

Situating Digital Storytelling within African Communities¹

Thomas Reitmaier^{a,*}, Nicola J Bidwell^b, Gary Marsden^a

^a*UCT Centre in ICT4D, University of Cape Town
Rondebosch 7701, South Africa*

^b*Meraka Institute of the CSIR
PO Box 395, Pretoria, 0001, South Africa*

Abstract

We reflect on the methods, activities and perspectives we used to situate digital storytelling in two rural African communities in South Africa and Kenya. We demonstrate how in-depth ethnography in a village in the Eastern Cape of South Africa and a design workshop involving participants from that village allowed us to design a prototype mobile digital storytelling system suited to the needs of rural, oral users. By leveraging our prototype as a probe and observing villagers using it in two villages in South Africa and Kenya, we uncovered implications for situating digital storytelling within those communities. Finally, we distil observations relevant to localizing storytelling and their implications for transferring design into a different community.

Keywords: digital storytelling, mobile devices, oral knowledge, rural, ICT4D, cross-cultural

1. Introduction

Gathering data and inspiration to localize designing for communities on the periphery of HCI's focus is challenging when they are geographically and culturally remote. Here we describe our experience in designing a prototype application based on ethnography and participation in one geographically remote community in South Africa, and then using this to probe communication in another community, in Kenya. These two communities share the characteristics of some 200 million people in sub-Saharan Africa in terms of their rural locations, low literacy and rich oral traditions. Such characteristics have motivated an increasing range of digital storytelling initiatives² globally to enable community members to share information using voice and photos. These motivations claim that digital storytelling can give the digitally disenfranchised a voice, for personal growth,

¹This is the author's version of the work. The definitive version was published in International Journal of Human-Computer Studies, Volume 69 Issue 10, September 2011, Pages 658–668. <http://dx.doi.org/10.1016/j.ijhcs.2010.12.008>

*Corresponding Author

Email addresses: treitmaier@gmail.com (Thomas Reitmaier), nic.bidwell@gmail.com (Nicola J Bidwell), gaz@cs.uct.ac.za (Gary Marsden)

²Media literacy workshops as advocated by the Center for Digital Storytelling

economic benefit or influence the decisions affecting their lives (Hartley and McWilliam, 2009; Tacchi, 2009) and draw upon opportunities provided by Web 2.0, spoken web and cell-phones (Frohlich et al., 2009). However, to interpret; digital storytelling³, from its Western origins, into rural African communities we must situate digital storytelling within those communities. Our account considers how using a prototype, designed for rural people in South Africa, to probe storytelling in rural Kenya yields reflections on oral practices and the interaction between storytelling and introducing media.

Our story culture profoundly effects how we use stories in HCI to depict requirements and engage with users. Firstly, since computer and written literacy often intertwine, design has a tendency to focus on what oral users cannot do (Sherwani et al., 2009). This is not least because of value-laden opinions on literacy (Finnegan, 2007; Kaschula, 2002) stemming from a now refuted view that literacy itself confers an objectivity and detachment; and fosters specific cognitive processes (e.g. abstraction, categorization) (Hull and Schultz, 2001). Such bias can overlook what people achieve orally; for instance, African oral story-telling traditions have their own definitions and constructs of story form and roles for imagery (Finnegan, 2007; Zenani and Scheub, 1992). They can obscure storytelling within cultural-linguistic contexts, in particular those found in rural communities, which survive by managing interpersonal relations and exchanging knowledge face-to-face. Even where ICT infrastructure exists, technologies for information access are often ill-suited to everyday acts of communication in rural communities, which differ from those in urban places (Bidwell and Browning, 2009). Rather than eventuating on an impersonal written page, oral transfer intertwines with speech's performative role and the continuous recreation, accumulation and division of knowledge across groups according to immediate factors, social systems and power relations. Orality mutually constructs particular management structures and processes and the nuances of daily acts of information transfer and social participation, which stabilize close-knit rural communities that survive by co-operating.

Here we describe the design of a prototype to respond to the increasing accessibility and opportunities of cell-phones (Donner, 2009) in Africa. We start by describing its emergence informed by ethnography, experiments with technology and a design workshop in a Xhosa tribal region of South Africa's Eastern Cape. Then we explain how we used this prototype to probe storytelling using different approaches in the Eastern Cape and Kenya. Next, we distil observations relevant to localizing storytelling and their implications for transferring design into a different community. Finally, we reflect on the process of designing across cultures and into a community and the methods and perspectives we used to achieve this.

2. The Emergence of a Probe

The technology probe emerged by using ethnography to localize a method to involve rural people in storytelling in a workshop and then translating the outputs of this into designing a probe. Some areas in HCI draw parallels between ethnography, participatory design and probes. While we used ethnographic strategies to gain insights into interactions in our design workshop and probe use; we distinguish between these uses

³Telling stories with visual and/or audio media



Figure 1: Headman of Lwandile oversees a village meeting.

methodologically (Crabtree et al., 2009). Our ‘real’ ethnography involves detailed analyses of what people do and how they organize action and interaction in their daily lives and, where possible, local views about actions. We do not think of such immersion as either ‘hanging out with’ locals or ‘talking to’ users; instead, we aim for a rigour in participant observation, dialogue and iterative processes of writing and reflexivity. That is not to say we have not used particular theoretical lenses, such as phenomenology, as rhetorical tools to emphasize elements in this context and motivate general design sensitivities (e.g. Bidwell, 2009). However, it is the *fine details* of what people did in the rural setting, depicted in our ethnography, that influenced our decisions in arranging and conducting a workshop and creating the technology probe.

