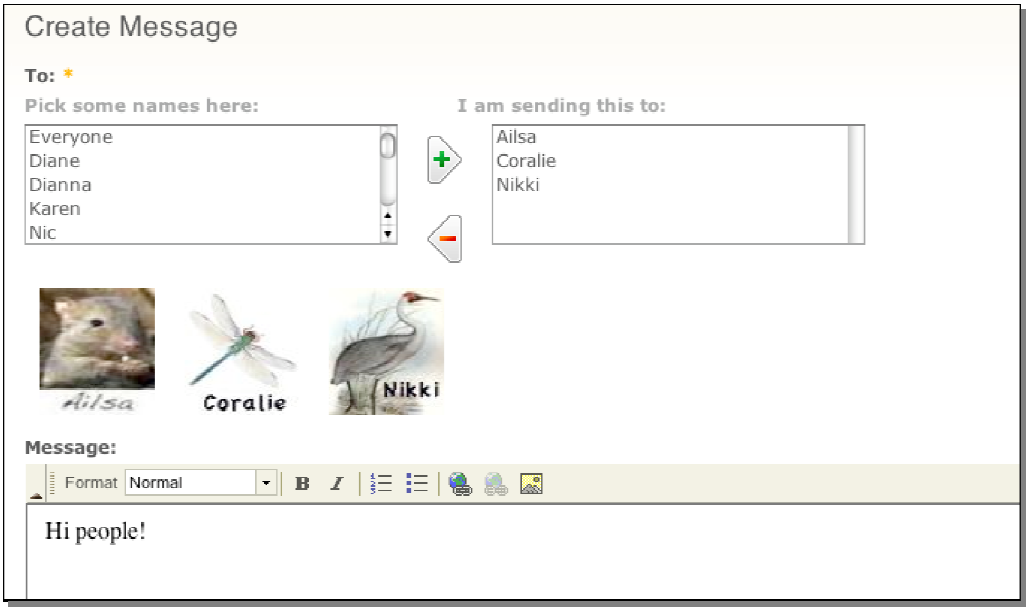

Figure 21 - Adding an improvement to the send MESSAGE

Although a few people used the message feature to write stories, this soon shifted to the use of the STORY area, so that all the stories would be kept together.

STORY

The STORIES on the probe were broadly categorised in the following areas: (1) cultural, (2) humour, 3) family history, (4) unexplained phenomena and (5) filling in the blanks. The earliest stories on the probe consisted of cultural stories regarding creation and the origins of their distant ancestors. Two examples of these are the stories about the Yamanie and the Red Dress people. These postings are listed in Figure 22 on the next page. The postings reflect important cultural information that the participants would like to be conveyed to the other members of their extended families.

The People of the Red Dress

Mon, 06/07/2009 - 8:20pm — Ailsa

This is a short story as we don't know a lot about them.I'm assuming They, as well as the Yarri Yarri, possibly have connections to our mob.They were a different group of people who lived in the hills across the lake from the homestead.Their colour was Red....Red ochure must have played a big part in their group.Everything had Red through it,what little clothing they had, hair and skin.Grandad said they were a very clever people, occasionally they worked on the Valley in return for tobacco and matches.

Yamanie Story

Fri, 15/05/2009 - 3:24pm — Yvonne

In the Dreamtime the Rainbow Serpent (Yamanie) lived around the Valley of Lagoons. One day he ate a young Aboriginal boy. The Aboriginal People chased him all the way up the river but he went underground. They saw his dust in the distance and crept up and waited until he was asleep then they speared him. Yamanie woke up and he was very angry and his tail thrashed around and knocked down all the trees except for a few. To this day only a few trees grow in the area.

The Aboriginal people killed the Yamanie and cut him open and took the young boy and put him on an ant bed for the ants to eat all the stuff from Yamanie's stomach which was on the body. When he was clean he woke up and was revived. That is the story of how part of the landscape was formed on Gugu Badhun country.

Figure 22 - Cultural stories

In the "*People of the Red Dress*" STORY, Ailsa documents the existence of a group of Aboriginal people who lived near her traditional lands. She mentions them in relation to another group, the Yarri Yarri, whom she tells about in another story. The basis for these stories is knowledge passed down to her from her grandfather. Yvonne's posting "Yamine story" is an account of how the area around her traditional lands came into being. The actions related in the story tie in with the look of the current landscape (lack of trees) on Gugu Badhun country.

As other women were added to the site in late July 2009, conversation turned to humour, in particular, telling joking stories about each other. An example of this type of content is shown in Figure 23 on the next page. The early stories reflect upon the humour to be found in daily life, and in dealing with children and other family members.

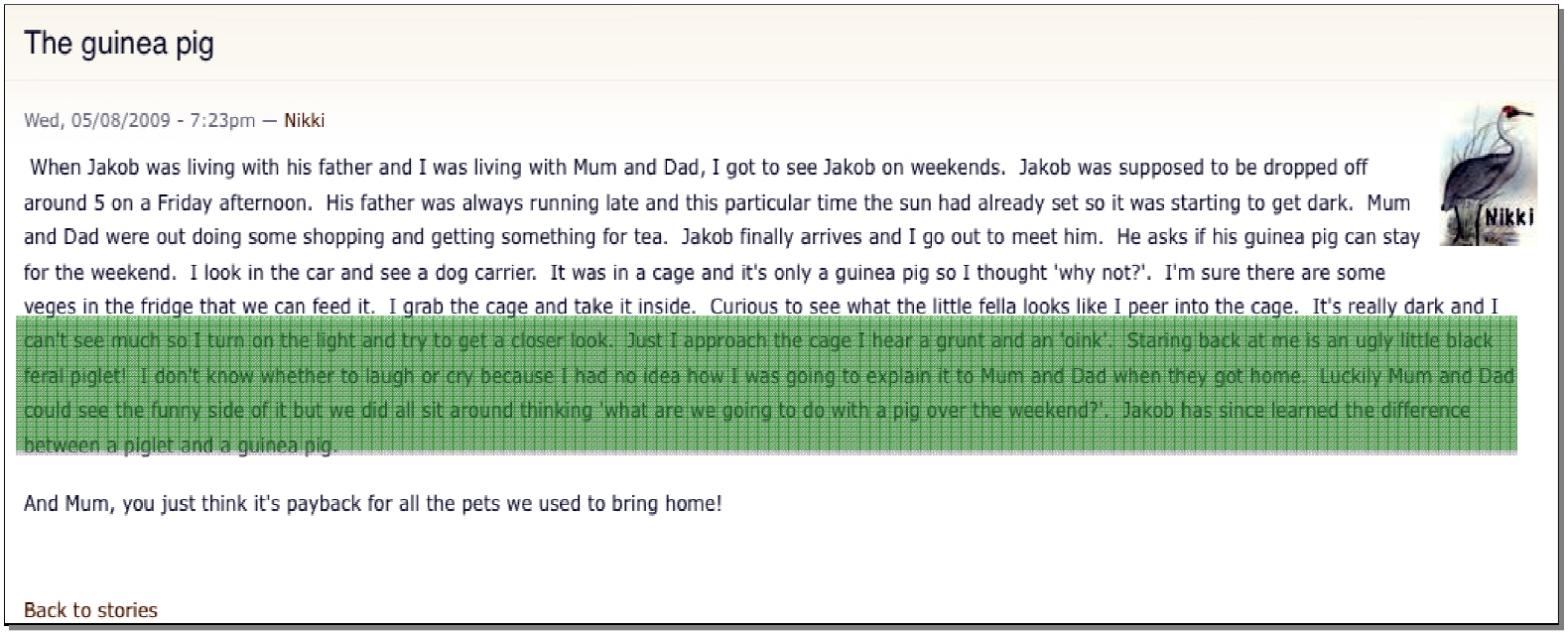

Figure 23 - Humour in storytelling

A large proportion of the stories on the probe site related to descriptions of the older women's youth in Malanda where they grew up, and tales about events that happened to their parents and grandparents. Many of these events helped form the group members into the people they are today.

Three stories in particular emphasize this point. In one, Roz mentions that when they were children and lived at a sawmill, their father constructed a cubby-house for them consisting entirely of scrap lumber found in a huge sawdust mound. The story hits quite a few key themes that are present in most of the stories about their parents: self-reliance, creativity, talent, initiative and kindness toward children. This entry from the probe is listed in Figure 24.

In another story, Val mentions that her father always made her be quiet when they went fishing, but she notices when she takes her children that they always catch something even if the children are playing loudly. Her presumption is that her father preferred the quiet. In a humorous reply, her daughter guesses that this is why Val always kept them quiet while fishing (Figure 25).

In a third story, two of the sisters reflect on growing up without much, and some of their pastimes (Figure 26).

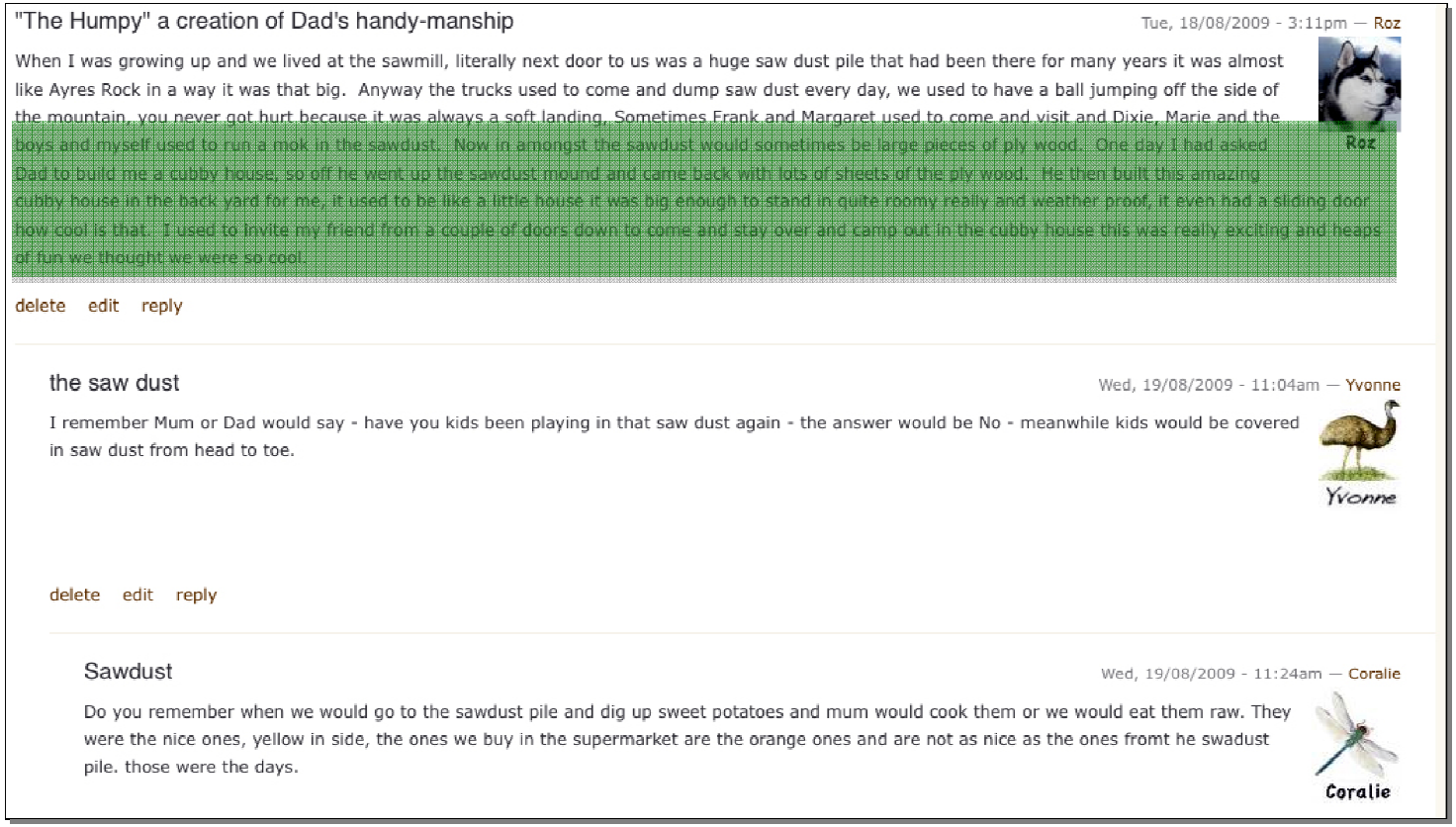

Figure 24 - A home-made humpy - family history story

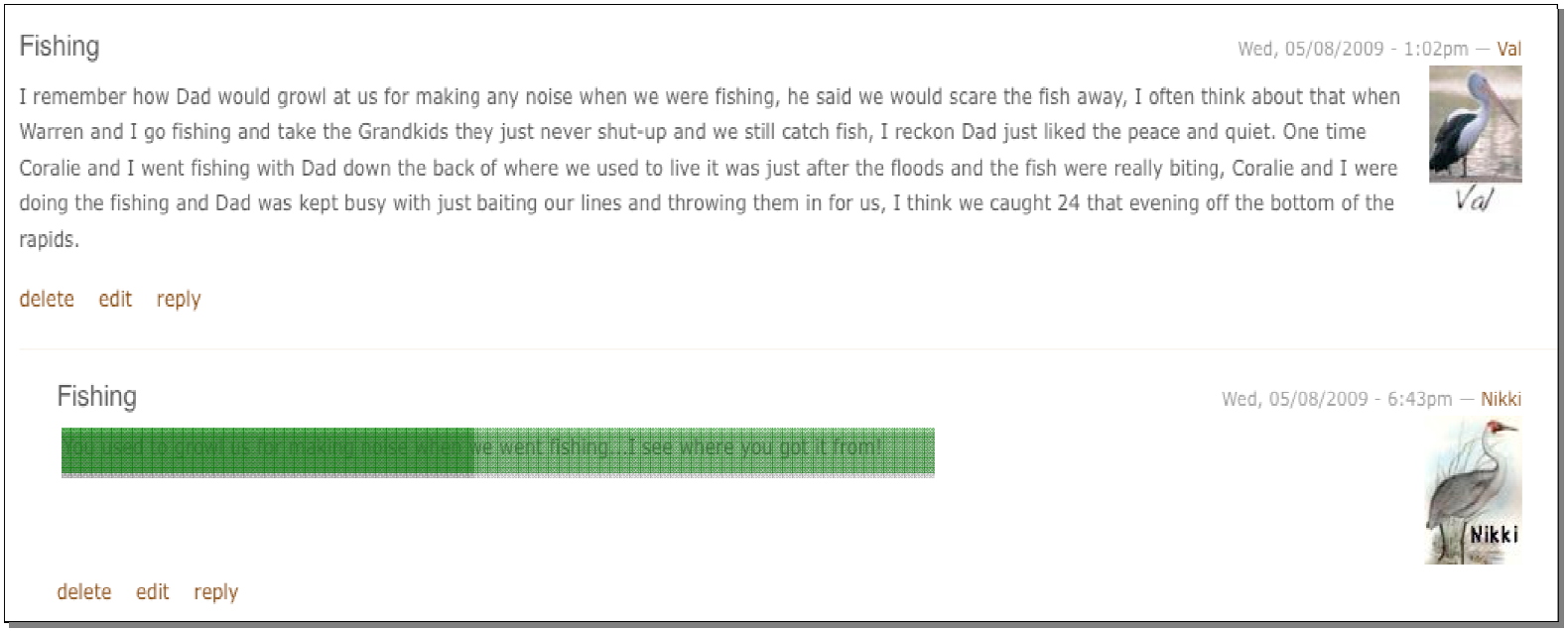

Figure 25 - A fishing story – family history

Figure 26 - Economic changes over the years – family history

In several (7) of the STORY postings, the women discussed unexplained happenings that they had experienced over the years. Diane reported that after she told her cousins a story about how her grandfather used to have to dive to find drowned victims in Lake Tinarroo, when the teenagers canoed on the lake they claimed later that they could feel “someone” trying to pull their oars under the water (Probe story 49). Although the participants did not state clearly a belief in spirits or other unexplained phenomena, the tone of the stories indicate a healthy respect for the unknown. In Figures 27 and 28, two of these STORIES are presented.

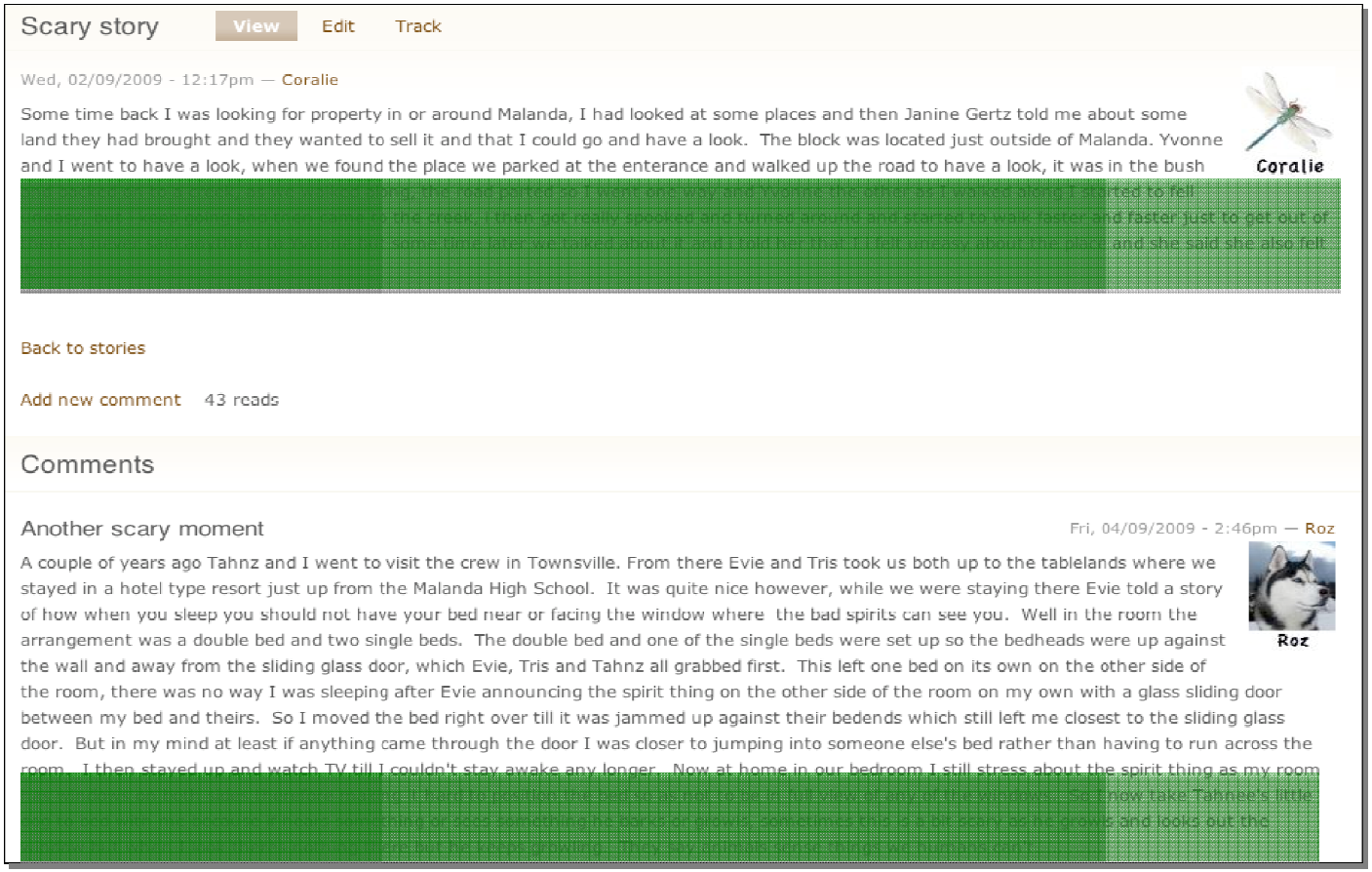

Figure 27 – Telling stories about unexplained events

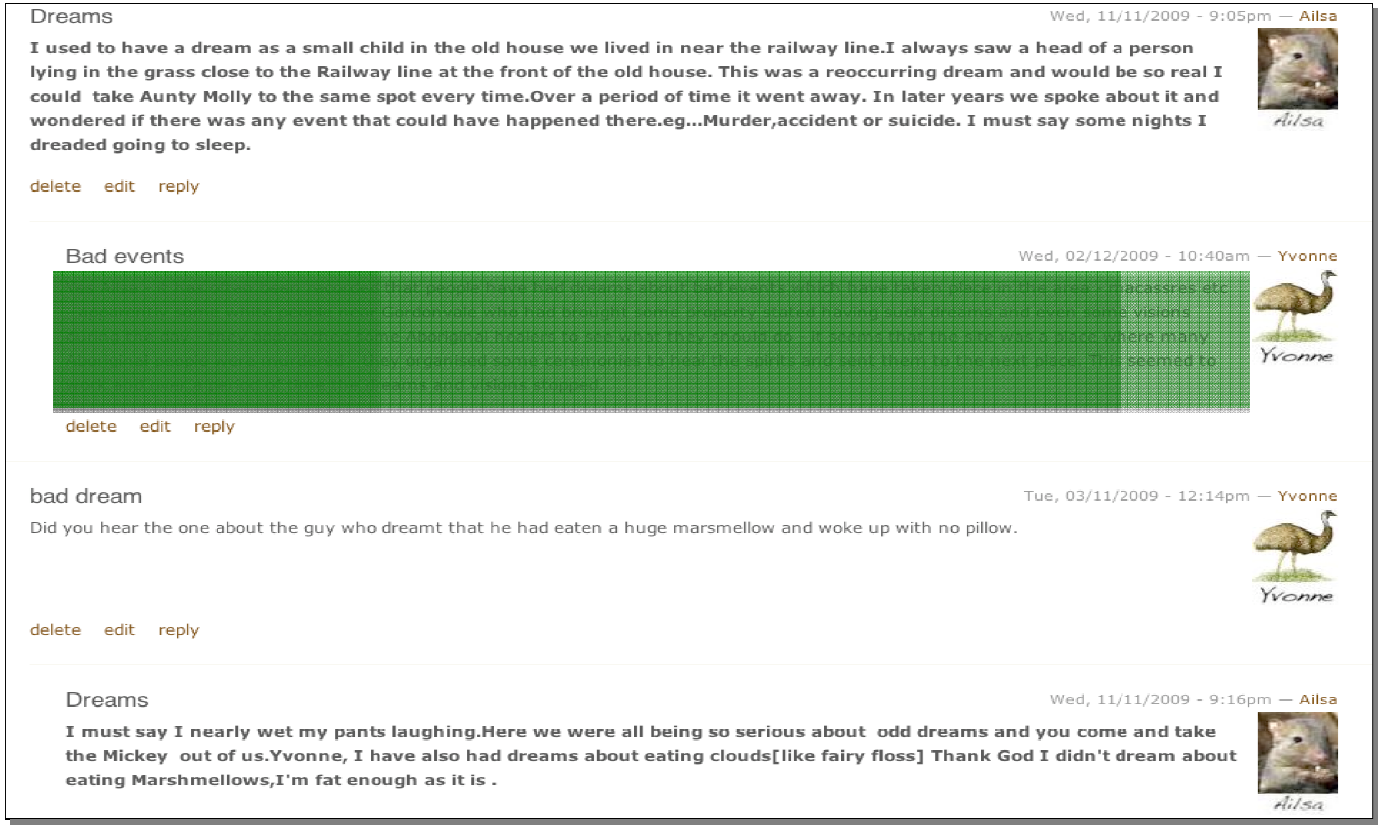

Figure 28 – Unexplained events with a twist

Tied to the idea of using the probe for passing on family or cultural history was the use of the site by younger members to request missing information from their elders. In one posting Diane related a STORY regarding her grandmother and great-grandmother. This description produced one of the largest amounts of comments in response from the women. The original STORY is listed in Figure 29 below; the ellipsis are from the original text and do not denote omissions in this case. The author (Diane) used them to show places where details are missing from the story and requesting for the additional information to be filled in by her relatives. Further analysis of this STORY is provided in the themes section later in this chapter.

In another STORY related on the probe (Figure 30), Val fills in the details regarding a STORY that her older sister told in regards to modern conveniences (mod cons). This occurred more than once on the probe and led Yvonne to quip that Val not only remembered all the details of stories; she never threw anything out. A STORY proving her point is shown in Figure 31.

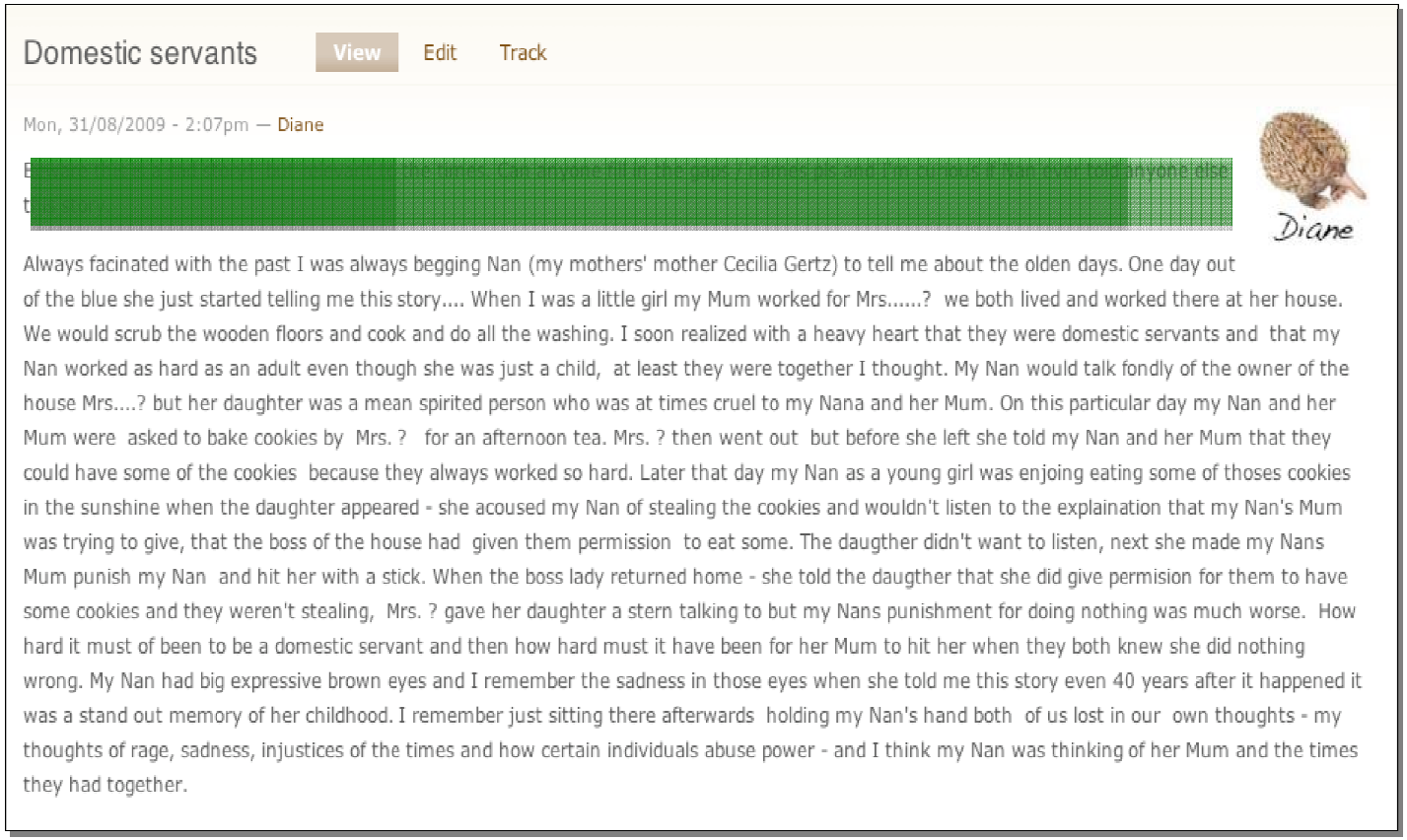

Figure 29 - Filling in the gaps

Yea for Mod Cons

Fri, 04/09/2009 - 12:52pm — Val

That was shellite in the iron and kerosene in the laterns and we also had a kerosene fridge after the ice scenario. Dad taught us to use finely crushed charcoal to clean our teeth once a week and seriously that made them really white. When the mower was worn out and we couldn't afford a new one Dad cut the grass with a cane knife. I remember when the electricity was first put on at the old house on the hill and we had one power point in the kitchen, one in the front room (as we used to call it) and one I think in what should have been the lounge room, we had a wood stove so didn't need power for that and not all the rooms had lights. there was a radio or wireless as it was called in those days in the front room and Mum would listen to Blue Hills at 1pm every week day with her cup of black tea and saos and we would all listen to Dad and Dave in the evenings. We would buy newspapers every day that they were available and each Sunday that was the highlight of the day going into Malanda to collect the papers. Us kids were also allowed to have a couple of magazines I remember was called Playhour which was for young children and the other was for teenagers.

Val

delete edit reply

more mod cons

Mon, 07/09/2009 - 12:39pm — Yvonne

[redacted] that the light from the electric light was so dull you could hardly see anything at first - we would be sitting up late at night trying to see to do our homework. What about the first time we saw TV - the family up the road had it first and we would all pack up at night time (TV was only on for a few hours each day) and go to their place to watch the shows - I remember some cowboy serials and Mr Ed - Dad would laugh and laugh at that stupid show.

Yvonne

Also remember first time using a computer at uni - the main frame was so big it took up one wall of the computer lab and you had to type in a whole range of information before you could actually do your work - printing was done on a common printer which was big and printed out on large paper - you had to wait in long ques to get your printing. My friend and I used to go to uni at 3am and work until 5am because there was only 1 lab for the whole uni. Then we had the supposedly portable Macs which used to break your arm when you carried them as they were so big in comparison to what we have today.

Figure 30 - More filling in details of stories

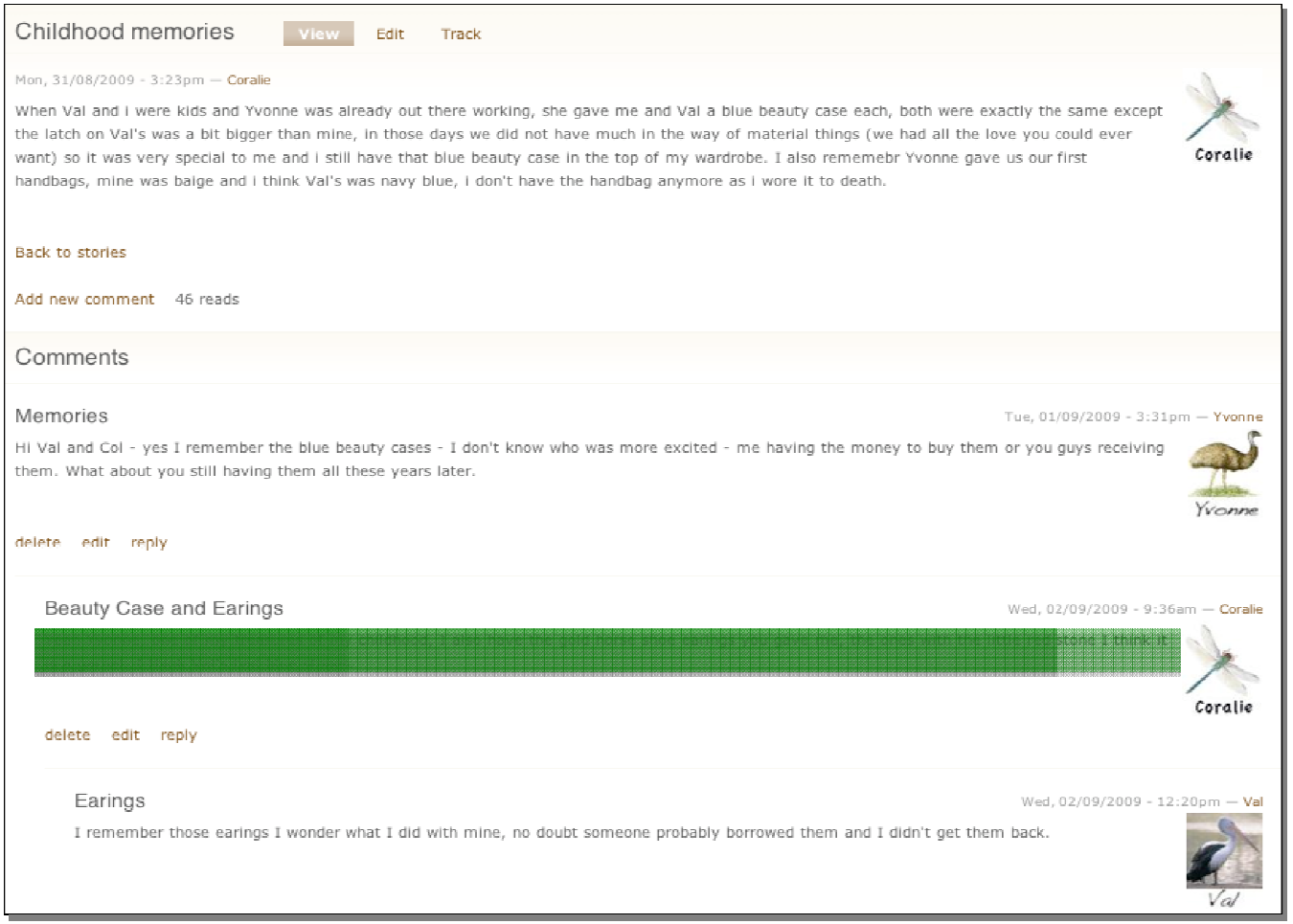

Figure 31 - Childhood keepsakes

These five categories of stories reveal aspects of the participants lives that they wish to share with each other; a shared connection via culture, family history, and humour. The women used the probe as an opportunity to support their busy lives and to fill in the gaps between themselves and in stories that make up their familial and cultural network.

IMAGES

Over 130 separate images were uploaded by the participants during the year that the probe was in use. Only four of the women added IMAGES (Ailsa, 2; Coralie, 20; Nikki, 109; and Yvonne, 1). Nikki was by far the most prolific in uploading of images. The topics for the images fell in 4 main categories: (1) cultural camp, (2) news, (3) our lives, and (4) old photos. Table 16 below describes the frequency of these entries.

Table 16 - Categories of images

General topic	% of total
Cultural camp	27%
News	11%
Our lives	37%
Old photos	25%

Three subsequent years of pictures make up the cultural camp category (2006-2008). Images from of this type show members engaged in typical activities from these camps. News items consist of recent noteworthy events for the group such as a daughter's wedding and high school or university graduations. The 'our lives' category reflects images that the participants wanted to share with each other regarding their current lifestyle such as work environment or home renovations. The final category 'old photos' consisted of images sourced from members and photos taken from the language CD produced in a prior project.

IMAGES did not accrue replies as often as did the STORIES, but were often used in a way of supporting the content of STORIES posted. In one story, a group member related that going to the local Show Day was a bit event in her life when she was a child. Another poster uploaded an image of girls from the same family attending the Show in support of this story. In another STORY a woman described a pedal-car that had made its rounds through the family, being handed down from child to child, and then to various cousins. An image of this car was then uploaded by another group member (see Figures 32-35 for examples of these images).