2.1. Ethnography: Ways of Doing & Saying in Eastern Cape, South Africa

Insights on storytelling, oral and digital communication emerged over 18 months in Lower Ndungunyeni in the Wild Coast of South Africa’s Eastern Cape. We established relationships via emails and a short visit, via Transcape, a Non-profit Organisation (NPO), and with the son of Ndungunyeni’s senior Headman. This enabled us (author two) to live for two months, according to local norms, in the village of Lwandile, and subsequently have two further visits, separated by nine months and encompassing 18 days in situ. We gathered data as we formed relationships, interpreted priorities, discovered design opportunities in the ad-hoc details of daily, domestic and community life, participated in activities and undertook socio-technical experiments (Bidwell and Browning, 2009). In situ, we recorded data using handwritten notes, 650 photographs, of which villagers took 200, and 12 hours of video. Every evening, by lamp-light, we wrote ‘thick’ descriptions, which we then integrated ex-situ with logs of email, SMS, phone calls and Facebook interactions, verbatim and video transcripts, and derived themes hermeneutically.

The meanings we constructed about the ways local people verbalize action, tell stories and entextualize their values and meanings in those speech acts emerged in relation to

diverse experience. Everyday life in Lwandile anchors to customary communication and power structures and traditional habitation and land-use. Most residents can trace their ancestry to the settlement of the 50km² area at least eight generations ago. Families live in umzi, which are informally distributed clusters of thatched, mud-brick rondavels, fronted by a garden for subsistence crops and connected by paths across hilly common grazing land. Formal, legislative institutions are separate from custom and daily practice; for instance people elect politicians but are closer to Headmen who inherit leadership patrilineally (see Figure 1). To begin with, we gained insight by passively observing visitors to the Headman's umzi in connection with his duties (e.g. resolving disputes, signing hunting permits) and during impromptu contextual interviews with his family about everyday life and priorities. Daily interactions developed swiftly with the elder sons and with women during our shared domestic duties. With increased familiarity we conversed about local issues with local teens, villagers and others in the umzi or in the village, and gained insights into the Headman's senior son's priorities for development and pursuing the Khonjwayo Chieftainship. As time went on, we talked with the Headman's son-in-law, a Chief in another area, and local people in Coffee Bay (a tourist area an hour away) and in Transcape's premises where villagers mix with Afrikaans and foreign volunteers. Our discussions varied widely in content and purpose. We noted villagers' interactions with each other as they travelled on local transport, between villages and en route to the city. We observed village meetings; meetings that led to founding a new independent NPO; and, a tribal meeting at the Palace where we were formally introduced to the Queen. We also accompanied the Headman's son on trips to Transcape NPO and to look for records at Municipal Archives and the Palace. We gathered data on formal performances, for instance at a school's official opening by provincial dignitaries and in events that arose because we were there. For example, we introduced the new NPO to The National Archives & Records Services, which led to hosting a 3.5-day workshop on Archives in Lwandile School, attended by over 50 villagers. The workshop was based on long oral presentations by the departments of Land Affairs and Environment; the House of Traditional Leaders; the Chief's emissary; and, the local Councillor. We observed media use locally and computer use at an Internet café in Mthatha, in a Coffee Bay tourist hostel and in Transcape's Education Centre. We also discussed villagers' media preferences and use in generating income and gathered data on phone handset models from the start of airtime sales in a spaza (local shop).

Our situated technology experiments were originally motivated by the Headsman's senior son's interest in using technology to attract attention to, and funds for, his local upliftment initiatives. We introduced him to various Internet facilities to search for information, and view NGO and Facebook websites and then spent an hour per day teaching his sister to set-up solar power, send emails and explore the Internet for information of interest to her. We also illustrated the Internet to children and sent emails for villagers who visited on errands, to charge cell-phones or through curiosity. Later we extended the existing Wi-Fi network, set up email and accounts and a group on Facebook, which yielded data on interactions around photos and text remotely. Various digital storytelling activities arose in situ. Some were intentional; for example, we created a blog to which the Headman's son and daughter uploaded photos and typed short texts. Other digital storytelling was impromptu. The Headman's son used his camera phone in discussions with dignitaries at the opening of a new school; family members orally described their photos or video, such as those they took at a party to honor the Queen; and, we videoed

interviews with the Headman and while walking with family members around Lwandile.

2.2. Integrating Perspectives into a Digital Storytelling Workshop

Informed by ethnography and our situated technology experiments we undertook a workshop to further localize the design of a digital storytelling application, in the Wild Coast. Here we describe how we arranged and realized this workshop, showing how some of our decisions were framed in insights arising in our ethnography.

Many Lwandileans were enthusiastic about recording local stories and felt audio-visual media might preserve their heritage in ways writing cannot. But, they noted that recording must be compatible with the features of orality that construct their identity and not threaten social structures in the way that elders attribute to American movies. Our insights into their communication practice and technology-access suggested the suitability of cell-phones to record and share stories using audio and images. Up to half of 9-year-olds in Lwandile cannot read, partly because school children are taught literacy in English, but villagers usually speak isiXhosa and social practice and preferences for media, when present, emphasize orature, song and dance. Villagers have limited access to TV and their main media are radio and basic cell-phones (e.g. Nokia 1100), which most over 15 years own or share. They make calls more rarely and abruptly than they would like, as airtime is prohibitively expensive, and instead use SMS as it is cheaper.

We aimed for the workshop to involve local users in decisions about incorporating visual and audio media in mobile digital storytelling. We ran the workshop at Transcape NPO on two consecutive afternoons with six participants, recruited via the NPO, from the village of Tschani 10km from Lwandile. Participants included two young men: Bafundi (20 years) and Sphiwo (22 years); and four women, two of whom were preschool teachers at the NPO: Kholiswa (23 years) and Nolutho (33 years) and two of their friends Celine (22 years) and Noileka (23 years). Some participants were fluent in English but others were less fluent and shy; so, one participant, Nolutho, translated our explanations.