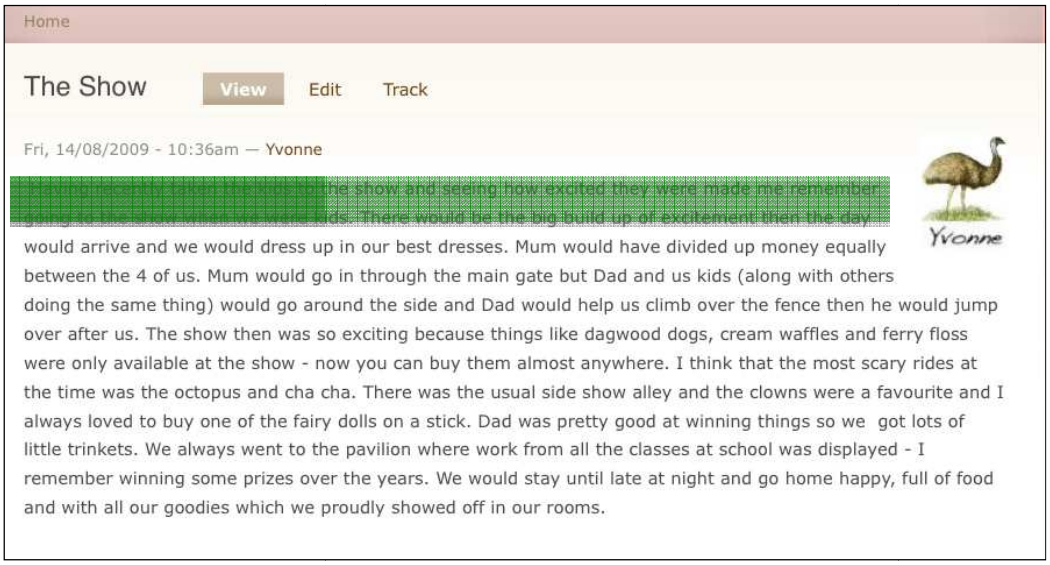

Figure 32 - Story about attending the Show

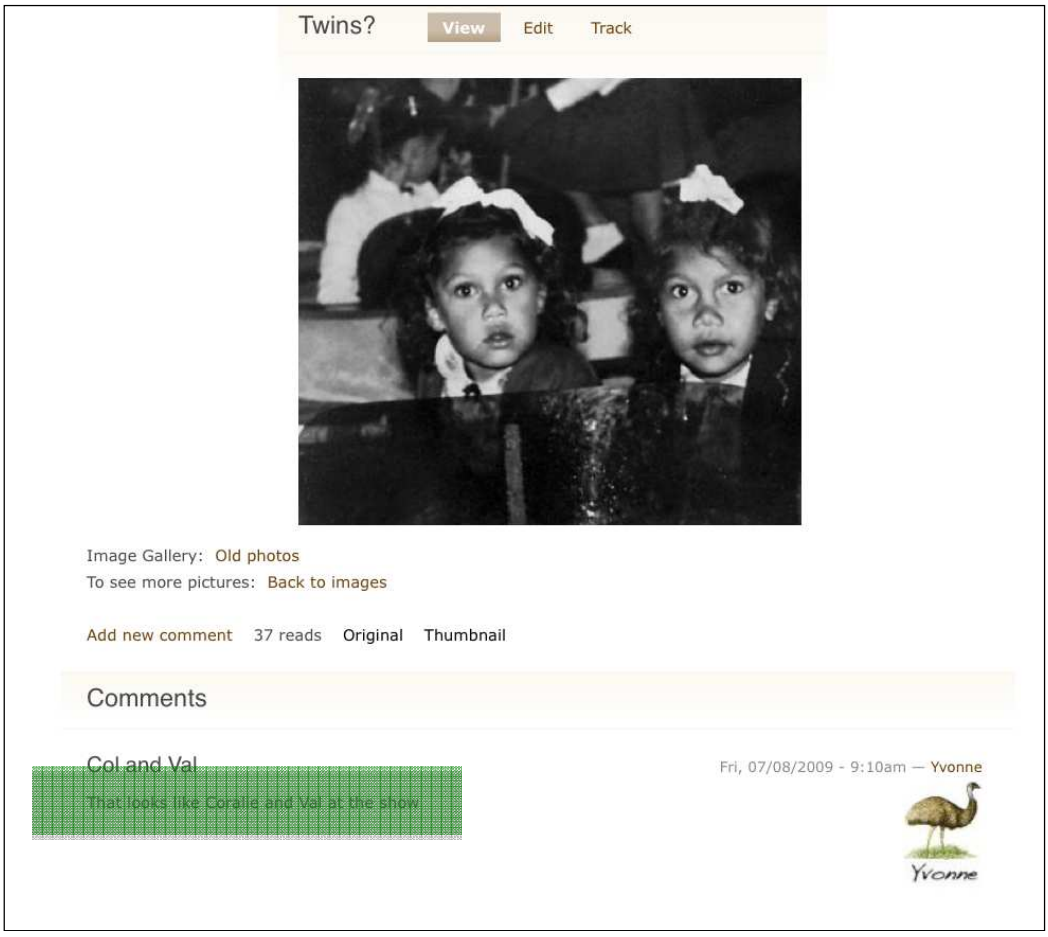

Figure 33 - Supporting photo showing sisters attending the Show

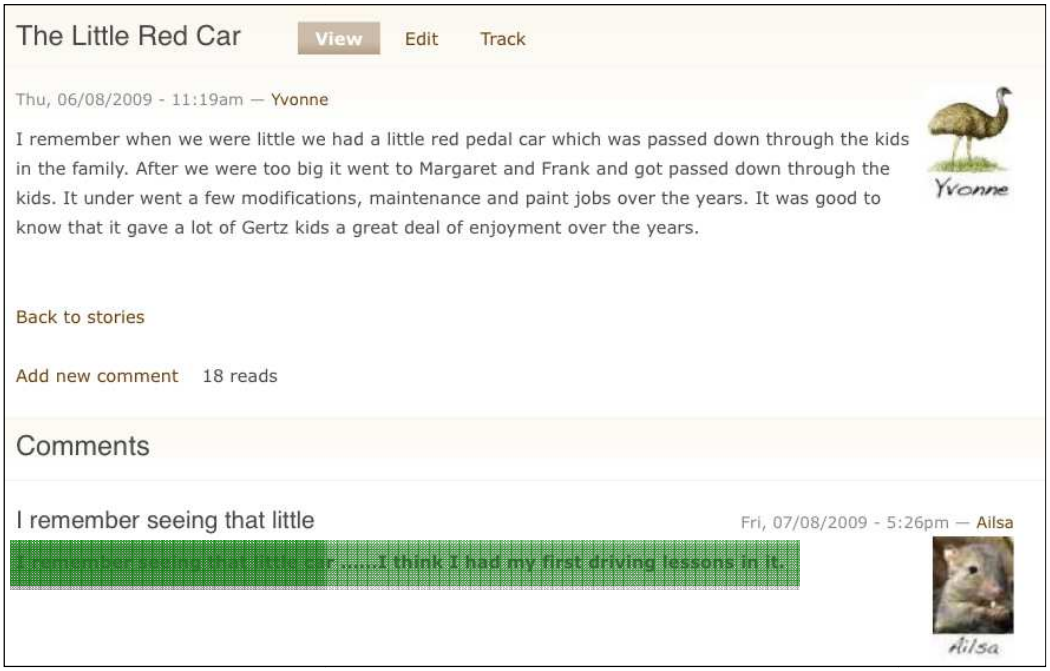

Figure 33 - Story about an old pedal-car

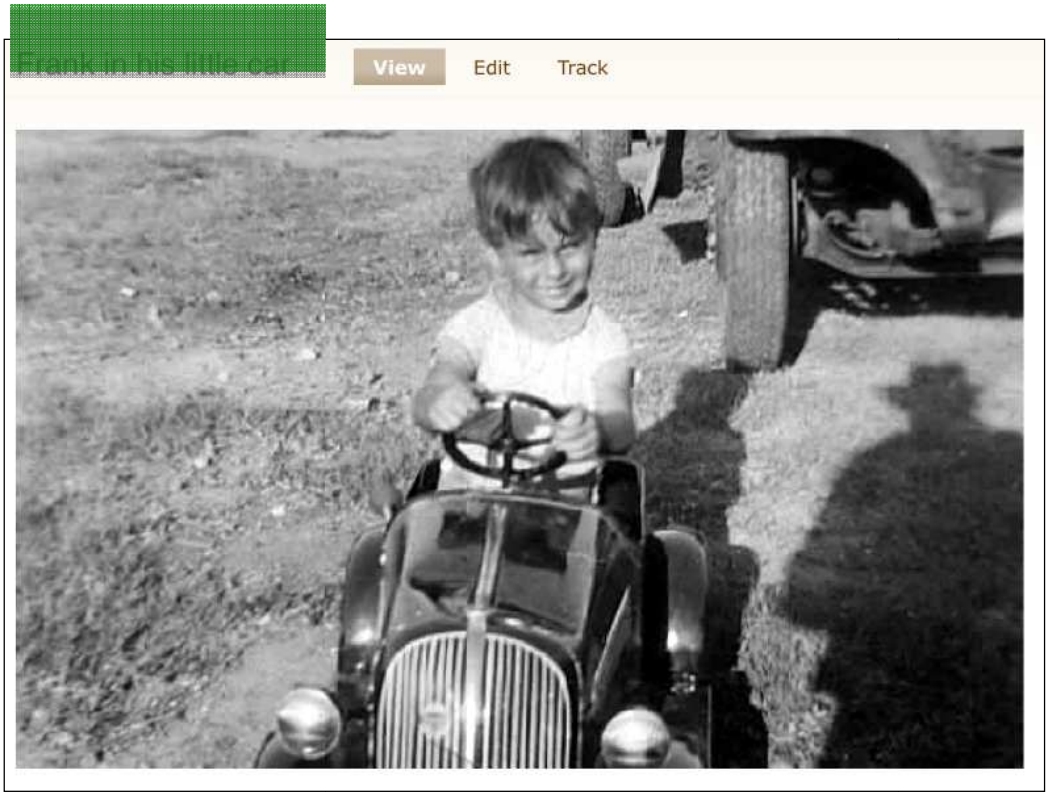

Figure 34 - Photo supporting the pedal-car story

The images uploaded to the probe site show aspects of in-person storytelling that have been translated to the digital interface. Telling stories, adding more information to fill in the areas that others do not have, and showing photographs that depict the stories are all ways that the women communicate when they are together. The probe site allowed them to further this interaction even while separated by distance.

MY MOB

During the focus groups in Cycle 1, a particular item of interest for the participants was the idea of recording their genealogy through a family tree, or a similar sort of approach. In discussing this idea, the research team realized that there might be cultural relationships that are not easily defined through the traditional, Western, hierarchical representation of a family tree. In order of gather this information, but not restrict the participants to a particular ordering of family members, we decided to provide a blank slate that people could use in any way that seemed reasonable to depict their families. The result is the MY MOB section, shown in Figure 36 below.

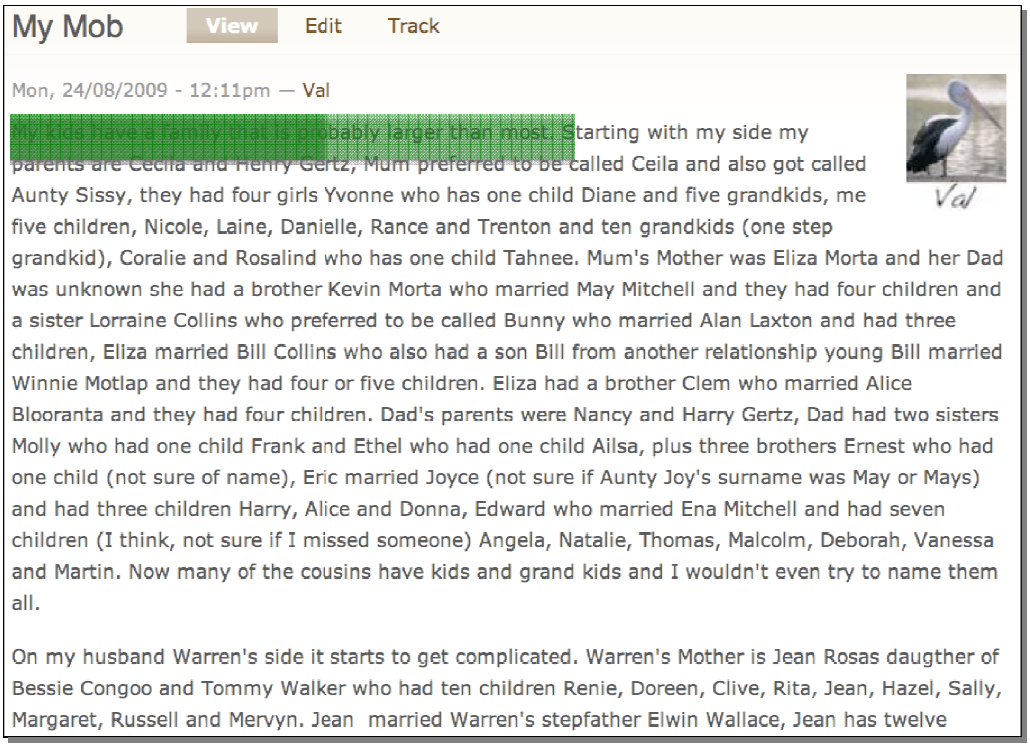

Figure 36 - A My Mob posting

As part of their Native Title Claim before the High Court, the Gugu Badhun constructed a very complete Family tree with the help of an anthropologist. This family tree was widely distributed among the group prior to this cycle of the project. Perhaps due to this situation,

interest waned in producing a second version on the same information on the probe site. Ailsa and Val both created a written description of their family that garnered a few comments from other participants.

5.4.3 How does usage of the probe and the content posted there relate to items prioritised in Cycle 1?

Analysis of the content posted on the probe shows that many participants used the site frequently, sometimes on a daily basis. Others, with more limited computer time or access, used it less frequently. Although some postings were short (less than 100 words), in general the content posted was made up of long (over 250 words) interactive postings. In several cases, responses to a story were 5-10 comments long, each adding more information. Additionally, discussion about a particular topic sometimes inspired a participant to write her own story about a situation or happening. A significant use of the probe was seen in the area of younger women requesting the older women to fill in the blanks for them on stories that they had heard over the years, but for which they did not have complete details. In this section the findings are detailed regarding how these usage and content patterns mesh with the items prioritised in the first cycle of the project.

Facets of storytelling

The stories told (or uploaded) to the probe site reveal facets of the process of storytelling for the Gugu Badhun. In this section I will examine one particular story in reference to the following activities: (1) filling in details, (2) conveying changes in economic and power circumstances, and (3) sharing emotions with family members.

Figure 37 shows the original entry for a story named “Domestic Servants” where a younger participant is requesting information from her mother and other relatives. A discussion regarding the components of this story and how they related to the research question follows.

Domestic servants View Edit Track

Mon, 31/08/2009 - 2:07pm — Diane

Beware this is a sad story! but relevant to the times. Can anyone fill in the gaps / names pls and I'm curious if Nan ever told anyone else this story.

Always facinated with the past I was always begging Nan (my mothers' mother Cecilia Gertz) to tell me about the olden days. One day out of the blue she just started telling me this story.... When I was a little girl my Mum worked for Mrs.....? we both lived and worked there at her house. We would scrub the wooden floors and cook and do all the washing. I soon realized with a heavy heart that they were domestic servants and that my Nan worked as hard as an adult even though she was just a child, at least they were together I thought. My Nan would talk fondly of the owner of the house Mrs....? but her daughter was a mean spirited person who was at times cruel to my Nana and her Mum. On this particular day my Nan and her Mum were asked to bake cookies by Mrs. ? for an afternoon tea. Mrs. ? then went out but before she left she told my Nan and her Mum that they could have some of the cookies because they always worked so hard. Later that day my Nan as a young girl was enjoing eating some of thoses cookies in the sunshine when the daughter appeared - she acoused my Nan of stealing the cookies and wouldn't listen to the explaination that my Nan's Mum was trying to give, that the boss of the house had given them permission to eat some. The daugther didn't want to listen, next she made my Nans Mum punish my Nan and hit her with a stick. When the boss lady returned home - she told the daugther that she did give permision for them to have some cookies and they weren't stealing, Mrs. ? gave her daughter a stern talking to but my Nans punishment for doing nothing was much worse. How hard it must of been to be a domestic servant and then how hard must it have been for her Mum to hit her when they both knew she did nothing wrong. My Nan had big expressive brown eyes and I remember the sadness in those eyes when she told me this story even 40 years after it happened it was a stand out memory of her childhood. I remember just sitting there afterwards holding my Nan's hand both of us lost in our own thoughts - my thoughts of rage, sadness, injustices of the times and how certain individuals abuse power - and I think my Nan was thinking of her Mum and the times they had together.

Figure 37 - Probe story # 48

Most of the stories that had been posted on the site previous to this one had been either humorous recitations of children's antics or cultural stories far removed from the present day. With this posting, Diane used the WOTM site to ask for information, with a warning "Beware this is a sad story! But relevant to the times." She relates where she heard the story and reveals her interest in the past. Since the story is about her grandmother (Nana), this incident has merit not only as a history lesson, but as a terrible incident that someone in her family had to endure. She is using the medium of the web site to gather further information regarding the story even though she currently lives in the same town as her mother. This shows that the usage of the website encouraged discussion of ideas that had not occurred to a person even when seeing a family member daily.

All three of the other women who participate in this story string offer information regarding this incident from their point of view. The other participants in this interaction are Diane's cousin (Nikki), aunt (Val) and mother (Yvonne).

> Nikki:
> I remember Nanna telling me that story. I think it was the [name removed] family but I could be wrong. They were a big family and owned a lot of properties. (Probe Story 48).

Diane uses the text-speak abbreviation "pls" for the word "please", and Val prefaces her comment using Nikki's name so that she will realize that the comment is addressed to her and not to Diane as the story's originator. These are adaptations from actual speech to that used on other ICT mediums such as SMS or chat rooms. The fact that they do not cause an obstruction in the flow of communication reveal that they are well accepted by the group.

The topic of power and racism present in this story leads to a discussion of these issues in the follow-on comments. First Val addresses the change in economic situations between then and now.

> Val:
> Nanna was 10 when she started working and I think they had to walk quite a

distance to work. When we went to visit her we had to leave the car at the top of the slope and walk down a track that was flanked on both sides with Guinea grass that would be way above us kid's heads.

This discussion leads to the topic of how the older people had to strive hard for basic necessities, a situation very different from the members of this group presently.

Col:
Yes Diane, I remember my mum telling me that story and as I sit here reading it I am crying. Mum also told me that she and her mum would get a half a cup of black tea and a piece of bread and dripping for their food and that Nanny had to go to the police station in Yungaburra and ask the police man for her wages, she was only allowed the right amount of money for what she wanted to buy.

But you know what mum never ever showed any poor bugger me, she just got on with life, mum and dad taught us kids that we were just as good as anybody else and to be proud of ourselves.

Nikki:
I loved my Nan, she was so amazing. I can't imagine what her life was like as a young girl or even a young woman because she was just my Nan. I often wonder about the sorts of things that the old people had to go through and they still managed to be able to read and write, get a job and provide for their family. It must have been a constant battle with all the barriers they faced but they took it in their stride to make life better for their kids and grandkids and future generations.

Yvonne:
Yes Nikki - if I am ever asked to give an example of a strong woman I have no hesitation in naming my Mum, your Nanna who was always there for us, went without and just got on with life - I think that if she had been born at a later time she would have had different opportunities which meant that she would have had access to a whole range of things which might have meant different outcomes for

her not that she complained. But what I am thankful for is that for me she facilitated an environment where I had the confidence, capacity and knowledge to take advantage of opportunities in my life allowing me to achieve what I have in life. I hope that I have been able to pass this onto the next generations in my family.

These comments showcase the attitudes and initiative that the Gugu Badhun women perceive to form the foundation of their group. Consistently the women report that people should not bemoan their fate, but get to work to improve it. The comment of "Mum never ever showed any poor bugger me, she just got on with life" reveals this very strongly. Yvonne's comments show that she views her parents as role models for how she should act, and that she has traits that she feels a responsibility to pass down to her family.

In one of the lengthier replies in the story, Yvonne relates her experiences with racism, however she downplays them as not being on a par with what was experienced by her parents and grandparents.

Yvonne:
I can't even begin to understand how it must have been to experience life in those days.

My experiences of power and racism were mild compared to that. Once when I was doing nursing training I was the only main nurse on night duty in the busy male ward - an American guy had just had a major operation and pressed his buzzer to ask for pain relief - when I got to the bed and pulled the screens around and switched on the night light he was taken aback and said he wanted to see the nurse - I said that I was the nurse and he said that he wanted another nurse - it took me a little bit to catch on but then I realised that he wanted a 'white' nurse.

Another experience I had was with a bunch of nurses going to Cairns for the weekend and we ended up at some pub where one of the nurses brothers was staying - he was a salesperson for a major company and a lot of the salespeople stayed at this particular pub when in town. After we had ordered out drinks the

> manager came out and said that we weren't welcome in the pub and when questioned why it was clear that I as the only Aboriginal person was not welcome.
>
> When I worked at the old Darwin hospital I applied to go to Canberra to do my midwifery - I had to have an appointment with the matron at the time to get permission to have a year's leave of absence - I got grilled about wanting to do midwifery and during the interview the matron had to go outside to find some files and with that I leant over and saw what she had written on my midwifery application - it said 'don't know about this Aboriginal nurse's ability to complete the program' or something to that effect - well I passed with flying colours.
>
> I could go on with other experiences but won't as it gives voice to these poor people who are limited in their thinking (Probe Story 'Domestic Servants').

A consistent theme throughout the original telling of the story and the responses from the other women was that the incident had powerful emotional significance for the family members. The retelling of the story allowed them to share in these emotions and to reaffirm their connections as family members and as Gugu Badhun.

Individual, Family & Group Responsibilities

The participants take very seriously their responsibilities to their immediate family and their larger group. These obligations fall within the spheres of individual, family and group involvement. While Yvonne's generation was the first to attend university, their family has always emphasized education as important. Both Yvonne and her sister Val started their academic career with nursing training. However, it took some action on their parents' part to provide them with the opportunity to do so. The story 'Making it happen' relates to this theme.

Yvonne:
I will always be grateful for Mum and Dad making sure that we had a good education. Because we did not have a lot of money I remember them going without so that we had the things necessary to fit in and achieve. Most of all I am grateful that we were bought up in an environment of 'you can do whatever you want to do' and when we got good marks it did not seem to be a big surprise rather it was an assumption that well yes why wouldn't you do well. Of course they were very proud of us.

One particular event I remember was Dad - while he was always interested in what we did it was really Mum who made everything happen so I was surprised when Dad parked the car when dropping me off at school one morning - usually he dropped me off and kept going to work. I asked him what he was doing and he simply said where is the Principal's office. I did not have a clue what was going on.

I found out later that the night before he had heard Mum and me talking and I had said that I was having problems at school because girls could only do Science subjects if you were looking at doing a full science degree at university - I just wanted to take some subjects because I wanted to do nursing and that wasn't allowed.

After Dad's brief meeting with the Principal I was allowed to do the science subjects - don't know if it had something to do with Dad's size and approach but I was happy.

Reply from Val:
You are right there was always an expectation that we would do well, in fact I remember on a couple of occasions worrying that I hadn't studied hard enough when I came 7th in the class exam rather than my usual 3rd or 4th, classes were large usually around 30 students (Probe STORY – 'Making it happen').

Figure 39 - Probe STORY 'Making it happen'

Diane:

Roz took a while to settle in to School and would run home regularly Nan finally tea towel flicked her to shoo her back to School both of them crying. Way back then Nan had insight to the value of education and wanted her girls to be educated and in turn empowered (Probe – School).

Figure 39 - Probe STORY 'School'

These stories display a belief of the women that personal accountability along with help from the family is key to providing a supportive environment where children can thrive. In the 'Making it happen' STORY Yvonne relates a situation where due to bias common at the time, female students were not allowed to take science subjects unless they were planning to attend university and do a full degree in science. Her father's actions convinced the high school principal to make an exception for Yvonne in order to allow her to study nursing and show his dedication to his children in assisting them to achievement through higher education. Diane's STORY echoes this theme, by showing how her grandmother walked her daughter (Yvonne's sister Roz) back to school via a flicked tea towel, even though she was quite sad at having to ignore her daughters cries. Although Yvonne's mother had not attained a high level of education herself, the story shows that she was determined to have better outcomes for her children.

Many of the postings on the probe site describe situations that still stir the group members to an emotional response. Frequently the participants replied to stories or images on the site saying that they were "sitting here laughing" or "sitting here with tears" in regards to content on the site. The emotional aspects of the probe and the women's feelings regarding it, and how this affected their well being is discussed in the next chapter.

5.5 Next steps and summary

In this cycle of the PAR process, the participants made use of a custom-designed technology probe, geared toward supporting the communication and documentation activities the women defined as important in Cycle 1. The content posted on the site surrounded five themes: (1) cultural, (2) humour, (3) family history, (4) unexplained phenomena and (5) filling in the blanks of family stories. This chapter has reported results from Cycle 2 of the project; interaction with the technology probe. First the statistical results regarding the probe were presented, followed by a descriptive and thematic analysis of the content created on the probe.

Following the conclusion of the probe phase of the research, the project team held a series of focus groups to consider how the probe met their needs for interactions, how this site could be improved, and what steps that they were interested in taking in order to move beyond the temporary aspect of the probe. The next chapter concludes the results portion of the thesis, and will report the information obtained from the last cycle of the PAR process.

Chapter 6

Pulling It Together: Focus Groups

6.1 Introduction

This chapter completes the presentation of the findings by describing the final cycle of the study that consisted of concluding focus groups. Two wrap-up meetings were held with the participants to gather information regarding feelings about the project as a whole. The general focus for the discussion during the meetings centred upon the research team members' feelings regarding the research process, opinions about the effectiveness of the probe and overall plans for the future in regards to ICT. In this chapter, the activities for this part of the project are given first. Next, the data from this cycle are analysed in regard to two research questions. The chapter concludes with a summary of the findings from this research cycle.

6.2 Description of activities for this cycle

During Cycle 3, the research team engaged in two focus groups, designed to access the jointly produced knowledge that had been created during the project. The first focus group for this cycle was held via a conference call with 6 participants who were located in Darwin, Cairns, Townsville and Brisbane. The second meeting took place in Greenvale with Ailsa and Yvonne. Table 17 lists the participants and locations for these interviews.

Table 17 - Location of participants for focus groups in Cycle 3

Interview code	Participants	Location	Date
TC	Roz, Col, Tahnee	Darwin	
	Val	Cairns	
	Yvonne, Researcher	Townsville	
	Nikki	Brisbane	
A4	Yvonne, Ailsa, Researcher	Greenvale	

6.3 Presentation of data from concluding focus groups

Two research questions were emphasized during the focus groups: (1) how did the probe fit into the participants' lives? and (2) what were the effects on wellbeing? Two stages of analysis were used in order to produce the results described below. Firstly, the comments made by the team members during this cycle were evaluated using descriptive and thematic

coding to determine the major areas of interest from the point of view of the participants (Saldana, 2010). Secondly, the transcripts from the interviews were analysed focusing on the emotions or feelings that were reported by the women (Goleman, 1995). The findings from the focus groups are reported next, grouped under the research questions.

6.3.1 How did the probe fit into the participants' lives?

Using the probe site

Usability is often defined as a measure of how easy a site or application is to use (Nielsen, 2003). Although the technology probe was not intended to be a prototype, it provided information regarding the participants' priorities in making use of ICT. During the focus groups the participants were asked, "How did you feel about using the site"? Five categories of use were described by the research team: (1) ease of use, (2) keeping in contact, (3) building up and correcting stories, (4) using the site as a teaching and learning tool and (5) a new opportunity. These types of uses are illustrated next.

Ease of use

In describing their experience in using the technology probe, the participants offered many positive phrases such as "it was great", "it was just so simple to use", and "I thought it was really good". One of the women explained, "I found it easy because it was a little bit like using email. I guess we use that all the time, so it didn't bother me at all" (Val, TC). Her sister replied, "Yeah, that was the beauty of it, it was just so simple to use, I think for me" (Yvonne, TC). Another woman described visiting the site on a daily basis: "I thought it was really good and I go in every day to have a look. I get disappointed if there's nothing there" (Col, TC). Her present tense use of "I go in every day" implies that at the time of this interview (6 months into the probe deployment), she was still actively using the site.

After multiple questions regarding "are you sure there wasn't anything on the site that was difficult to use", near the end of the interviews, four of the women finally admitted that "occasionally" they had problems with the site. The issues raised were regarding uploading images (due to size constraints) and navigating within the site (due to bandwidth issues and site structure). These comments are described in more detail in the 'planning next steps' section as they had bearing on design choices made by the participants.

Keeping in contact

In the Cycle 1 focus groups, the participants described a lack of connection between Gugu Badhun people due to distance. These issues were mentioned as a primary driver for their interest in conducting the research. This theme was carried through in Cycle 3 when three of the participants who were added to the project voiced the same concerns. These women

spoke about how the probe site had been useful to them in keeping in contact with geographically distant family members.

> Roz:
> Up here in the Northern Territory we don't really keep in contact as much as I would like to with them outside of Darwin, so for me it was a great way to sort of like be talking to other people without physically needing to see other people, say family (TC).
>
> Val:
> It's really nice to get on there and have a laugh about something or keep in contact with you know people because, otherwise it's only going to like you be our mob come up and the Gertz' there for Christmas or something or for some reason you ring somebody (TC).
>
> Nikki:
> I thought it was great because, yeah just hearing all the uh, reading all the stories, because we don't get together too much anymore and to just physically, you know tell each other the stories. It was a good thing to read the stories and go in and check every day or so to see what was new (TC).

Even though these women were not involved in the design portion of the project, they acknowledged the same issues related to the sense of distance between members; a feeling of disconnection from other people in their group due to geographic constraints. Val related that rather than keeping in contact with the entire Gugu Badhun group, she tends to only see those from her immediate family. Nikki revealed that for her reading the stories on the probe allowed the relaying of stories, something that she misses due to the geographic distance between herself and the rest of the family.

Building up and correcting stories

While the participants often created new stories and content, the feature most frequently used was the reply functionality. As reported in the previous chapter there were 160% more replies than original postings. This figure rises to 330% when looking at stories alone. A common use of the reply area was to add more details to a particular story or an image. Yvonne noted this usage in her comment below.

> Yvonne:
> I liked how someone put up a story and it just grew from that. You know, and then

> people added and they gave thoughts to other things to put up there. So that was really excellent. I loved all the photos, Nikki, that was great. And your new ones, but particularly some of the old ones I hadn't seen before (TC).

Three types of content extensions are described here. In the first, participants added details to the current story. In the second, users created new stories inspired by the telling of a previous one. A third method of adding content was the usage of supporting images, generally uploaded by Nikki, Val's daughter. Regarding the source of the images she stated:

> Nikki:
> They are all from the GB language CD. Yeah, and some that Mum had that she'd scanned in. I picked some of the best that I could to kind of fit in (TC).

A well-known aspect of reminiscing is that the person relates the details of the story as they remember it. In the stories on the probe, the women often fill in missing information, and correct each other regarding specific aspects of the tale. Yvonne brought up this point during the interviews.

> Yvonne:
> Yeah, I guess identifying the people in those old photos was interesting for me to find out who they were and how they were connected. But, I guess once again, it just goes back to some memories you have and then somebody else adds to them, so you get the, you had forgotten about that bit of it, so to be reminded by somebody who had better memories of that was really useful.
>
> Col:
> Val, is just like, she knows everything, like, knows who is who.
>
> Yvonne:
> Yep!
>
> Col:
> And I never remember those things and it just makes me laugh. But Val, remember Yvonne said something about irons and you said, it's not that it's something else.
>
> Yvonne:
> What did I say?

Val:
I can't remember what you said it was, but it was the wrong thing that you put in there.

Yvonne:
That's right, yeah, yeah.

Col's remark that Val knows all the details of stories requires Val to fill in the details of a yet another story, again reinforcing her reputation as the one who remembers everything. This incident is raised again in the focus group meeting in Greenvale with Ailsa.

Yvonne:
Val has everything down to a 'T'. We're talking about what to put in the kerosene lamp or that iron or something, and she comes back with "no, it was shellite".

Ailsa:
Yeah, it was shellite.

Yvonne:
And I'm like, whatever (Yvonne and Ailsa, A4).

Shellite (an Australian brand name) is a derivative of petroleum. Also known as white gas or white spirit, it is highly flammable and is commonly used as lighter fluid or in camping stoves. Since kerosene is potentially explosive, this was an important detail for Val. Ailsa remarked, "if you put kerosene in there you would have blown us all up!"

During the telling of the stories on the probe, Yvonne discussed using some of the first money she earned to purchase little presents for her younger sisters, in this case small beauty cases. She was astonished to discover via comments on the probe site that all these years later that her sisters still had these early gifts.

Yvonne:
When Val did up her room [during nursing training], her colour was orange at the time, and she's still got those bloody, lace, the mat and the lace curtains. And I

couldn't remember if it was little snowflakes, orange snowflakes on white curtains or whether there were dots and she said they were snowflakes. Like, wow.

Dianna:
It's interesting what people remember.

Ailsa:
Or what somebody will keep!

Yvonne:
But one thing I didn't actually know is all the stuff that I bought Valda and Coralie, did you see those comments? They actually still had them (A4).

These comments indicate that use of the probe site helped the women relay information that they did not normally discuss.

Site as a teaching and learning tool

Many of the participants mentioned that reading the content on the probe site was like "a history lesson", in that it gave them more information about their family's past. The value of these history lessons was reported two-fold: for themselves and for their children. Roz and Val both discussed the importance of the site in telling the family history as it applied to them personally.

Val:
It was really good to get online and actually talk about you know like what we did when we were kids and I think the sharing with other people (TC).

Roz:
It's kind of like being a big history lesson for me as well…The My Mob section was quite good because that sort of teaches more into what family connections there are. For me, I found it to be a really good thing to be able to have (TC).

Although the women spoke about the value of the site as a personal history, there were many more comments made about its importance as a "reality check" for their grandchildren.

Val:
I think it might be something for our kids to actually have a look at, you know the grandkids to actually have a look at. It's a big reality check, so you know if you haven't got Austar then it's not such a big deal. I mean we didn't have TVs when we were kids you know (TC).

The validity of this comment is borne out in a story on the probe where Nikki shared an incident in relation to her son Jakob, Val's grandson:

> When we moved into our new house, we had to wait a few weeks for the Foxtel and internet to be connected. Jakob hated it because he had to put up with free to air TV and not being able to chat to his friends online.
>
> One evening when he was sitting on the couch flicking through the channels and couldn't find anything to watch he threw his hands in the air and exclaimed 'this is terrible! It's just...terrible! How do people cope?' Rob and I just busted out laughing (Probe Story, 'TV').

The women also reported a need to educate their youth on their own history.

> Val:
> We never had all those things and technology that they've got these days that keeps them occupied. And you know just some of the stuff we put up there is how we kept ourselves occupied when we were small, and we just had so much fun. I think it's a fantastic tool (TC).
>
> Yvonne:
> Val made the point that it's a very good learning tool for our kids, you know just things about how we were brought up and how we lived and stuff (A4).
>
> Ailsa:
> Yeah, to look in there and read stories about us (A4).

While the idea of the use of the probe as a teaching tool was mentioned, it was also described as a learning tool. Some of the women discussed the idea that they had learned more about their family through participating in the project and using the site. Roz and her daughter Tahnee discussed this aspect of the research.

> Roz:
> Just being able to um work out who's who in the family tree and, um some of the stories, and the family albums and have a look at what the others have been up to. It was funny to read some of the stories and see what Val and Coralie and Yvonne had been up to when they were kids. It's quite good, quite funny (TC).

Tahnee:
Yeah, just a big learning experience about our grandparents and parents and the aunties (TC).

Roz discussed the aspect of learning what sorts of things her older siblings had done as children, implying that she had not heard these stories before. Her daughter mentioned the importance of learning about the older generations. These results show that the group found the probe to be a useful tool in regard to both teaching and learning.

Various items of content on the probe dealt with the improved economic situation for the women compared to that experienced to their parents. A consistent theme in the stories regarded the appreciation the women had for the efforts of their family in helping them achieve their goals. The women reported however, that a side effect of access to more material goods is that children do not appreciate what they have been given.

Yvonne:
I don't know where the economics brings with it any great joy, either. I think it gives you some privilege and allows you to make choices and to be independent, but it also takes away the appreciation I think for other things.

Dianna:
Simple things?

Yvonne:
Yeah, I mean Tristan doesn't have the appreciation that I had by starting out with only a couple of cardboard boxes and

Ailsa:
Borrowing stuff to try and build it up.

Yvonne:
Getting something from the dump and painting it and treasuring our bikes that Dad got for us.

Ailsa:
Yeah, he, I mean that bike was my be all, end all of my life. And every birthday I got a present to go with the bike. It was, a new seat and a basket with ribbons on it, and this sort of thing (A4).