During the workshop we wrote notes and recorded video of participants interacting with each other and cell-phones. Design requirements and ideas arose while we watched participants take photos, record audio and create stories together. Ex-situ, the designer-ethnographer (author 2) guided the designer-developer (author 1) through video, photos and stories and suggested some design requirements. We added to these and refined design ideas as we reviewed the video a further eight times. The video enabled us (author 1) to link our more ephemeral experience of participants' worlds, through their photos and stories, to concrete interactions with technology; and, generate usage scenarios and less palpable ideas, such as integrating features and the general feel of the interface.

2.2.1. Making Digital Stories with a Phone-Pair

We sought a loose, non-prescriptive and easily observable way for participants to record photos and audio and create storylines in whatever way they preferred. We needed to take into account, firstly, that villagers treat writing as special and sketching and writing materials are not available locally (Bidwell, 2009), so paper prototyping, typically used to defy rigidity and determinism, is unsuitable. Further, Lwandileans were unfamiliar with the mutability of software development as most, with the exception of the participants of our technology experiments, had never used a computer or feature phone. Thus, in the workshop we used a pair of older (2004) feature phones: a Nokia



Figure 2: The audio (left) and photo (right) phones of the phone-pair.

6600, as a camera, and a Nokia 6630, to record audio. The phone-pair (Figure 2) aligned with villagers’ familiarity but had sufficient ambiguity to avoid constraining use.

On the first day of the workshop, we illustrated a digital story and assisted and observed participants as they learnt to use the phones’ camera, the rudimentary default image and voice software, and text-based menus. Participants took the phones home with them and we encouraged them to take as many photos as they liked to provide us with insight into interactions remotely.

2.2.2. Collaboration and a Person is a Person through other People

We sought to enable workshop participants to create stories together if they desired. We use the term ‘collaborate’ in storytelling, but have some reservations as it may inadequately translate local concepts related to the philosophy of ‘ubuntu’. Ubuntu stems from the African Bantu languages, including isiXhosa, and variously means, “humanity” or “humanness”, and grounds the paradigm of “connectedness of all”. Canon John Mbiti insists that the cardinal point in understanding the African view of humanity is: “I am, because we are; and since we are, therefore I am” (Mbiti, 1990, p106). Thus, ubuntu is significant for concepts such as co-ordination and sense of identity and encompasses the spirit of unconditional African collective contribution, solidarity, acceptance, dignity, stewardship, compassion and care, hospitality and legitimacy. We have explored principles of ubuntu of relevance to social networks (Bidwell, 2010); and in participatory design elsewhere (Winschiers-Theophilus et al., 2010). Here, we describe ‘collaborative’ practices in Lwandile that might be shaped by the ubuntu.

Many observations in Lwandile showed both that cell-phones are not always personal devices and that communication and co-ordination intertwine to support community. Lwandileans’ protocols of speaking and listening contribute to cohesion, shared identity and security and emphasize displaying unity in everyday life. They do not recognize such inter-dependence as a trait defining Western constructs of personhood (Bidwell, 2010); this troubles viewing cell-phones from Western habits of ‘personal space’, where phones are used by one person at a time. In face-to-face dialogue Lwandileans prioritize

launching and maintaining relationships over speed. Consider the way the Headman's son first ingratiated the Education Minister using photos on his cell-phone, which they comfortably looked at together, before illustrating Lwandile School's need for resources. Consider also the prolonged debate in village meetings that feeds into a Headman's decision-making about collectively-owned resources. We were eager to notice diversity in collaborating in recording as we have observed gender differences in patterns of turn-taking that manage spoken interaction and participation. In male and mixed groups people listen quietly until a speaker finishes but, in female-only groups, women often repeat items in synchrony with each other (Bidwell, 2009).

In the workshop participants formed three groups according to friendship and home location: Bafundi and Sphiwo; Kholiswa, Celine, and Noileka; and Nolutho. Participants' relaxed mutual physical proximity in the workshop confirmed our observations about shared phone use. Their use of the camera-audio phone pair revealed collaboration. For instance, Kholiswa's group took turns to say parts of the story, associated with each photo, and fluidly and intuitively knew when to speak; and, Sphiwo located photos on one phone to help Bafundi as he recorded audio on the other.

2.2.3. Storylines

We sought to inform our prototype with insights into the ways that participants combined audio and photos into stories. On the first day we asked participants to think of story ideas, emphasizing that there is no right or wrong story or way to tell a story. The next day, participants looked at their photos and reflected on their stories. We asked if they thought it be better to: record audio first and then find photos to fit; think of a story then decide on suitable photos and record speech; or view photos and record speech. Participants said they were unsure which strategy would be easiest but adopted different strategies when they came to create stories. At the end of the workshop participants indicated the timings of photos and audio recordings using their phones, which we later stitched together as stories.

Two groups held the two phones next to each other looking at a picture while recording audio, which suggested they might draw on photos as memory prompts (see Figure 2). Nolutho spent time looking through photos to find the right ones before recording audio. Kholiswa's group created their story collaboratively, with each member telling a part of the story before passing the phone on to the next person. However, Bafundi and Sphiwo did not hold the phones together; they split the task so that one prepared the next photo while the other recorded audio. They consulted written storylines on paper to co-ordinate audio with photo which they sometimes annotated, between recording audio segments. This suggests that during the process of recording they realized a more effective order to convey their story. They also replayed an audio segment they had just recorded, to check it sounded right. When Nolutho listened to her audio after re-ordering her photo sequence she said 'I need to explain more' and created another sound clip to insert into the middle of her story.