The effects of the generation gap are well represented in stories on the probe. Nikki reported "We get in trouble [with their son] for listening to old music from the 80s and 90s"

(Probe Story, TV). These differences are economic as well as those related to age. Yvonne and Ailsa represent these as their grandchildren missing the opportunity to learn to make do, and build up possessions slowly. Val discussed this issue as well.

> Val:
> There was always something here [on the probe site] that reminded you about something that happened years ago. I think it's also a big reality check too. You know like today you know you're making more money than you did, than our parents did. You know we might had thought we were all hard done by when we were kids, but you look back and man, we just had so much fun (TC).

This comment focuses on the idea that the women worry that their younger children have missed their chance to learn inexpensive means of entertainment.

A new opportunity

Access and use of the probe fell into three distinct patterns: (1) active posting and viewing, (2) active viewing and (3) one-time only use. Table 18 below shows the groupings for these levels of participation regarding probe usage.

Table 18 - Usage patterns for probe showing differential types of use

Usage pattern	**Participant names**
Active posting and viewing	Roz, Col, Nikki, Val, Yvonne, Ailsa
Active viewing and sometimes posting	Diane, Tahnee
One-time only use	Karen, Pat, Nyree

These usage patterns reveal that interactions on the probe were generally initiated by the older members of the group, who were all from one family, i.e. the Gertz' (Yvonne's family). Diane and Tahnee (daughters of Yvonne and Roz) used the probe in a more observational manner, offering a post from time to time, especially as the topics of discussion turned to more recent events. The last group of users or non-users as the case may be were women who attended the Cycle 1 focus groups quite actively but this did not translate into use of the probe site.

Nikki and Col both comment that they would have liked to have more interaction with people outside their immediate family. Nikki stated, "The only thing is that I would have liked some of the other families to have put in contributions" (TC). Col suggested that some

people might not have had access to a computer, making interaction on the probe difficult (TC).

This lack of participation among the one-time users caused some unhappiness in some of the older group members. Ailsa remarked, "I'm extremely disappointed in the younger people not going with it" (A4). She offered the following surmise for the lack of interest among the younger women.

> Ailsa:
> This is my own personal opinion; I think FaceBook has done some damage to us there. People are more interested in what they can do there, than something like this. I think maybe the older mob of us would be more into this sort of stuff (A4).

Tahnee, one of the younger women who viewed the site much more often than she posted offers the explanation "I didn't have any time to go onto the computer, I rarely ever log on". Table 19 below shows the time of day that the participants reported using the probe.

Table 19 - Reported access times – TC and A4

Participant	General access times
Yvonne	'Often late at night after everything else was done'
Val	'Most times it was first thing in the morning'
Roz	'I do it during work times, and it's wrong'
Tahnee	'Friday or Saturday night'
Nikki	'I use it at work or at home if I haven't checked it at work'
Ailsa	When I have the chance

6.3.2 What were the effects of the project on wellbeing?

Feelings about using the probe

This section details the results from the participants' answers to the following question: "How did it feel to use the site"? This question was posed in order to gather information regarding any wellbeing effects that the women had to report about their use of the probe.

A few of the participants remarked that the use of the probe site had been "healing". There appear to be two aspects of this: recalling details of their history and gaining closure. First, Yvonne raised the issue of healing.

Yvonne:

I was saying to Dianna it was, for me it was sort of a healing thing too, sort of like memories.

Ailsa:

Yeah, you know, things come back into your mind a lot more. Like you could see Granny lighting the bloody pipe up, talking to the old people at the singing tree at the old people's graveyard. And cause if I reckon you get a kid, you get him hush now, c'mon now we're going fishing. Oh boy oh boy, I copped a mouthful then, not in that language in another language [laugh]. But um, it was like you got to go through the right protocol before you go down here, and expect to catch any fish or whatever (A4).

When Yvonne raised the issue of healing, Ailsa stated that the healing aspect of the probe for her was remembering the details of the events in the stories. Of all of the participants, she is the only one that grew up on their traditional lands, and therefore had a strong grounding in the customs and obligations this required via training from her grandparents. Yvonne's comments suggested that she meant something different regarding healing.

Yvonne:

I think sometimes that things happen over a period of time and you don't really take the time to you know, de-construct that, and you go through a couple processes of, I don't know, remembering and having some closure. I think this is what it did for me, was to have a bit of more closure to a lot of things.

Ailsa:

Yeah, yep yeah that's pretty much of what it'd be.

Yvonne:

Because I think when people die, you actually you go through different grieving processes. It's not a nice one, but later on, right now, you can do that in a more

Ailsa:

Happier things, you remember happier things.

Yvonne:

Yeah.

Dianna:

More nostalgic than sorrowful?

Ailsa:

Yeah (A4).

Many of the participants described the use of the probe as having an emotional aspect for them.

Ailsa:
You just really do like, um you know when you talked about your mum and dad doing different things I think, oh I can remember that. The plum pudding, I got the plum pudding recipe out the other day that your dad wrote, and I just burst into tears (A4).

Yvonne and Roz discussed this emotional aspect of the probe as well.

Yvonne:
Yeah, I mean that was the embarrassing thing sometimes actually opening it up at

work [the probe] and I don't know about you guys but I'd be sitting there laughing away by myself.

Roz:
Or crying.

Yvonne:
Yeah true, tears for some of the stuff as well (TC).

While tears were mentioned as a response to content on the probe, humour was more frequently discussed.

Yvonne:

Just having a laugh too sometimes like Mr. Bean, you know bloody Tahnee and Mr. Bean!

Ailsa:

Yeah, and the things you know like your kids do bring their pets home, all those pets and who was bringing them home (A4).

Developing ICT knowledge and ability

Ailsa was the sole participant who did not have previous training in computer use prior the start of the study. Due to her remote location and limited finances (as a retiree), she was unable to access the same opportunities as the other women in making use of ICTs such as computers and the Internet. Many of the questions in the final interview with her focused on the subject of her newly gained experience with computers. When asked how she felt about the process of learning how to use the computer, Ailsa expressed a feeling of satisfaction in attaining this goal.

Ailsa:
Yeah, well I'd say I wish I'd done it a long time ago. You know, sort of like it was always the bitey sitting on the desk, it's going to bite me. Simply because you don't know, you've never had anything to do with it, or if you have, it's always looking over someone's shoulder while they're doing stuff in there (A4).

Ailsa reveals two reasons for her initial trepidation: lack of access and experience with them. The combination of these two issues resulted in computers assuming a worrisome demeanour in her mind, i.e. "the bitey sitting on the desk". However, due to the training in

computer use that she received during this study (and a fair amount of telephone-based assistance that was available when issues arose), she reported that she is increasingly more used to them.

> Ailsa:
> Um, I feel a lot, I feel quite comfortable with it, but you know there's still things you'd like to learn. For example, Richard's, he put a great big file of music in there for me, so I can sit in there and do stuff and turn the music on at the same time. That's really good, and um, he also put in Skype, which I used the headphones for that, I've actually talked to Pat, and I talked to Tracey.
>
> Dianna:
> So, it sounds like you're feeling more confident about doing things?
>
> Ailsa:
> Yeah I am, I am, as I said there's things you stumble in and out of, and there are times you wish you had you sitting beside me to help me [chuckle] (A4).

Although Ailsa is more confident, dealing with new software functionality is still stressful to her. She is becoming more willing to experiment, "things you stumble in and out of", but still would like to have someone nearby to offer assistance from time to time.

> Dianna:
> So how has it been, with not having somebody here? Because that was a worry at first.
>
> Ailsa:
> [sigh] Yeah it was, but as I got a little more confident. [long pause] I'm still not good at, I only ever downloaded one photo and that's one we did together of the gravestone, right. I was not game enough to go back and do more.
>
> Ailsa:
> But that was interesting and sort of like knowing all the stuff you can do, and now I'm still stumbling along and finding little, you know, different things you can do, and then I get shocked by something, "how did I get there?" [laugh] You know, how did I do that? And you think gee I wish I knew what I was doing here. I could go boom, boom, boom and I'm there but it's just a bit of trial and error (A4).

Ailsa reported a common method of computer learning, i.e. through "trial and error". Although she is still building her confidence level regarding ICT use, it can still be shaken

by the common errors that most new users experience. However, she has moved beyond the initial panicked response to unforeseen incidents and is learning to deal with them.

> Ailsa:
> Well after Dale bought the printer, I can scan stuff, and send stuff off that way too, put it into an email form and send it. Um, I need to know a bit more about that too because I can't scan more than one page at a time. But I don't know how to do more than one page at a time I should say. Um, there must be something there (A4).

Ailsa is exploring what other avenues there are to scanning multiple pages. Her comment, "there must be something there" applies to the instruction manual that came with the device. She is starting on the path to self-sufficiency on the computer in become proactive in solving problems herself, seeking out assistance when necessary.

Next, the interview focused on Ailsa's feelings regarding participating in this sort of research. Her responses are listed below.

> Ailsa:
> Well, I mean it all started here with Yvonne, doing stuff down at JCU, which we would never, it would never have got as far as it did without what you put into it. Cause none of us had the means or what have you to be able to achieve those things I mean you have, you
>
> Yvonne:
> I had the connections. And then you guys have got the other side of it, grew up with all our stuff, and I didn't so it's a matter of marrying the two, which was quite nice.
>
> Ailsa:
> I'm sure our grandkids and whatever to down the track will be very grateful for all that sort of stuff, otherwise you lose it. Gosh we must have been that far away from losing it. Yeah, and that sort of stuff keeps it alive, it's there, and um yeah, people have access to it (A4).

Ailsa and Yvonne report a high level of respect for each other's contributions to the research. They each have skills that proved to be of benefit in this collaborative study. Ailsa suggests that the research is quite important due to the necessity of recording their culture so that others can learn about it.

Next the interview turned to questions regarding Ailsa's feelings about using the probe site.

Dianna:

How did that feel to be telling stories on a thing where you can't see the people you're talking to? Like, when you guys sit around and talk and say “Oh do you remember so and so”, and there's lots of back and forth. On the Women on the Move site you'd get people commenting but it wouldn't be the same day or it might be a couple of days later.

Ailsa:

Hmmm, I must admit, I didn’t comment on all things, actually a good few I didn’t.

Yvonne:

Sometimes I just had a laugh and didn’t put in a comment.

Ailsa:

It’s um, it’s funny but the story about the eel, and that just sort of came right out and I thought, oh, yeah, and after you know I put it down on the thing I went back and read it all and it was almost like it happened yesterday sort of thing. It was pretty vivid. Um right down to the scar on my little finger right there.

Ailsa:

I should have just put a detail or something underneath. But um yeah, nah you can’t see the people, its --- an interesting thing. Maybe you could do a Skype thing?

Ailsa’s comments regarding the use of the probe echo those of the other women when she states that telling stories on the site brought back details regarding those memories. She muses that ‘It was almost like it happened yesterday” and “It was pretty vivid”.

A final quote from this interview regarding Ailsa’s future plans shows how far she has come in domesticating ICT to her needs.

Ailsa:

I actually saw a thing the other day it was that day when Sal brought down, it was on his uncle, and he’s a Thursday Island man and they were doing stuff up there, how they did a um, it was sort of like a statement, but it was his life with these old people, sort of a little paragraph forms all the way through from back as far as he could remember and it turned out about a 400 page document, this thing. And I’ve been toying with the idea of having a go at doing something like that too, cause it was just to see how far back I could go, and how much information I could put in it, so that it might be my next little project on there (A4).

The statement shows that Ailsa has moved from requiring the assistance of others to document her knowledge to doing it herself through the use of her new computer skills.

6.4 Planning next steps

During these last interviews, an important area of consideration dealt with what to do next with the Women on the Move site. Four action items emerged from the interviews regarding next steps: (1) bringing in additional Gugu Badhun people, (2) using the site to support day-to-day connections, (3) collecting and archiving records collection/archiving records and (4) and adding improvements to the site.

Bringing in more people

Although the older women tended not to use FaceBook or other social networking programs, there was considerable interest in how those types of sites could be used to stay in touch with family members. During the time the probe was in use, one of the younger members of the Gugu Badhun, Janine Gertz created a group called 'GuguBadhun'.

> Tahnee:
> Janine, I think pretty much looks after it. It's mostly just used for meetings and things like that, and to remind when the camp is. Not many people, like, put anything on there.
>
> Yvonne:
> Yeah, and I think it was never really put out with some guidelines for people to use, so that people know that they can use it for other things like keeping in touch.
>
> Roz:
> I know a lot of the younger people use FaceBook cause on the odd occasion my boys will want to get on FaceBook. My boys actually talk with Warren's family on FaceBook and then Nikki you were saying that you'd actually caught up with [someone] on FaceBook.
>
> Nikki:
> I keep in touch with all the Hoolihan kids and all that arm too yeah (TC).

The younger members of the group such as Nikki and Roz's children use the generic features of FaceBook to keep in contact, and tend not to use the official "Gugu Badhun group" on FaceBook for social connections. Roz, who stated that Nikki had caught up with someone on FaceBook, reports an important issue found with this use, i.e. the necessity of

searching for people ("the Hoolihan kids and all that arm") among the millions of other FaceBook users.

Given these issues, Roz suggested that perhaps the Women on the Move site could be broadened to include all members of the Gugu Badhun.

> Roz:
> I was just wondering if in the future it might be Gugu Badhun Women on the Move can become just Gugu Badhun you know so everyone actually looks at it (TC).

Other members of the group supported this recommendation. Ailsa echoed this sentiment in her remarks regarding next steps.

> Ailsa: I know we need to bring in more people, so that they can all look at it too. And probably the younger people, ah cause it's pretty exclusive right now isn't it, just to a handful of people. Yeah, they might want to put stuff in there, too (A4).

Using of the site for everyday connections

Many of the stories and images on the created on the probe site dealt with incidents that happened years ago. However, much of the content added by the younger members of the group discussed more recent events. Therefore, the participants were asked if they thought that the site could be useful to talk about things everyday activities.

> Val:
> Oh yeah, yeah, yeah. I mean things that happen every day and that there, they are important too, and I think yeah it would be a way of actually having people keeping in touch with just everyday stories (TC).

> Yvonne:
> I wouldn't have a clue about what some of the kids are doing, you know, where people are up to and all that sort of stuff so that would be good if other people, you know, use it (TC).

Val and Yvonne cite the usefulness of keeping up with others in the group as a benefit of not only accessing the site themselves but also extending it to other Gugu Badhun people.

Collecting and archiving records

An ongoing issue reported by the women is that their personal and cultural information is scattered around various locations. Ailsa first mentioned this problem as it related to old photos, but continues on to explain how their Native Title actions generate additional

information that they would like to store appropriately in a manner that allows them easy access.

> Ailsa: I'd been thinking of scanning them [old photos] and putting them on a disk. Again, I've got to learn how to do that, um and then it wouldn't matter if I threw them away, I'd have them, all those disks. And so at least they're not getting any older, going yellowy looking,

> Ailsa: When we do cultural heritage, like we did with Kagara, you have an anthropologist that comes with you on your walk when you're doing it, and they record it and give it to you in a report form, and photos and everything, and that's what you've got to download in there too. Stuff all on your country sort of things (A4).

Research generates a tremendous amount of data over which the Gugu Badhun have legitimate ownership, as described in Ailsa comment above.

Adding improvements to the site

Three issues were reported by the participants in regarding to use of the probe site: (1) image size limitation, (2) bandwidth issues in navigating the site and (3) navigation issues associated with site structure. The participants comments associated with an image size limit are presented first.

Image size limitation

An issue that was not reported until the end of the project, and was not visible in the analysis of the postings from the site related to a limitation on the file size of images. Drupal, the underlying CMS that provides the functionality for the site, established a default setting for images at the time of installation, less than 1MB. Most, if not all, modern digital cameras have a default setting of over 5MB (often called 'megapixels'). As this issue was not reported until the end of the use of the probe, the participants were required to resize each image before they were able to upload a photo. Unfortunately, not all users had sufficient knowledge in photo editing to be able to do so. Col's comments in regarding to this issue are reported below.

> Col:
> There was only one thing Dianna, once I tried to put some pictures on there, and it told me it was too big or something, and I didn't know how to do it

Dianna:
Oh, it was a size limitation on your photo

Col:
Yeah, probably [laugh]

Col:
Yeah, but I thought maybe I could scan it some other and they could do it for me? (Col, TC).

Nikki:
Ah, just with that, I um, yeah I had to resize most of my photos so that they'd, so that they could upload. So, it would take quite a while to go and resize them and all (Nikki, TC).

Two aspects of this issue reveal important information about working with the group. The first is that even though this was a significant issue, the women tried various work-arounds (rescanning the image) rather than to report it through the "Help" link on the probe site which would allow them to send a message asking for assistance. The second is that although this limitation caused extra work for the participants in resizing the images, this type of content was still frequently used on the site. The participants were quite interested in what changes could be made to the site to handle this difficulty. However, the suggestion regarding how to solve the issue raised an additional concern, i.e. that using new functionality would require learning new steps of follow.

Dianna:
There's something I can do that would, kind of handle that, where so you could upload in the large size and it'd let you pick which size you want it to be and the program will do it automatically.

Nikki:
OK, that'd be good.

Val:
You might have to put on some instructions on that for us oldies [laugh] Well I now know, how to figure out how to do something…I say Nikki! I can't do this, what am I supposed to do about it [laugh] (TC).

Bandwidth issues in navigating the site

Ailsa was the only participant who reported issues associated with the response rate of the site. She states below that the slowness in being able to navigate the site caused irritation for her.

> Ailsa:
> One thing I did find in there its sort of you can't just click and move straight on to the next story, you've got to wait for that thing to spin its tail off, and then you finally get in to where you're going. It's like, well come on, I need to go there, hurry up. Um, I think that was the downside, it was just taking a little time to get there.
>
> Ailsa:
> Because, as I said everything there was pretty slow in that computer, even getting to start up. I think it's part of this business that happened.
>
> Dianna:
> The Internet?
>
> Ailsa:
> The fall down (A4).

Due to her remote location and lack of funds, Ailsa's options in access to broadband Internet were limited to the use of a satellite dish. Her Internet plan allowed only 1GB of downloads per month, after which her access was shaped or constricted downwards to dial-up speed. As might be expected, this lack of speed in accessing the Internet caused difficulties in using the site. On top of this, the satellite dish failed during the project, and the Internet service provider took over two months to replace it due to her distance from a major centre. This is the "fall down" that she described above.