In Lwandile we observed that storylines might emerge serendipitously by drawing on the representational, physical or social. Villagers' accounts were often prompted by cues in the landscape (e.g. the tree that a villager's brother planted); in ancestry (e.g. the Headman's lineage); or by images (e.g. a sequence of photos taken at the King's party). In our blogging activities villagers often found it difficult to think of a story without such resources. However, we noticed that in Lwandile the landscape progressed the narrative

in storytelling and prompted recollections. For instance, the Headman gestured across hills in reminiscing sending a messenger on a horse and his son animated stories of his youth by indicating a forest.

Participants' photos between the two workshop sessions revealed relationships between contents of different photos before their integration into stories and the experiences that prompted participants' storylines and choices they made in balancing photos and audio. The groups had taken 60, 41, and 78 photos, and the content included a range of details about everyday life and values, some candid and intimate; from pigs, to puddles to a naked infant peeing. There were stunning photos of landscape, of sun-light through branches or haloing a cow. Most contained people, in homes, gardens or fields, often undertaking activities (e.g. cleaning, cooking). Participants' stories also focused on people and, for the women, these were biographical. People were in all but one of the 22 photos in a group's story about Kholiswa's infant daughter's routine from awakening to walking to school. Nolutho featured in all photos of her story about gardening, showing that she enlisted a friend. Bufundi's and Sphiwo's stories were staged performances with props. Two seemed deliberately comical: chasing pigs from a home and an infant using a cell-phone; but two seemed to be a gentle satire about their life, which alluded to issues of alcoholism and producing sufficient melons to feed a huge family.

2.2.4. Identity & Privacy

We sought to ensure that our activities would sensitize us to facets of participants' identity. We were anxious because Lwandileans felt outsiders did not articulate the meanings that entwine their identity with a setting in which their kin have resided for generations. We observed how the features of, and material used in, their storytelling join to expectations bound to community, place and being Khonjwayo. Lwandile's isolation and a daily-life spent outdoors means villagers are not anonymous and from birth to burial, and beyond, their identity is etched into the land and their stories index to the furniture of rural life. Relationships are encoded, symbolically and syntactically, in the landscape; customs define where a villager can establish an umzi and, as they are buried in their umzi, ancestors' graves are nearby. Name sounds acutely associate with umzis, as isiXhosa language carries in the open-air, and names carry stories.

In our workshop the remote 'returns' from our phone-pair, such as ambient or contextual content of photos yielded insight into identity and we noted participants disappointment in being unable to take photos in the low illumination of their homes, which have few windows and no electricity. Stretching the workshop over two days enabled participants to involve others, so their photos and stories integrated kin and community, and lessen the weight of power relations in recording stories, between us (author 2), a white academic. As participants might have felt shy about recording opinions for us to scrutinize, we asked them to record stories in isiXhosa even if they knew English, to respect the language boundary that enabled people in Lwandile to separate their intimate locale from external structures and outsiders.

2.3. The Prototype

Our current prototype emerged by integrating and interrogating the design requirements and ideas we produced through ethnography and in our workshop. The prototype, shown in Figure 3, runs on Symbian S60, the most prevalent operating system for feature phones globally. We designed the prototype for mostly single user scenarios, but

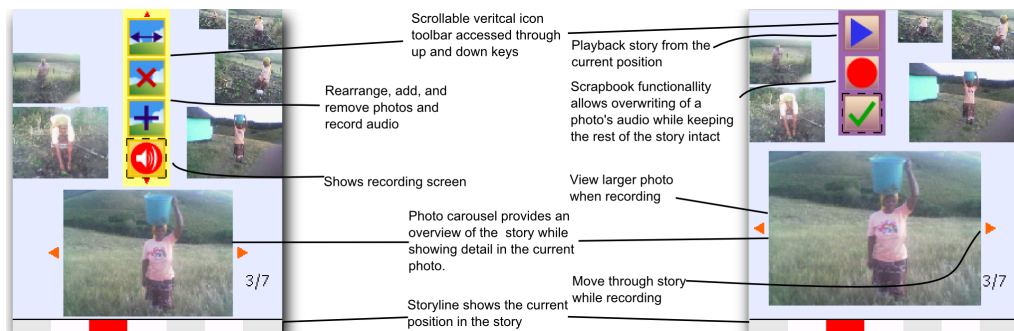


Figure 3: Our current prototype.

features often reflect the collaborative nature of storytelling in our workshop, such as a flowing interaction to mimic the way group members helped each other. Once open, the prototype presents a centrally positioned tool bar of icons for adding, removing and rearranging photos and recording audio (Figure 3). This reflects participants' ease in using the vertical icon toolbar of the voice recorder application but difficulties in using text-based menu systems. Our prototype is designed for flexibility so that users can begin by recording audio or taking photo(s).

If users click the 'add photo' icon the application launches the default image gallery to enable selecting from filenames and thumbnails, reflecting workshop participants use of thumbnails. When users have selected all the photos s/he requires, at that time, the prototype displays them in a storyboard symmetrical carousel of up to 11 photo thumbnails in increasing sizes, scaled to make best use of screen real estate (Figure 3). This arrangement aims to reduce the time overhead that participants encountered in navigating through photos in a linear system and memory load in recalling a long sequence of photos. The carousel also enables easy navigation and may assist users in planning a storyline and envisaging alternative story structures, such as possibilities for patterns and repetition, as photos do not appear along a vertical or horizontal.

Users can add, remove and change the order of photos on the carousel either before or after recording audio. This is vital as workshop participants wanted to alter the order of photos during, or at the end of, recording accompanying audio. If needed, they can also (re)set the timings of the photos. We used animation so that the photos move around the carousel when re-ordered to help reduce errors, such as when participants became confused about the direction of photo sequences. Multiple copies of a photo can be included in a story, which may serve in revisiting a feature or the emphasis and rhythm that similar photos provided to one group's story-telling. Users can also take photos from within the prototype by launching the camera, as we noticed that the photos of one group's story were taken in sequence.

Users can look at, and move, through photos in the recording carousel allowing them to draw upon visual cues while telling their stories. They can record the audio on a photo-by-photo basis; as observed for two groups who paused their recording after viewing each photo and resumed as the next photo was displayed. Alternatively, they can view and move to the next photo of the story without having to pause enabling them to

record their own rhythms in speaking. Throughout this process the prototype captures all interactions with the carousel and uses these for photo timings. Users can then draw upon and change these timings, for instance to map photo timings to vocal patterns.

Users can record audio in one go or record and playback in segments. Recording the story in entirety might suit expert storytellers, or people reading from scripts. Users can playback a recorded audio segment and supplement audio. Recording in segments also offers the capacity to tag photos in a serendipitous manner and collect a ‘scrapbook’ of audio-tagged photos. Thus, users can construct a story in pieces and iteratively refine segments until a final story emerges; which might support those who compose by collage and workshop participants who situated stories in a journey or had difficulty in formulating a story idea. It also supports shared storytelling as multiple users can contribute their own story segments.

3. Localizing Storytelling Using the Probe

Our prototype responds to a need for flexibility in conceiving how different rural African communities may approach and appropriate digital storytelling and how its use can inform our understanding of those communities. Other published (mobile) digital story applications (Frohlich et al., 2009; Jokela et al., 2008) adopt a less flexible approach to using audio and/or photos. They tend to be modelled on another media (e.g. PowerPoint) or designed to suit the story-format of the Digital Storytelling movement (Landry and Guzdial, 2006) and have a task flow for integrating audio and photos. They also tend to limit audio duration or quantity of photos. Our prototype’s affordance for users to iteratively record the story’s narrative and craft the audio experience, with or without photos, provides opportunities to explore appropriation of digital storytelling by communities that have untechnologized life-styles, rich oral cultures and dependence on each other and on the land.

3.1. *Deploying the Probe*

We deployed our prototype in two different communities: Tschani, from where we had recruited participants for the workshop and Adiedo, a village in Western Kenya. Like other rural African communities both Tschani and Adiedo are acutely impoverished. There is poor transport, almost no grid electricity, and no sanitation. We collected 41 stories in total: 15 in Tschani and 26 in Adiedo, but collected these in different ways. Though, in Tschani, seven of the 15 stories contained only one picture and less than 15 seconds of audio.

3.1.1. *Near to the Site of Design: Tschani*

We returned to Tschani to probe storytelling with our prototype in a more informal way than in the workshop. We (author 2) spent two weeks staying in the village and gave the prototype, running on a Nokia 6120 and a 6220c, to four young men (aged 17-23) who independently recorded stories. We introduced the prototype slowly, chatting with the young men about phones and music as they came to visit our rondavel or around the pool table at the NPO. The young men spent two days collecting photos and audio around the village or NPO and, independently, stitched together their stories. Afterwards, we video recorded them explaining their stories and their motives to us. The young men



Figure 4: Mama Rhoda records her story.

gathered 15 stories about activities in the shebeen (local bar), a woman's work, HIV and crime.

3.1.2. Far from the Site of Design: Adiedo, Kenya

Through an existing relationship we (author 1) spent seven days in Adiedo village, by Lake Victoria some 80km south of Kisumu, with subsistence farmers of the Luo tribe. In Adiedo we recruited as research assistant a 20 year-old young man from Adiedo who guided us through the village, introduced us to other villagers, translated, and facilitated when participants had difficulty using the prototype. We recorded handwritten notes and photos and gathered 24 stories, of which eight were audio-only, from 14 people by visiting eight homesteads in a five km² area. Our activities were typified by the following events. On the second day we visited Mama Rhoda and her grandchild in her homestead and, after introducing ourselves and our research we asked her to tell us a story. We recorded her voice as, seated, she told us a traditional tale (Figure 4). Then we asked her if she knew any stories that were suited to photos; so she included photos in another story, including herself as she role-played. The research assistant helped Mama Rhoda and her granddaughter add photos to the storyline, listen to the audio, rearrange photos and stitch the story together. Later that day, we presented Mama Rhoda's story to Mama Theresa and Mama Helena Ajwang at their homestead. They also recorded a traditional tale. As more Adiedons arrived we replayed Mama Rhoda's story and Mama Theresa and Mama Helena asked to add more pictures to Rhoda's story. Mama Theresa then asked for photos of the orphans they cared for, who had just returned from school, so we would show them in Nairobi. In thinking about stories related to the orphans, the women took photos of themselves undertaking various activities. They only briefly thought about the general theme of the story (orphans), however, the exact plot of the story only emerged while they were taking photos. Initially Mama Theresa and Mama Helena wanted to record the story together, but because of time constraints only Mama Theresa later reviewed the photos and, with the research assistant's help, added most of them to the prototype's storyline. She then proceeded to record the story's voice-over

while looking at the photos.

3.2. Localizing Storytelling

Probing storytelling with a digital application can uncover insights into how people might appropriate the medium to their customary communication forms. It also alerted us to issues of communication that the medium does not currently lend itself to. Some of these aspects may be analogous to how oral traditions have been adopted and adapted in African broadcast media (Spitalnik, 2004).