Navigation issues due to site structure

The other issue described by the participants that impacted their use of the site was concerned with locating content once it had been created. The site had search functionality, but the women reported an interest in being able to browse the site by topic area.

> Yvonne:
> So would it be possible Dianna to have it structured in such a way that you could actually have folders in there with like maybe stories about living on the [name removed] and um yeah the older generation growing up and something rather than

people trying to find, just imagine I'm thinking going in there and trying to find something.

Yvonne:
You have to tap on each on to actually find them.

Dianna:
Yeah, we can put something in it with a grouping like a book, and you can make little chapters and stuff.

Yvonne:
That would be good because we could have like you're story about the red people, and people could add and then say if Tristan wants to get in there and have a look at stories then he can

Ailsa:
And do something for

Yvonne:
Well just for whatsername thinking about he could just click on, and up it come talking about the red dress people, and any comments that people made.

Dianna:
There's ways of categorizing things, like people could go into their story and say you put some little tag on it that says, this is about living on the [name removed] station (A4).

The participants describe a need for organising the data in ways that are understandable to their people, rather than a strict hierarchy established by the developer. A reasonable solution to this issue would be the creation of a tagging scheme to allow users to develop folksomonies.

6.5 Summary

This chapter has reported the results obtained from engaging in the final cycle of PAR for this project. Two interviews were conducted with the team members to gain feedback from them regarding their opinions regarding the technology probe. The responses given to the questions in the interview provide insight into the positive and negative aspects of the Gugu Badhun's use of ICT. The major themes extracted from the interviews focus on the usefulness of the probe, emotional responses to the activity of online storytelling in this context and determine next steps that the group would like to take.

Several decisions were made during the interviews regarding how to proceed next. Since the conclusion of the interview phase of the project, actions have been taken to resolve the issues mentioned. These actions are described in Table 20 below.

Table 20 - Action items to implement participants' requests from Cycle 3

Action items	Action taken
Bring in more Gugu Badhun people	• Currently developing a list of all Gugu Badhun members who have Internet access, or who would like to use the site • Will add people to the site as soon as this is complete
Use the site for everyday activities	• The site is still available and is although it is not being actively used, it is expected that this will occur when the additional members are added
Resolve image limitation issue	• The size limit has been raised to 10MB • Installed image resizing tool
Add alternative types of structure to the data	• Added tagging functionality for each content type, and sorting scheme in the navigation • Need to create instructions for using this • Members will need to go in and re-tag their content, or direct someone else to do so
Use site to keep records in one place	• An alternate Gugu Badhun site has been created to handle documents

This section concludes the reporting of the findings from the three research cycles. The next chapter of this thesis contains a discussion of these findings.

Chapter 7
Discussion of findings

7.1 Introduction

This final chapter brings together and discusses the research findings in relation to enhancing wellbeing in Aboriginal people through the use of ICT. Women in general access and use ICTs to a lesser extent than men. In the developing world reasons for this are often found in cultural norms that restrict women's activities to those found in the home, but also are impacted by literacy issues, training, cost and safety concerns (Subramanian 2000; Sterling 2007). In the so-called First World, these differences are often attributed to perceived abilities of women and the difficulty of learning to use ICTs. For some Aboriginal women, lack of access to reliable electricity and telecom connections limit their use (Maunder 2006). However, many studies have shown that access to and use of ICTs can have an empowering effect on women (Sharma, 2003; Ng, 2005), increasing their personal autonomy, self-confidence and agency (Maier, 2008). Despite these benefits, once online, women often face intimidation and sexual harassment (Meyers & Cukier, 2006) from males, perhaps due to the anonymous nature of the communication structures. These combined issues create a very steep and sometimes dangerous learning curve for women that attempt to engage in the ICT realm.

The focus of the research for this study has been to examine "how can access to, and use of culturally appropriate ICT enhance Aboriginal people's sense of wellbeing"? Embedded within this question is the assumption that ICT can be of value to improve wellbeing. The collaborative and participative nature of this research has endeavoured to reduce the stress that women face in extending their ICT skills through exploration of the online environment. The information reported and discussed here was co-produced with the Gugu Badhun women during the three research cycles of this PAR project. The information taken from the first cycle, "thinking about ICT", were created via focus groups held in Townsville and Greenvale. The second cycle, "using ICT", consisted of joint use of a technology probe web site named "Gugu Badhun Women on the Move". The final cycle, "reflecting on ICT", provided an opportunity for each person involved to give feedback regarding her feelings about the project. The analysis of the information from these cycles was considered holistically, in order to draw conclusions regarding the usefulness of this methodology for research with Aboriginal participants. The three cycles and their impact on the joint knowledge-creation process they engendered are listed in Figure 40 below.

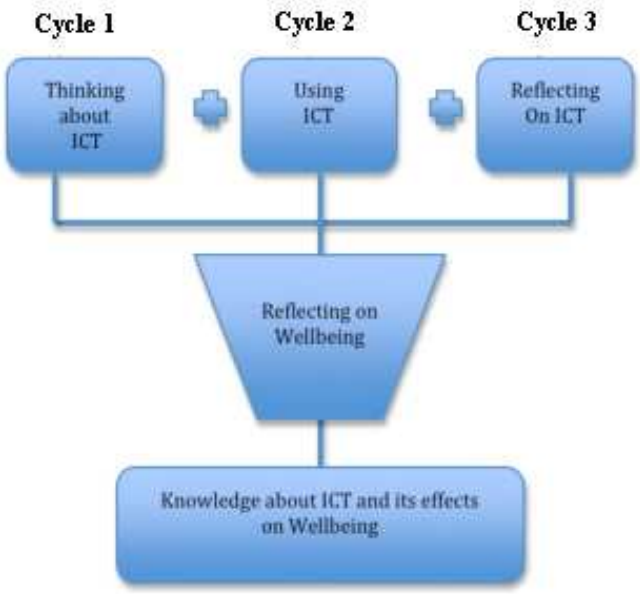

Figure 40 - Cycles from project

7.2 Discussion of findings

The term wellbeing is frequently used as a gloss to cover a wide range of topics such as physical, mental and emotional health. The ABS framework (2001) for wellbeing describes it as 'a state of health or sufficiency in all aspects of life' (p.. While narrower measures such as education or socioeconomic status are easier to quantify, the complexity of wellbeing makes it difficult to measure with any sense of surety (Biddle, 2010). For instance, research shows that although income has a positive influence on emotional wellbeing, the effect satiates at around $75,000 (Kahneman & Deaton, 2010). In keeping with the collaborative, self-deterministic nature of PAR, the findings discussed here are those reported by the participants themselves during our meetings.

The following sections discuss the findings from this research using the seven aspects of wellbeing as defined by the Australian Institute of Health and Welfare (1994) as a framework.

> Wellbeing includes health, social wellbeing, economic wellbeing, environmental wellbeing, life satisfaction, spiritual or existential wellbeing, and other characteristics valued by humans (p. 10).

Where a finding may have bearing on more than one aspect of wellbeing, this is noted in the discussion. Although many of the findings are global in nature (i.e. emerged from many

in-depth conversations with the participants), the general source of the information is indicated in each section.

7.2.1 Health and social and emotional wellbeing

Importance of storytelling: 'Storytelling is how we do our business'

Storytelling was a primary activity engaged in by the participants, both in the in-person meetings and on the technology probe. As mentioned in the Cycle 2 results chapter, storytelling was one of the most frequent uses of the probe site. One of the elder women stated "storytelling is how we do our business" (Yvonne, pers comm.). Storytelling is a mode of communication that felt comfortable for most of the women in the study. Additionally, several women stated that telling stories via the technology probe felt "healing" to them (TC). Two types of storytelling were mentioned here: recalling the details of stories and deconstructing stories about difficult circumstances. Many of the women discussed the fact that the storytelling on the probe took on an emotional aspect for them.

People of all cultures use storytelling to affirm and maintain family and cultural bonds, tying the members together in a way that connects them in a web of shared culture. Groups that traditionally did not use written language to convey these stories are often at risk of losing these ties when the family structure is disturbed, as was the case with the colonization of Australia by Europeans, and more recently due to the "Stolen Generations" era (Reynolds, 1999; Smith, 1999; Zubrick et al., 2010). Instruction methods rely on the teacher to choose the appropriate "teachable moment" to pass on a bit of knowledge. However, when the student has been removed from the community this opportunity is lost, and the knowledge cannot be transmitted. The women in the study reported that although much of their traditional cultural knowledge has been lost, it is vitally important to ensure that what is left is saved for their children and community (T3).

Connections to family and country

Storytelling both in-person and in digital mediums performed an important role for this group (Benebed, 2009). While the women often told stories about family events and occurrences in the workshops and interviews, the technology probe allowed the participants to engage in storytelling to a much larger degree, and with people they did not often see on a regular basis (T1, TC). The participants in the Northern Territory were particularly interested in reading and posting on the probe as a way of staying in contact with their distant relatives (Williams et al., 2008).

A significant number of the stories told both in person, and on the probe site (over 75%) related to incidents that happened to their ancestors. These stories had been relayed to them by their parents and were being passed on to their children. The generation gap between grandparents and grandchildren, and the geographic distance between some family members makes in-person storytelling difficult (T2). The participants noted that although the grandchildren are not very interested currently in the old stories, by the time they become old enough to seek them out, the older people may be gone, resulting in additional loss of their traditional knowledge (T3, A3). The image and text based nature of the probe site ensures that these stories are retained for the future.

While many Gugu Badhun in the later generations have secured good jobs and enjoy a high standard of living, not all branches of the family are experiencing this sort of economic benefit. Yvonne expressed regret at the fact that her priority needs to be with her immediate family due to the demands of her career. In her words "you can't help everyone" (Williams et al, 2003). The elder women hope that by opening the site to other members of the group that this will assist those that do not have some of the same support mechanisms (Yvonne, personal communication). The Gugu Badhun would like to use an ICT system to keep in contact with all of their group members even those they do not get to see on a regular basis (T3).

Creating a place of safety

An important outcome of the study was the creation of a 'safe place' for the participants to interact online as well as a secure repository for sensitive information (Rigney, 2006). While interaction on the wider Internet brings with it greater opportunity for Western knowledge and economic advancement, it also brings additional issues as well. Not only is the sheer volume of content on the Internet worrisome as it subsumes local knowledge, but there is a greater chance of encountering distressing prejudicial or racist commentary (Meyers and Cukier, 2006). Through the use of a site where only Gugu Badhun people are members, the group can relax within the bounds of culturally safe interactions (A4).

For those people who are frustrated with ICT in general, the Internet can provide a discouragingly difficult entrée to further technical knowledge. The competitive nature of gaining technical information can prove stressful for those who feel that have 'missed the boat' in regards to learning technology (Maier, 2008). Ewing, Thomas & Schiessl (2008) state that lack of skills is one of the leading reasons that both males and females give for being non-users of the Internet (24% males, 16% females). When they do use the Internet, women often denigrate their skills (Huyer, 2005). A difference in how men and women

internalize these types of frustrating experiences can be seen in their viewpoints regarding a site. A man may state, "the *site* is terrible", while a woman may believe "*I* am terrible at ICT". Therefore, the use of a culturally safe, easy to use site, with membership from their own group can alleviate much of this stress and provide a simpler path to gaining experience with ICT (Kelly et al, 2009). There is significant evidence that empowerment through the use of ICT can increase women's wellbeing, and the women in this study confirm this (Sharma, 2003; Ng, 2005).

Social and emotional wellbeing

Enhancing connection through storytelling

Storytelling was discussed in the health section on wellbeing, but it bears mentioning here as it is a common social activity (Fredericks, 2006). At each meeting with the participants, the first half hour was usually composed of a session where the women had a "catchup" about their families. These conversations often started "so, did you hear about…", and proceeded to describe the current activities of their husbands, children and grandchildren (Williams et al., 2003) Rather than family gossip, as it might appear from the outside, these narratives served to keep the women up to date regarding potential areas of concern regarding members of the group (Ailsa and Yvonne, personal communication). Some of this type of storytelling occurred on the probe site, but was limited to those stories which could be told without embarrassing anyone unduly, or that would not break a sense of confidentiality. A second type of storytelling, which was associated with both teaching and learning, occurred in both the in-person meetings and on the probe site (Esler, 2008). These included historical stories about their youth as well as creation stories that conveyed information about their country (see Figure 21). Younger members requested details to be added to stories they had been told, and women corrected each other's stories, reinforcing their familial connections via their shared history. The women reported that they felt much closer after having engaged in the probe site, and that it enhanced their sense of connection to each other (TC).

Emotional healing through storytelling

A consistent theme throughout telling of stories was that the incidents that were related had powerful emotional significance for the family members (Garvey, 2008). The retelling of the story allowed them to share in these emotions and to reaffirm their connections as family members and as Gugu Badhun. Storytelling via the probe enabled the women to revisit scenes of previous significance (both good or bad) and reframe them in ways that enhanced their feelings of wellbeing (Paradies, 2006). Participants stated that they obtained a sense of healing from storytelling on the probe site (TC). Two aspects of healing were

cited: gaining a sense of closure from the retelling, and a sense of pleasure in revisiting the details of activities from long ago (A4). These comments show that storytelling not only serves as a medium for transferring information, it also helps frame a story in a way that is helpful for the teller of the tale and her audience.

Supporting connection to land and spirituality through the cultural camp

Several of the interactions on the probe were associated with the cultural camp. The site was used to coordinate planning activities for the camp (see Figure 18 and 19), and later to report descriptions of activities that occurred at the camp (T3). Many of the images that were uploaded to the site were associated with cultural camps over a three-year period. Additionally, stories were posted that described camping trips to other areas of their country. In this way, members all participated discussions regarding the camps without having to leave home. The asynchronous nature of the website meant that users could communicate where and when they felt the urge, rather than having to arrange their schedules around such meetings (Ng, 2005). The members discussed the happiness that this ability gave them, and at least one participant mentioned feeling sad when there were no new postings to read.

7.2.2 Economic wellbeing

Social cohesion via shared responsibilities

In addition to the cultural activities mentioned above, the participants take very seriously their responsibilities to their immediate family and their larger group (Grieves, 2009). These obligations fall within the spheres of individual, family and group involvement. The participants, especially the elder women make great efforts to keep in contact with all of the members of their immediate family and those to whom they are related (A4). Although priority falls with their immediate family, the women feel an obligation towards helping maintain the well-being of everyone in the group (Smith, 1999). A primary undertaking is to ensure that as many Gugu Badhun who are capable of attending higher education or training do so. This includes seeking out scholarship opportunities for younger members and keeping an eye on what training or grant opportunities exist (Nakata, 1995).

During the feedback interviews with the participants, each person involved stated that the probe site has been very useful to facilitate connection with distant family members (TC). The participants expressed a sense of enthusiasm in using the site for this purpose. The women indicated that this software fulfilled a need that they had for maintaining these connections. A further area of interest expressed by the women was to use the site as a way of assisting their teens in discovering higher education avenues such as scholarships and

grants (T3). Additionally, the site could be used to advertise jobs that they have inside information about. Yvonne stated "We have knowledge about what's available; know how to access the information and how to play the game (Yvonne, pers. communication)".

Empowerment via ICT knowledge

Several of the women in the study reported an appreciation for how easy the probe site was to navigate and use. This is in distinct opposition to their experiences with other ICT products (T1). A common frustration expressed by the group members in their use of technology was the continual need to learn new skills to negotiate the same task (Cooper, 2003). Diane, mentioned that because of her fears about technology, she had held off buying a new digital camera because of the fear that she will not be able to figure out how it works. However, in spite of these apprehensions regarding technology, she was able to use the site easily. Since participating in the project, Ailsa who had never used a computer prior to this project now claims that she is comfortable with computers and is actively seeking the use of them in further activities (A4). Rather than limiting herself to the training she was given on the probe site she has learned to use Skype, word processing programs and digital music as well. The empowerment that she had received through "learning computers" has improved her sense of self-determination and independence (Sharma, 2003), shown through the new projects she had undertaken (recording her memoirs) and the cultural heritage activities that she is now able to document.

Solving problems through the use of ICT

The members of the group have suggested that although they realize that ICT offers the means to solve many problems, they currently do not have the training to bring these to fruition. This was expressed in many comments regarding the youth and that they should study IT at university. In conversations regarding the next steps that should be followed the participants have laid out plans they would like to implement regarding sharing job information and other cultural details among their family and wider group and to address broader issues which impact on the group (TC).

7.2.3 Environmental wellbeing

Individual environmental factors

At the individual level, group members identified three types of activities with bearing on wellbeing. These were maintaining connections with each other, using storytelling to discuss their youth and the current ongoing situations and gaining support for one's individual live situation through the use of a safe, nurturing place. Each of these issues has been discussed previously in regards to other aspects of wellbeing, but it was also an

important finding in regards to environmental wellbeing. Each of the women interviewed in the final cycle described the process of using the probe as something that was "easy to do", "fun", or "great" (TC). These terms show that the women enjoyed using the site, rather than participating out of a sense of obligation. Use of the probe was described as something the women did each day, at a time that was convenient for her. The information posted on the probe reflected a group of people who were comfortable with the stories they were sharing.

Family level environmental factors

During the group workshops information emerged regarding the necessity of family members to keep each other up to date on activities and family issues. The sense of social cohesion mentioned earlier comes into effect here where the families interact as a group to share resources and solve problems. A frequent topic of concern with the women was the necessity to moderate their children's access and use of ICT (T1, T2). They accept that ICTs are the way of the future, but express concern with the immersive level of their children's activities. Safety online continued to be a consistent issue across the three cycles of the project (T2,, TC, A4). The combination of a closed group ensured that only appropriate people would be allowed to access the site. The probe became another venue for sharing interaction, in the words of one of the participants "something we've never had before" (TC). Their interest in using the probe, tied with their comments during the two group discussion phases revealed that connecting with each other in spite of the geographic distance is an important issue to be resolved.

Group level environmental factors

An issue that was reported consistently across all phases of the research was the difficulty the women experienced in communicating at a distance. The factors associated with this were both geographic and temporal. The geographic distance made it difficult for the women to convey cultural knowledge to the younger members of the group (T2). Additionally, the time needed to accomplish these activities was becoming increasingly more difficult to fit into their lives. Another issue that occurred each year was the problem of coordinating the logistics of preparation for the cultural camp. Getting the news out to everyone about the importance of attendance was difficult, as was arranging for food, tents, camping gear and transportation (A1). Although the women were able to use the probe to great effect for these issues, they report the need to extend this to more members of the Gugu Badhun (TC).

7.2.4 Life satisfaction

Concerns about the need for ICT research

The participants in the study described a range of issues associated with ICT that have bearing on their life satisfaction. The group members realize that the time is rapidly approaching when the elders in their group will die, and that these people may not have the time to pass on their cultural knowledge (A4). The women believe that through the use of ICT some of this knowledge can be stored for posterity (T3). However, as a group the Gugu Badhun women believe they lack the skills necessary to create the mechanisms for recording this cultural knowledge. Several team members themselves expressed doubts and concerns regarding their ability to learn basic ICT, much less design complicated systems for a knowledge repository (T1). This situation has a negative effect on their wellbeing. However, in working on this study the women learned a range of skills that improved their abilities in the use of ICT and opened up new avenues of action in domesticating technologies for their own ends. The women reporting feeling more confident about the use of ICT in general, and being able to record their important cultural data (TC).

Dealing with racism

Racism has a day-to-day, ongoing negative impact on Aboriginal people. The women in the study recounted many cases of racism that they have experienced. These range from incidents where they were subjected to the patronizing attitudes of non-Aboriginal people in regard their abilities and potential for achievement right up to overt racism such as being denied service or opportunity for advancement based on their race. Several of the participants expressed the feeling that racism has not been eradicated - it has just gone underground. Cowlishaw (1997) suggests that the root cause of this racism is the belief that equality under the law implies cultural sameness.

> Unequal treatment is declared immoral and anti-discrimination legislation passed, leaving untouched the ubiquitous and mundane forms of injustice and inequity that resonate with cultural difference. For Aborigines, racial inequality is a normal part of Australian society. Racism can flourish as a hidden discourse because it is hidden behind the assertion of equality which assumes similarity (p178).

Evidence for this sort of subterranean racism is seen daily in the press where both politicians and average citizens alike make verbal faux pas of a distressing nature. Broome (2001) reports two of these. In first, the owner of a caravan park refused to rent to an Aboriginal man based on his race. In defending her lack of racism the owner exclaimed in

court, “I have got great admiration for a lot of Aborigines, as I have for a lot of other non-Australian people” (p.221). In the second case, the President of the Collingwood Club, Allan McAlister, stated about racism in sport “as long as they [Aborigines] conduct themselves like white people, well, on and off the field, everyone will admire and respect them” (p223). Both of these incidents reveal that many non-Aboriginal Australians equate equality with sameness. The women in this study reported ongoing difficulties associated with visiting their country due to the antagonistic attitude of one of the landowners of a cattle station on their traditional lands (T3, TC). Regardless of whether his reluctance to allow them entry is due to racism or fear of extending their rights over land he considers his to own, the effect is similar to a racial attack.

Access to the probe provided a place where the group could freely associate with each other without fear of intrusive comments or actions. Although the participants still had to navigate the cultural interface by using western-based ICT, they could do it in their own way, without needed to worry whether their words or actions would be held against them or be viewed as suspect due to their culture.

Effects of using the probe site

While the previous two topics have dealt with drains on the group’s life satisfaction, the participants reported significant benefits from using the probe site (TC). This interface provided a non-threatening location for interaction where cultural difference did not have a negative impact. Nakata (2002) described the benefit of this type of connection to eliminate distance and to reconstitute the ‘balance between visual, oral, and textual modes of presenting information in a way that supports cultural perspectives” (p 28). Moreover, the storytelling aspect of the probe offered the opportunity for healing; Indigenous healing patterns prioritise storytelling traditions (Benabed, 2009). In the “Stories by the Campfire” report (a project to discuss the creation of an Aboriginal and Torres Strait Islander Healing Foundation), many participants suggested that the government should assist in setting up a place to record people’s stories and histories (Phillips & O’Brien, 2009). The positive nature of storytelling in this type of medium has the potential to aid many groups of people, not just the Gugu Badhun. At a demonstration of the Women on the Move site at James Cook University a Townsville Aboriginal man stated “our mob needs to get one of these things set up”.

7.2.5 Spirituality

The women in this study prioritize connection to country as one of the most important aspects of spirituality. This connection to the land and to each other as Gugu Badhun people binds them together in a set of dual rights and obligations. The findings from this

research regarding the spiritual aspects of the women's lives are categorized here as: (1) doing, (2) recording and (3) teaching.

Documenting group actions

One of the outcomes of this action research process was the documentation of the varied types of actions taken by the group to maintain and preserve their culture (McKennit and Fletcher, 2007). These include conducting the cultural camp on country, engaging in other family business to support their group, and pursuing additional Native Title activities. The use of ICT in all of these endeavours is an important goal for the women. Ailsa, one of the few members, who still lives on country is in a unique position of having the knowledge, skills and ability to negotiate with the mining and other ventures seeking to do business on their land. As one of the main people in charge of setting up the annual cultural camp, the fact that she now has ICT skills is a tremendous asset for the group (Ailsa and Yvonne, personal communication.

Recording cultural heritage

The women in the group as part of the larger Gugu Badhun entity have engaged previously in many knowledge-generating activities. Many of these have been documented externally (Hardy et al., 2007). The Gugu Badhun have been granted access to the data, but until the end of this project have had no way to manage it, or store it in one location. Currently the group is working to train additional people in their group to manage the uploading of this data into a central repository (Bidwell and Hardy, 2009). The importance of maintaining this cultural data is extremely important to supporting their spiritual connections to land, as is the necessity to tell cultural stories to each other and their children. The probe provided a long-lasting storage medium for important cultural heritage information.

Teaching

A final activity associated with maintaining spirituality is to convey this information to all group members in an appropriate fashion (A4). The women in this project affirmed the probe site as a valuable tool for both teaching and learning, and plan to keep adding to it as time passes. A further issue associated with storytelling and spirituality is that for those stories describing being on country, the person has to have spent time there in order to tell the story (Martin, 2003). Yvonne relates that although she did not grow up on their country, she maintained a connection to their land through the stories that her father told her (T2). Then, when she was able to visit their traditional land, she felt an immediate connection through the stories. However, until she was able to visit their area herself she was unable to convey these stories to her child and grandchildren. The comments made by the participants

regarding storytelling show that this activity enables them to build connections between themselves, their ancestors and their traditional country (Nakata, 2002).

7.2.6 Characteristics valued by humans

The final element of wellbeing points out that the goals of the Aboriginal people are not that different from those all humans: to be treated with respect (Smith, 1999). The end outcomes of the project demonstrate this idea as well. As the women have become more adept with ICTs they have attempted to use them to maintain familial and cultural connections. Although most of the participants are well skilled in the use of ICTs, they have found them inadequate to stay in contact and preserve their cultural history (T1). The comments in the final meetings with the group solidified their intentions toward the use of the website to continue interaction, but on a larger scale with the other members of the group (TC). Therefore, a final outcome of this project is the use of the site as a mechanism for recording their culture, a communication vehicle that facilitates interaction between distance family members, a publishing avenue to distribute information they would like the world to know about the Gugu Badhun, and a secure place where all members of the group can communicate and learn in a safe environment.

The next and final chapter discusses the implications that this research has for the Gugu Badhun and for Aboriginal and Torres Strait people in general.

Chapter 8
Research implications and conclusions

8.1 Implications of the research and recommendations

As the research question for this study focused on enhancing wellbeing through the use of ICT, the previous section discussed the findings from the research in terms of enhancing wellbeing for the participants. In this section the implications of these findings are discussed in relation to research on three different levels: the participants of this study, Aboriginal and Torres Strait Islander people in general, and for ICT professionals doing research with Aboriginal and Torres Strait Islander peoples. Additionally, recommendations for future work are provided.

8.1.1 Implications for research with the study participants

The purpose of this research was to examine whether the use of ICT could enhance wellbeing in a group of Aboriginal women. The findings from the research show that ICT can be used to support wellbeing. However, the implications from this statement are complex.

During the course of the research the Gugu Badhun women described having difficulty staying in contact with members of their group because of issues associated with distance and the fast-paced nature of life in modern Australia. Additionally they discussed issues associated with the need to record cultural knowledge and family history in a manner that fit in with their lifestyles. Although they had conducted previous projects in recording this knowledge, once these projects ended, the knowledge recording ceased as well. A final issue surrounded the need to combine all of this knowledge with that stored digitally in other locations such as state and federal archives, and place it on their own digital repository. This complex situation was having significant wellbeing impacts upon their group as they felt time slipping away from them, potentially leading to even greater loss of cultural identity. The women had attempted to harness ICT to manage these issues, however their primary communication tools, i.e. telephone and email proved inadequate for this task.

Another issue that impacted this situation was the need to have one of the group members who still lived on their country, and had the most cultural knowledge be able to act as an advocate for them on cultural heritage and Native Title Ailsa, one of the elder women, held a unique position in the group as the only women on the project team who had been raised on their traditional country, and now lives there as well. Due to her experience with the

cultural information, she was ideally placed to pursue their Native Title activities. However, due to her lack of ICT knowledge she was hampered in her ability to achieve these goals. Lack of access to computers, tied with a fear of her ability to learn ICT kept her from adequately fulfilling the plans for the group. Following the project Ailsa now claims a comfort and knowledge level of computers that allows her to expand her horizons regarding what she can achieve for herself and her group. The empowerment that she has experienced via the use of ICTs has given her an increased self-determination regarding her plans and activities (Maier, 2008).

At the start of the project several of the women stated considerable angst in dealing with computers and the Internet. While they reported the feeling that being computer-literate was an important goal, they expressed dissatisfaction with the options available to them regarding the complexity of technologies. An ongoing concern was the necessity to continually relearn how to do basic day-to-day activities such as making phone calls on a mobile phone or downloading photos from a digital camera. The frustration that the women reported in attempting these tasks reinforced a feeling of inadequacy in their abilities to use ICTs.

At the conclusion of this research, the Gugu Badhun women now have a website that can be used to handle many of the issues listed above. The members helped co-design the site themselves, and have used it for over a year. The site is backed up on a periodic basis, and the data from the research period has been copied onto an external storage device (in this case a USB stick). The women reported an increase in their sense of connection to each other and to their culture. The probe site allowed the women to use storytelling to reaffirm their connections to their group and to their country in a way that was not previously possible and which was culturally appropriate.

The use of the probe site offered a number of solutions to issues the women discussed. A primary benefit was the sense of empowerment the women reported in their increased knowledge regarding ICTS. Although the participants used the probe in different ways, most of the women with the highest level of reported stress with using ICTs developed new skills in using them. The support for kinship ties was an important outcome of the research. Through the process of doing the project a number of cultural and family stories were recorded that will be able to be accessed by other members of their community. A final but not unimportant outcome was the development of a safe place for the members to communicate.

While the development of the probe site was able to handle many issues, there still remain much work to be done as far as meeting the complete ICT needs for the group. A major area of concern is to keep the teenagers of the group connected with their culture and family. Whether or not this can be achieved using a similar site remains to be seen. Younger members of the project team were much less likely to post entries on the web site, although they did read the site from time to time. The project participants discussed the idea of creating a separate section of the site for the youth, so that they could communicate freely, but due to time constraints this has not been implemented as yet.

In addition the group has much data that still needs to be recorded and stored in a safe location. During the project a second Gugu Badhun web site was established by the larger community, however at the moment is has not yet been populated with data. While Yvonne's grandson Tristan has agreed to take on responsibility for managing this new site, the collection of all of the varied records and data is a large job. There are many projects that the women would like to implement such as a recording of a cultural heritage walk with the elders back on their country, and making other recordings of their family history. While the creation of the Women on the Move site resolved a number of issues, it was successful in documenting another large group of ideas for further work.

Recommendations for future work

When looking at recommendations for further actions with the members of the research group it is important to consider which avenues are the most feasible given their access to resources and time. These recommendations are listed below.

Recommendation 1: Determine a plan of action for a central information repository

A consistent theme revealed through much of the research was the need to record and store cultural information generated via their Native Title activities and other recording projects. Although recording areas have been created for this and previous research, each project has tended to create a separate repository, leading to "yet-another-system" (Hardy et al, 2007). Data from these separate entities should be combined in a way that can be easily maintained by the Gugu Badhun. This is not a simple task and will require the "skilling-up" of some members of the group who will need to take responsibility for it. Steps toward this have been already taken via the creation of a separate Gugu Badhun website, although as yet it is unpopulated. It is recommended that this storage system use open-source software to minimize cost. Technical assistance can be sourced through the Information Technology discipline at the local university which is often seeking opportunity for their students to engage in pro-bono development as a learning tool.

Recommendation 2: Continue oral history recordings with elders

Although the use of the probe site offered good outcomes for those members of the group who were willing and able to access computers and Internet, some members of the community are not able to do so. In order to access and record their cultural history, video recordings of their data should be made. These can be stored in the repository described above.

Recommendation 3: Extend the Women on the Move site to include other members of the group

The use of the probe site provided a significant level of safety and comfort to the project members. Following this outcome, the women on the project requested that the site be extended to include not only other men, but children and teenagers as well. This would allow the previous content created by the women to be accessed by the greater members of the group. The changes needed to make this possible are minimal. Additionally, the structure of the site would need to be updated to handle tagging as requested by the group. The revised site could be linked to the main data repository, and allow role-restricted access.

8.1.2 Implications for research with Aboriginal and Torres Strait Islander peoples

The research in this study has had beneficial outcomes for the participants in regards to wellbeing. Some of these benefits can be generalized to the Aboriginal and Torres Strait Islander peoples as well.

Avoiding purely extractive research

Often research that is conducted with Aboriginal and Torres Strait Islander people approaches it from a deficit attitude, i.e. with the idea that the people are lacking something that the Western researcher can provide. This is a continuation of the colonization process, by placing the researcher in the one-up position over the community being researched (Grieves, 2010). A common symptom of this attitude is found in the situation where the researcher expects the Aboriginal and Torres Strait Islander people to bare their souls, but the information flow is only one way. Fredericks (2007) describes these sorts of researchers as leeches that keep taking but never giving.

> They are like leeches and suck people dry, they need to keep taking, they don't give…its totally disempowering…sometimes in the first instance you can think that you'd like to get to know this person, they have some deep

> and meaningfuls that you can exchange but you soon learn that you are the only one giving…, they do not disclose anything about themselves (p. x).

In this study, the participants expressed appreciation for hearing stories about my family and life in America. Comments such as "it's good to learn about you", showed the women's appreciation for this two-way sharing of stories. This is particularly important for the wellbeing of women who bond through the sharing of details in each other's lives (Tannen, 1991).

Self-determination, independence, social cohesion and sustainability

The research in this study showed that self-determination and independence can be increased through the use of an online medium such as the probe that was used in this project. Through the increased connection that was facilitated by use of the Women on the Move site, the participants supported each other in their daily lives. The families were able to draw closer together through the act of telling stories and discussing them on the site. The sustainability implications of this are that the group as a whole is strengthened. The "family business" activities engaged in by the group are aided by the ability to maintain connection even when physically separated by distance. These positive effects were obtained through the use of PAR and co-designing a technology probe suitable for the group not just use of the web site alone.

The findings of this study imply that this sort of research can have benefits for those Aboriginal and Torres Strait Islander members outside of this research group. Indigenous peoples have certain generalisable issues due to the after-effects of colonialization (Smith, 1999; Nakata, 2002). Culturally supportive ICTs can provide a nurturing environment that can be self-managed by the people themselves.

Recommendations for future work

The research from this study has shown that participation in the design and implementation of a secure, culturally respectful website increased that members sense of wellbeing. Three primary areas this research emphasized were enhancing connection between people separated by distance, providing a secure, private place for sharing sensitive information and a mechanism to recording cultural history. The following recommendations address how this research could be used to supplement wellbeing in other Aboriginal and Torres Strait Islander peoples.

Recommendation 1: Use with people residing at a distance from family

Many Aboriginal and Torres Strait Islander peoples live away from their extended family. Study and employment often require long-term separation. The provision of a method of connection with family members without outside intervention has the potential to raise wellbeing.

Recommendation 2: Use with marginalised groups addressing sensitive issues

Online forums have been used with success to provide a caring, support mechanism for those people addressing difficult situations (Finfgeld, 2000; White and Dorman, 2001; Barak et al., 2008). The need for this with groups dealing with highly sensitive issues could be considerable. It is recommended that such as system be trialled with people undergoing stressful events to see if it can ameliorate their wellbeing. The healing benefits of storytelling as revealed in this project appear to have significance here.

Recommendation 3: Groups wishing to record cultural history

One of the most highly regarded benefits of use of the probe site as reported by the women was to record their cultural and family history. It is not a stretch to suggest that it could be of similar value to other Aboriginal and Torres Strait Islander people. The recording of cultural history is an activity of considerable importance for many of these groups.

8.1.3 Implications for ICT research with Aboriginal and Torres Strait peoples

Doing community-based research such as the study described in this thesis requires a researcher to step outside of his or her comfort zone on a number of levels. Community research presents issues very different to that encountered in general business orientated ICT development. (Huyer, 2005). The locus of authority is not just based in a manager or other decision-maker, but is spread out among multiple stakeholders. When doing research that requires the navigation of cross-cultural boundaries, communication issues can become problematic. Assumptions made on both sides can lead to difficulties in translation. For instance, in this study many of the participants held beliefs that ICT work was very complex and required a high level of intelligence to comprehend. They doubted their ability to make decisions regarding the development of ICT without expert assistance. This made it difficult to reduce the perceived power structures between researcher and research team, impacting the feedback that I received from them. From the other perspective, I sometimes did not understand social situations that I observed and their importance to the study. As an example of this, I noted that most conversations between the two elder women were based

on “family gossip”. As it turned out, this was a gross misunderstanding of the situation, and the women were engaged in keeping up to date with their group in order to provide what aid was needed.

Iterative nature of participatory action research is very similar to Agile programming or Extreme programming methods that focus on tight coordination between customers and programmers. The ongoing improvements to the system are documented and expanded with each iteration. In this study, each meeting improved the group’s understanding of what was needed, and together the group developed a consensus toward what should be created. This technique ensures that rather than the waterfall method of development where the programmer or project manager determines the entire feature set for the application prior to beginning work, the work proceeds in an iterative fashion, each cycle building understanding about the requirements for the ICT.