3.2.1. Values & Power Relations

Using the prototype to probe in different ways revealed how storytelling activities entwine with power relations and social protocol and relationships. In both Adiedo and Tschani, some patterns re-iterated aspects of communication protocols observed in Lwandile; such as, the importance of family and personal bonds, high esteem for storytellers, and respect for elders. The content of stories revealed personal ties. For instance we noticed kinship in a story about the daily life of one young man's sister in Tschani; inheriting a business in Adiedo; and, daily activities in supporting family in both Tschani and Adiedo. Adiedons favored hearing their relative's stories and some said, upon recognizing a storytellers' voice, that they would visit her later. Our activities dynamically entwined with power relations. For instance, first Adiedons wanted to hear the digital story of Mama Rhoda, known locally as a superior storyteller but later the story created by Mzee Ogot, at 104 years the eldest member of the community, took precedence. Similarly, while Adideo's children were involved in taking and role-playing in photos, they did not speak and Tschani's young men deferred to elders. The latter was evident for one young man of somewhat mischievous repute who carries a knife for fights and is the subject of local discussion of whether he will chose the path of his brother, currently in prison. Despite his scallywag reputation, his story in the shebeen revealed his deference to elders.

Clearly, how we used the prototype to probe storytelling was shaped by local values. Our visits to Adiedo homesteads often drew a small crowd, while the young men in Tschani created their stories independently after involving others. This may reflect the different roles of stories in building rapport. For instance, the traditional Xhosa praise-poet performs publically as a critic and social commentator on behalf of the community (Kaschula, 2002) while local histories and fables are 'essentially a private matter' carried out amongst those who knew each other well (Finnegan, 2007). However, this entwines with power relations and the way that our presence might have given storytelling activity a legitimacy, unavailable to the young men in Tschani. Further, while the research assistant acted as a linguistic and cultural bridge it is likely he influenced who participated, the stories told and media used. The research assistant has completed secondary school, unlike most Adiedo's adults of whom 58% are illiterate, which might mean participants viewed him as an expert and which has exposed him to Western expectations of stories. Further, we (author 1) and the research assistant are male, while in Adiedo 64% of storytellers were women, which may have influenced the content. Many participants, especially Elders, told moral stories. For instance, Mama Rhoda told a tale about an impoverished fisherman who became rich once he had married a woman he had fished from Lake Gwasi; but after the fisherman abused her, the woman followed by his wealth

(life-stock) returned to the lake. While one young man, in Tschani, was keen to record principled opinions about HIV and crime, most storytelling activities arose in the context of the young men's more general aims. Two were eager to carry the phones on 'dates' to impress two young Xhosa women from the city, who were visiting the NPO, and the others were more interested in earning 50 Rand (\$7) for collecting stories.

3.2.2. *Excising the Hypervisual Lens*

Our probe's flexibility showed that we can easily obscure an African community's emphasis on orality from the perspective of a hyper-visual culture. Most Adiedons recorded audio first before annotating with photos, which registers with the rich traditions of Luo oral literature (Miruka, 2001). The oral arts bring people, places and objects alive, and Adiedons did not find it easy to depict their stories in photos. Many of Adiedons' traditional stories attached to objects or places; for instance, we heard rich descriptions of the folk origins of a nearby hot spring and crater-lake Simbi and how a dead tree on the shores of nearby Lake Gwasi is the form of a fisherman in one tale. However, the preference for the oral went beyond words. In Tschani, one participant explained that photo descriptions were incompatible with recording opinions on social issues, such as HIV and crime; while another, recording stories in the shebeen explained that storytellers aggressively prevented him from taking photos of them to annotate stories.

Our digital storytelling activities provided insight into the way rural Africans may use their oral skills. People were often able to recognize a storyteller's voice, with no other aural or visual cues. They used devices we had observed in Lwandile to add emphasis, such as repetition; each segment in one story, associated with a photo and started in the same way: "With the widows. . .". The prototype's flexibility revealed the way creativity with photos can draw on oral skills. For instance, once he had listened to his story, which included a single photo of his skin and hide workshop, one participant said he needed to add photos of his house, business license, and family. The legibility and accent we place on the visual, as designers from the West, can obscure the aural as we negotiate language divides. It was only when we deployed the prototype that we became acutely aware how we use visual resources in explaining technology; for instance, it was much easier to explain the concept of digital story by reference to photos. Adiedons' easily accomplished sub-steps of the story creation process: taking photos, recording audio and transitioning through photos. However, often they did not know which step they needed to complete next in order to create a digital story and we found ourselves pointing to visual representations in our explanation. Indeed, in designing the prototype it did not occur to us that if people do not use any photos then they would be unable to find their stories! Thus, we more cautiously refined the interface with the oral arts at the upper most in our minds. For instance, with the research assistant, we sketched icons to respond to Adiedo participants difficulties in guessing which functions could be accessed through icons; however, we are cautious to generalize interactions between often localized visual and conceptual metaphors.

Our probe's emphasis on the visual combines with the traditions of storytelling, co-ordination around time and the absence of electricity. Customary storytelling in Africa is an evening activity, undertaken at a time convenient to all, when people have finished their work (Finnegan, 2007). In Adiedo our homestead visits were constrained by daylight and this entwined with our values with respect to efficiency: we wanted to involve many participants over a short time. That is, while we were not looking constantly at

our watches we approached time monochronically, as an impersonal absolute, which contrasts to the polychronic approach of rural Africans. This interacted with participants preference for storytelling, for instance one group were resigned to using a single voice in recording a story's audio, instead of their preference for multiple voices, because of time constraints. However, even when participants were responsible for when they undertook storytelling the absence of electric lights constrained storytelling. For instance, one young man, in Tschani, was unable to take photos because he needed to record at night in order to fit around the activities of a person he sought to record.