Why not use a FaceBook group or other social networking software?

An important premise of this research has been the understanding that existing software that was easily available to the participants had not proved to be of sufficient value to the group in maintaining social cohesion and wellbeing. In discussing this project we often were asked “so, why not just use FaceBook?” This question was briefly discussed in the methodology chapter of the thesis, but a more thorough exploration of this question can provide a framework for explaining the findings more completely. There are many similarities between the functionality provided by the probe site described in this study, and that are present on social networking sites like FaceBook. Messaging and image uploads are two of the most common attributes. However, there are significant reasons why such pre-existing software was not adequate for the information sharing needs of the group.

Functionality differences and their impacts

During the time of the research, a few of the members of the Gugu Badhun formed a closed group on FaceBook. Unfortunately, this site is rarely used, accruing only about 1-2 messages a month. The online group is used primarily to notify people of meetings, other Gugu Badhun who use Facebook tend to do status updates and then put comments on each other’s updates, very much like how everyone else uses FaceBook. The women in this study reported that even though their children might be active on FaceBook they were generally unaware of the closed group. The short length of status updates makes use of the site problematic for sharing historical or cultural information. Status updates are designed to be short bursts of information regarding activities of the poster. Due to the brevity of the medium, in-depth details are seldom conveyed. Provision for a type of posting called “Notes” which allow longer entries is provided, but it is infrequently used.

A final functionality issue that impacts on the use of social networking sites like FaceBook is the idea that all postings appear in one continuous stream, in other words not divided into topical areas. Superfluous information such as results from games and quizzes is interlaced with comments that may be of more relevance. As a person gives permission for greater numbers of people to view their updates via accepting them as a "friend", the hazard increases for sharing data that may be inappropriate for everyone (family, friends and business associates) to see. A significant outcome from this research was the sense of security women reported in having their own space apart from others on the Internet. This would not be possible in a FaceBook type environment.

Lack of control of data

Issues of greater significance for the group are found in the lack of control over data that is required by participation in sites such as FaceBook. One of the issues mentioned by the group related to the need to provide a secure storage place for much of the cultural data that has been collected over the years about the Gugu Badhun. This data could not be stored easily on a social networking site, and nor would it be appropriate there. This would simply prolong the colonization of their cultural history via placing control over their data with an external authority.

A further concern to self-determination and independence is the fact that the site can change radically without their permission or input. FaceBook has a history of making global changes to the site functionality and personal privacy settings without seeking feedback first. The continual use of the "opt-out" rather than "opt-in" method of community agreement is particularly worrisome. Indigenous peoples have experienced many negative outcomes from governmental entities designing their fate, and this reinforces this pattern. It places the locus of control of the information outside of the control of the group, further minimising their power. While it is unlikely that FaceBook will disappear anytime soon, it is extremely difficult for users to export their data off of the site should they choose to do so. Even if a person's account is closed, the interactions associated with that person still exist on the server. Due to the nature of cascading updates that would be required to extract all traces of the data from the site, this is basically impossible to mandate. Therefore data posted to FaceBook stays there permanently. This issue also becomes important when someone dies. Theoretically the family of the deceased should have ownership of this data, however that is not the case.

A final area of concern is the perception of many older Australians (not just Aboriginal people) that social networking sites are not safe venues for sharing private details of one's life. Increasingly more employers report that human resources departments perform

searches against FaceBook records for information regarding off-time activities of both potential and current employees. The implications of this are that privacy becomes non-existent (Acquisti and Groos, 2006).

The main reason that FaceBook is not suitable for this group is that the Gugu Badhun have communication needs that cannot be met by this sort of medium. They need a targeted, role-based system that can be easily modified without needing to consult a wide population, such as millions of FaceBook users. Simplicity of use is another major concern; FaceBook users are constantly inundated with Friend Requests, advertisements for games, and updates that they may not be interested in. The average FaceBook user has a friend list of about 130 people (statistics from FaceBook site) and each person generally posts about 70 items a month. This is a lot of data to navigate.

Recommendations for ICT development work with Aboriginal and Torres Strait Islander people

Although there is currently a base of literature describing how community development activities should be conducted when working with Indigenous people this type of research has not generally been extended to cover ICT development efforts with Aboriginal and Torres Strait Islander peoples (Nakata, 2002; Dyson, 2007). Where this research exists, coverage is mainly given to a methodological description of the research rather than eliciting best practices. This next section provides a brief set of recommendations and outlines future work in this area.

Recommendation 1: Educate ICT designers in complexities of community research

As discussed above, there are significant complexities involved in community research that are not present in common ICT design projects, such as the understanding of local politics, resourcing dilemmas and internal rivalries. Not everyone will agree with the suggestions provided by the designer, and training in how to facilitate discussions regarding decision-making should be required. In community-based research the benefits of bottom-up rather than top-down problem solving should be prioritised.

Recommendation 2: Use of cultural mentor highly recommended

Cultural mentors are very important in situations where the outsider may not have not developed a previous relationship with the people with whom he or she is working (Guilfoyle et al., 2008). This is particularly important in work with Aboriginal and Torres Strait Islander people where previous research has been conducted in an inappropriate manner or in ways that deny the "researched" group a sense of personal agency and self-determination (Smith, 1999). A cultural mentor provides not only access to the community,

but helps alleviate cross-cultural misunderstandings that may occur (Walker and Sonn, 2010). A mentor can point out the subtle details that may be overlooked, especially in cultures where communication styles may be very different.

Recommendation 3: Provide ICT workers opportunities to develop cultural competency

Cultural awareness training provides a researcher or developer with a base set of understandings regarding the community. This is a very surface understanding of the situation, however, and can sometimes lead to the perpetuation of stereotypes regarding the culture under study. Fredericks (2006) describes a health service where the workers had all attended cultural awareness training, this did not lead to the staff being more understanding of the perspectives of their clients. In order to move beyond this dynamic, the NHMRC has developed a model for developing cultural competence in practitioners who work with Aboriginal and Torres Strait Islander people (NHMRC, 2005). Cultural competence is a commitment to engage respectfully with people from other cultures. It should be noted that developing cultural competence is not a skill or attribute that is developed quickly, it requires a significant effort on the part of the practitioner to develop self-awareness and a reflexivity regarding their own practice.

Recommendation 4: Collaborative and iterative design methods should be used

ICT design work of all types involves creating a shared vision of what is to be created between designer and clients. There has been much research done regarding methods of gaining this shared understanding. The research shows that the use of collaborative and iterative methods of design is quite effective in producing ICT that will be actively used by the community members. Agile development methods should be paired with collaborative decision-making by the group.

8.2 Limitations of the research

Due to the methodology chosen for this research, i.e. participatory action research, the sample size of the group was small. While the educational achievement levels of the women differed, most were employed or retired after a history of employment. This is different to the experience of many Aboriginal women (ABS, 2010). Many of the women in the study who provided most of the input on the probe site were older, giving them a different perspective from the younger members of the group. It should be noted that this life-stage may present them with the opportunity to be more reflective about their overall goals and aspirations regarding the use of ICTs. Additionally, the fact that this was not my first research project with this group has bearing on the level of information gathered and the assumptions that I bring in its analysis. After several years of work with this group a

mutual level of trust and obligation has arisen that should be acknowledged. The underlying assumptions of PAR, i.e. that research should have its basis in improvement of group welfare also has an impact on the study. Activities that would prioritize the desires of the group for communication and sustainability have been chosen in combination with those of an empirical, knowledge-gathering nature. Given these three impacts, research conducted by another person or with a different group might reveal different priorities.

8.3 Conclusions

The foundational research question for this study was "how can wellbeing in an Aboriginal community be enhanced through the culturally appropriate use of ICT. This research explored this question through the use of an ICT targeted to the participants' needs and requirements. The research showed that the women engage in activities central to maintaining their family and group identity and sustainability. These actions include staying in contact with distant family members and maintaining ties with their ancestors and country. These activities are central to supporting wellbeing in their group. Due to the distance separating family members, and the busyness of modern life, opportunities to connect and share their lives and culture are growing increasingly small. Significant cultural work is done by the women to stay connected to each other and to their country. These activities are not currently supported by the ICT commonly used in the group such as email and telephone.

Previous use of technology probes with Indigenous participants has focused on examining a particular facet of community life. This thesis widens the lens of inquiry to reveal a holistic view of Aboriginal people and their myriad connections and mutual obligations. While the thesis examines the ICT ramifications it also contributes to the literature documenting supportive mechanisms to improve wellbeing. Although the participants generally focused on more positive outcomes, this research also highlights ongoing situations with negative impacts on wellbeing. Storytelling via the online probe site reveals a method of not only conveying information but also in healing. Situations were reframed in a way to bring healing to both the teller and the listener. The use of supportive photographs in building up the details of stories also added to the complexity of the storytelling process.

This study contributes to an understanding of the importance of connection and social cohesion in Aboriginal and Torres Strait Islander communities. While these concepts are well documented, their application in ICT research is not common. This research contributes to the documentation and implementation of culturally appropriate research methods with Aboriginal people. In order to ensure that Aboriginal and Torres Strait Islander people have access to applications that do not discriminate based on Westernized

metaphors and worldviews a collaborative understanding of best practices for ICT design in this type of community setting is crucial.

After nearly a decade, Nakata's (2002) vision of the future of Indigenous ICT endeavours still rings true.

> What the future Indigenous information context will look like is speculative. What can be certain is that the intersections of different Knowledges, systems, concerns and priorities will converge to inform and develop new practices in this area. As this unfolds, I would hope that the information profession would be mindful of just how complex the underlying issues are and just how much is at stake for us when the remnants of our knowledge, for some of us all that we have left to us, are the focus of so much external interest.

The research in this study has demonstrated that the development and use of culturally appropriate ICTs through respectful collaboration between Aboriginal and non-Aboriginal people that takes into consideration past histories of conflict, present understandings of the differences in ontologies and epistemologies and which strives to level power imbalances between researchers and participants has the potential to improve wellbeing in Aboriginal communities.

Appendix A – Information page

Information Page

Title:

Participatory design of computer supported interaction and collaboration in Indigenous rural and urban communities

About the project:

The aim of this project is to design and create a computer supported interaction and collaboration system for Indigenous people in urban and rural areas. The information used to create this system will come from interviews with Gugu Badhun women, and the data will be stored in a digital repository (computer storage facility) at James Cook University. Access to this system will be determined by the Gugu Badhun people. The Gugu Badhun people will determine who has access to this system. Because some of the information may be culturally sensitive, the Gugu Badhun people will be responsible for deciding what information will be available to certain groups within Gugu Badhun people and the general public. This research project is being conducted as part of a PhD thesis in the School of Maths, Physics and Information technology at James Cook University.

During this research, I will be collecting the following types of information:

1. Data concerning what types of information technology that Gugu Badhun women currently use such as mobile phones, Internet, computers, or game systems.

2. Data concerning the type of system that the participants would like to create. This may include the functionality of a system, how it would operate, and how people might use it.

Once the system has been built and has been used by people over the course of several months, I will be gathering statistics from the system that describes how the system was used. I will also be checking back with the people in the group to gather data regarding how they felt about the system. This information will include whether the participants feel the system is useful and whether it could it be improved.

Your involvement in the project:

You are invited to be involved in the project by participating in informal interviews, focus groups/group design sessions and as users of the system once it is completed. You can participate in any or all stages of this project and may withdraw at any time, for any reason.

Audio recordings of all interviews and focus groups will be provided to the participants to make sure that the information is correct and that it is all right for this information to be used in the final product.

Description of interviews and focus groups and group design sessions:
First interview – background questions
First focus group/group design session – create a diagram of how the system could work
Second focus group/group design session – try out the first version of the system and provide feedback
Third focus group/group design session – try out the second version of the system and provide feedback

What will happen in the first interview:

You will be asked some questions about where you grew up, your age, and your family status. Next, we'll discuss what sort of technology you use on a regular basis: such as mobile phones, computers and the Internet. We will also talk about what things you would like to do, but aren't able to do at the present.

Method of gathering information at the interview:

In addition to taking notes during the interview, you will be asked we will ask your for permission to

audio record the interview. A copy of the audio recording will be provided back to you at the end of the project to ensure that all of the data gathered is correct.

Are there any possible risks to you being involved in the research?
We recognise that recalling information may sometimes bring about painful memories for anyone. Gugu Badhun people should be aware that they may experience some stress through remembering events associated with Government policies and events of the time. Because of this, participants in the project will be provided we will provide you with details of relevant support facilities/services in their your area and give you n assistance to contact the services if necessary.

In relation to confidentiality, you should be aware that if you agree to allow video images and/or your photograph being used in the final product then you will be able to be identified by people viewing the information. You should also be aware that if, in telling your life story, you name places and times and your relationships with others then you may be able to be identified by people who know of your background. You should also consider whether you give permission for

your video/photograph image and/or interview information to remain in the final product in the event of your death, given that this may not be acceptable to some Aboriginal people.

Withdrawal from the Project:
Should you decide at any time during the project that you no longer wish to be involved, you may withdraw from the project without having to explain your reasons. Your decision will be respected.

Further information:
Thank you for your valuable time. If you require further details of the project, please contact:

Dianna Hardy
School of Maths, Physics and IT
James Cook University
Ph: (07) 4781 6921
Email: dianna.hardy@jcu.edu.au

If you have any questions or concerns regarding the ethical conduct of this research project, you may contact the Human Ethics Sub-Committee through:

Tina Langford,
Ethics Administrator
Research Office
James Cook University
Townsville, QLD 4811
Ph: (07) 4781 4342; Fax (07) 4781 5521
Email: tina.langford@jcu.edu.au

Appendix B – Informed consent form

INFORMED CONSENT FORM

PRINCIPAL INVESTIGATOR	*Dianna Hardy*
PROJECT TITLE:	*Participatory design of computer supported interaction and collaboration in Indigenous rural and urban communities*
SCHOOL	*School of Maths, Physics and Information Technology*
CONTACT DETAILS	Ph: (07) 4781 6921 Email: dianna.hardy@jcu.edu.au

DETAILS OF CONSENT:

The aim of this project is to design and create a computer supported interaction and collaboration system for Indigenous people in urban and rural areas. The information used to create this system will come from interviews with Gugu Badhun women, and the data will be stored in a digital repository (computer storage facility) at James Cook University. The project specifically targets the needs of the Gugu Badhun people and to do so we will undertake a series of activities with individuals and groups of people.

Firstly, we will gather information to help us gain a basic understanding of your interests, concerns and the way such a computer system might fit into your daily lives. We will gather this information by talking to you about your relationships, where you grew up, your life experiences, significant events, your experiences with technology, and present concerns and goals. We will also explore with you some existing systems that are designed to support Indigenous people, and with your permission we will also ask you to comment on photographs or other items. Given the nature of the information being sought, the length of these introductory interviews will depend on how much information you want to share, your health and the time frame that you feel comfortable with. We will make audio recordings of our discussions and take notes on paper.

After we have gathered basic information from people, we will invite Gugu Badhun women in groups of 5 or 6 to work with us on design activities that will enable us to develop a prototype system. Each group of women will be asked to attend three group design sessions that will be about 3 months apart; each session will last approximately 2-3 hours.

During this research, I will be collecting the following types of information:

1. Data concerning what types of information technology that Gugu Badhun women currently use such as mobile phones, Internet, computers, or game systems.

2. Data concerning the type of system that the participants would like to create. This may include the functionality of a system, how it would operate, and how people might use it.

Once the system has been built and has been used by people over the course of several months, I will be gathering statistics from the system that describes how the system was used. I will also be checking back with the people in the group to gather data regarding how they felt about the system. This information will include whether the participants feel the system is useful and whether it could it be improved.

People participating in this project should be aware of the possibility of recalling memories that may sometimes bring about painful recollections. This especially applies to Gugu Badhun people who may have experienced trauma and stress through experiencing and/or recalling events associated with Government policies of the time. People who experience this will be provided with information about support facilities/services in their area and given relevant assistance to access these services.

This research is being conducted as part of a PhD thesis for the School of Maths, Physics and Information Technology at James Cook University.

CONSENT FORM

1. **The aims of this study have been clearly explained to me and I understand what is wanted of me.**

2. **I know that taking part in this study is voluntary and I am aware that I can stop taking part in it at any time and may refuse to answer any questions.**

3. **I am aware of the possibility of experiencing some level of stress due to the nature of th type of memories I may recall and if so I will be assisted to seek the help of relevant support services.**

4. **I am aware that if I consent to myself being audio or video recorded or photographed during the interview or provide any photographs to be used in the project then I will be able to be identified in the final product.**

5. **I am also aware that if, in my recollections I name places and times and the nature of m relationships with others then I may also be able to be identified by people who know of my background.**

6. **I understand that any information I give will be kept strictly confidential and that no names will be used to identify me with this study without my approval.**

7. **I understand also, that if I take part in group activities that confidentiality cannot be guaranteed.**

I give consent to the following: (please tick the appropriate boxes)

I wish to participate in:

☐ **interviews**

☐ **group design sessions**

I give consent for:

Audio recording of myself during ☐ interviews ☐ group design sessions ☐ use in final product

Video recording of myself during ☐ interviews ☐ group design sessions ☐ use in final product

☐ **photographs or other documents in my possession being used in the final product**

I will allow any of the following items to remain in the final product after the event of my death:

☐ **my name and details**

☐ **video image**

☐ **audio recording**

☐ **photographs**

☐ **interview information**

I will allow

☐ **the information recorded in the final product to be used in conference presentations and publications as well as a PhD thesis**

Name: ***(printed)***

Signature:	**Date:**

Appendix C – Questions from initial focus groups

Personal background

1. What is your name?
2. Are you related to anyone else here?
3. What hobbies do you have?

Current usage of computers

1. Do you use any special applications at work or just Microsoft Office?
2. What sort of places do you download music
3. Are there any particular web sites you like to go to?
4. Is there anything special you like to use the computer for?
5. Are there certain types of games you like to play?
6. Do you have a computer with internet in your home?
7. Do you find it easy to get time to use the computer at home?

Feelings regarding computer use

1. How do you feel about computers? Do you like them?
2. What sort of things frustrate you about the computer?
3. What is your main worry about your children using the Internet?
4. What sort of things would you like to be able to do with a computer program?

Methods of staying in contact with family members

1. How do you get in contact with family?
2. Do you use the camera on your mobile phone?
3. How do you share photos?

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