3.3. Digital Storytelling Localizes Collaboration & Performance

Digital storytelling activities can be sites for collaboration and cultural translation between the meaning of collaboration for designers and rural Africa users. Sometimes recording stories revealed communication nuances and interactions between storytelling and cooperation. For instance, in seeking to express their daily hardships a group of Adiedo widows took photos while they performed subsistence activities (farming, carrying wood, cooking, cleaning), so role-play and photography became a resource for group thinking. Their discussions about recording audio as multiple or one representative voice furthered our sense of group decision making. At other times collaboration was asynchronous; for instance in Adiedo, hearing Mama Rhoda's traditional tale triggered Mama Theresa to record a tale in the same genre, and we often heard slightly different versions of the same plot or the same story told orally and in song. Dynamic interactions between listening to a previous story and creating a new one resonated with our experience in Lwandile where diverse perspectives across the community had orthogonal relationships with a singular linear flow. Adiedons often wanted to add to the material of another's story, sometimes explaining that adding photos or audio would make the story "more interesting", or complete the story. They seemed to seek to maintain the original story arc and tended to say that details were missing rather than erroneous. For example, one participant claimed that another's account of people's clothing was incomplete, and illustrated the "correct" way of dressing in the past with three photos and a minute of audio, which we appended to the original story. As we had noticed for Lwandileans, there was a sense of pursuing unanimity through disparate tangents so their voices seemed interdependent.

Flexible digital storytelling activities provided insight into how people might appropriate the medium to their customary communication forms but also alerted us to issues of communication that the medium does not currently lend itself to. Adiedons role-played and posed to provide resources for photos. For instance, Mama Helena feigning to be a hyena by crouching over and holding a large wooden cooking spoon to her forehead; and children were very eager to pose with spears and machetes to illustrate the inter-tribal fighting in pastimes. Role-plays resonates with Kaschula's (2002) assertions about the oral literary performance of traditional Xhosa imbongis, or praise poets, where central realities are not confined to words, but include gesture, dance and other extra-linguistic 'acts' - visual and kinaesthetic. They also echo qualities of traditional oral literature that acute emphasise people, rather than objects, strongly conveys the social character of the community's narratives about itself and others. Further, Adiedon's enthusiasm and amusement in watching a performance indicates the role of digital storytelling for co-present as much as remote sharing. From this perspective there was some incongruence with the prototype. For instance, people would pay little attention to the phone when

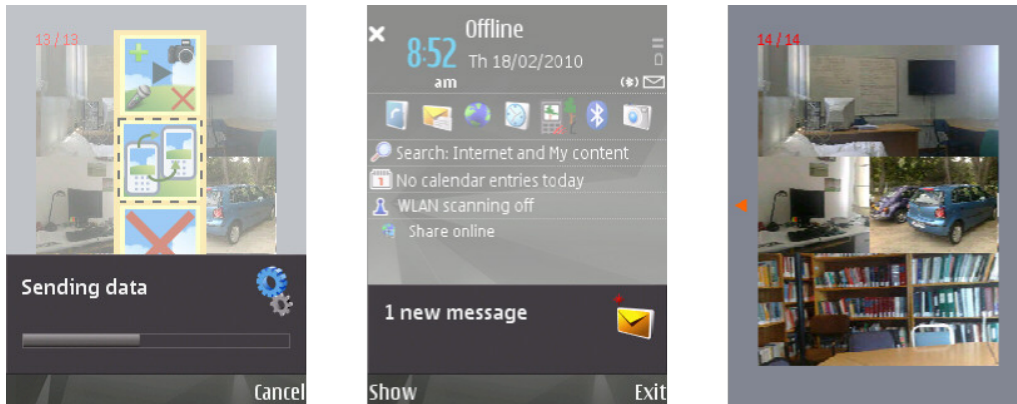


Figure 5: A story is shared from one phone (left) and then opened (center) and displayed (right) on another.

recording audio, and rather than telling the story to the phone they looked at us and the people gathered around as they performed their stories. Sometimes they preferred that the research assistant hold the phone, suggesting they found that the phone interrupted the form they preferred to engage in communication. Similarly photos might have this intrusive quality, for instance, after Mama Rhoda had pointed and started singing and dancing towards a calabash in front of her house, she sat back down. The calabash prompted her to describe how her great grandfathers drank fermented alcohol from that calabash while their wives were dancing. However, as she recorded the story's audio she did not look at the phone, or photos but instead intensely into our eyes.

4. Current & Further work: Multiple Stories & Co-presence

In Lwandile we first noticed how stories link together and how storytelling is often a group activity; in Adiedo and Tschani observations around our probe confirmed this. Our prototype now allows storytellers to not only share a story by sending it to another phone, but also to collaborate on a story by incorporating changes made to an original story once it is transferred back to the original phone (see Figure 5). Participants in our workshop, and in Adiedo, often managed digital interactions from multiple views around a theme in a co-present way, which together with our ethnography in Lwandile, allows us to revise our view of media sharing and the affordances of media for storytelling in rural Africa. In Adiedo when participants collaborated asynchronously they did not interrupt an original linearity to connect various directions from disparate parts, but sequenced them in. At the same time, our ethnography and probe deployment shows temporal rhythms and patterns arching across stories, such as repeating phrases, segments or motifs, which convey emotion and other information in storytelling.

In further developing our prototype we are experimenting with ways to interconnect multiple voices in sharing digital stories. This is not a new avenue for exploration. However, common approaches towards incorporating multiple voices into stories tend to reconcile with particular concepts about self and narrative and these have temporal consequences. They favour a Ricoeurian view where people constantly re-narrate an

open-ended life-story as they reflect and gain experience. Richouer suggests that people produce their identity in their re-narrations by drawing together diverse elements into a larger whole and syntactical ordering events, agents and objects (Dauenhauer, 2008). These narrative arrangement render meanings, about why, how, who, where, when, and thus foster a causal continuity from a temporal succession. Narratives in more individualised societies, of which Richouer is part, might afford greater diversity in constructing identity than in those societies philosophy where “persons are part of a much wider, and very significant, community of living beings” (Forster, 2007). Richouer links self and narrative to temporality and refers to the ways narrations contribute different and non-coincident representations of time including: a time “lived” in the story; a time about the unfolding events that the story depicts; and, a time of the world in which the story is experienced. Recording media, including writing, contribute to diversity in temporality. Current mashups of oral stories, such as IBM’s ‘Spoken Web’, are built upon the perspective of individuals contributing items independently in discrete oral items (Arons, 1991). The temporal diversity contrasts with the rhythms and patterns of storytelling we, and others (e.g. Finnegan, 2007; Zenani and Scheub, 1992), observe in rural Africa and the way co-present communication converges the time of the world in which the story is experienced. Thus, our emphasis now considers ways face-to-face storytelling manages interactions around media.

5. Conclusion

Designing a prototype in one rural African community to probe storytelling in another both revealed and addressed notorious issues when we only think from a written text perspective, towards localization in Africa. Our in-depth ethnography and user participation in design activities allowed us to create a digital storytelling prototype better suited to the needs of rural, oral users. However, through our activities in Lwandile, Tschani, and Adiedo we noticed that it is almost impossible not to let our cultural heritage influence our methods, activities, and design decisions no matter how hard we try. This is perhaps the biggest challenge of designing across cultures. However, we believe that this does not have to mean that cross-cultural design is a hopeless endeavor. Rather, we should embrace the fact that our user understanding is incomplete and our methods inherently flawed, and use our activities to further our user understanding. This perspective enabled us to continually question our methods and design decisions and gain a better understanding of our users, their context, and use of our prototype in that context. This allowed us to uncover communalities and differences between storytelling in different communities and, importantly, will allow us to further refine and customize our prototype to better suit each community’s needs and traditions. Although we are encouraged by how well our prototype was able to perform in Adiedo and Tschani showing the importance of ethnography and user participation in design we must not allow this to lull us into a false sense of achievement. A design, even if ethnographically informed, is not the end of a cross-cultural design process. It is only the beginning.

6. Acknowledgements

We are deeply grateful to: Lwandile’s Headman and villagers, Transcape (www.transcape.org), Tschani workshop participants, Bill Tucker (University of Western

Cape), Adiedo's villagers, George Anyango, and Asher Ojuok. We thank Nokia Research, Kenya for donating handsets and the Telkom Centre of Excellence for partial funding.

References

- Arons, B., 1991. Hyperspeech: Navigating in Speech-Only Hypermedia. In: Proceedings of the third annual ACM conference on Hypertext - HYPERTEXT '91. ACM Press, New York, New York, USA, pp. 133–146.
- Bidwell, N. J., 2009. Anchoring Design in Rural Customs of Doing and Saying. Vol. 5726 of Lecture Notes in Computer Science. Springer, Berlin / Heidelberg, pp. 686–699.
- Bidwell, N. J., 2010. Ubuntu in the Network: Humanness in Social Capital in Rural South Africa. *interactions* 17 (2), 68–71.
- Bidwell, N. J., Browning, D., 2009. Pursuing genius loci: interaction design and natural places. *Personal and Ubiquitous Computing* 14 (1), 15–30.
- Crabtree, A., Rodden, T., Tolmie, P., Button, G., 2009. Ethnography considered harmful. In: Proceedings of the 27th international conference on Human factors in computing systems - CHI '09. ACM Press, New York, New York, USA, pp. 879–888.
- Dauenhauer, B., 2008. Paul Ricœur. In: Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition).
URL <http://plato.stanford.edu/archives/fall2008/entries/ricoeur/>
- Donner, J., 2009. Blurring livelihoods and lives: The social uses of mobile phones and socioeconomic development. *Innovations: Technology, Governance, Globalization* 4 (1), 91–101.
- Finnegan, R. H., 2007. *The Oral and Beyond: Doing Things with Words in Africa*. University Of Chicago Press.
- Forster, D., 2007. Identity in relationship: the ethics of ubuntu as an answer to the impasse of individual consciousness. In: du Toit, C. (Ed.), *The Impact of Knowledge Systems on Human Development*. Research institute for Religion and Theology (UNISA), Pretoria, pp. 245–289.
- Frohlich, D. M., Bhat, R., Jones, M., Lalmas, M., Frank, M., Rachovides, D., Tucker, R., Riga, K., 2009. Democracy, Design, and Development in Community Content Creation: Lessons From the StoryBank Project. *Information Technologies & International Development* 5 (4), 19–35.
- Hartley, J., McWilliam, K., 2009. *Story Circle: Digital Storytelling Around the World*. Wiley-Blackwell, Oxford.
- Hull, G., Schultz, K., 2001. Literacy and Learning Out of School: A Review of Theory and Research. *Review of Educational Research* 71 (4), 575–611.
- Jokela, T., Lehtikoinen, J. T., Korhonen, H., 2008. Mobile Multimedia Presentation Editor: Enabling Creation of Audio-Visual Stories on Mobile Devices. In: Proceedings of the 26th annual CHI conference on Human factors in computing systems - CHI '08. ACM Press, New York, New York, USA, pp. 63–72.
- Kaschula, R., 2002. *The Bones of the Ancestors are Shaking: Xhosa Oral Poetry in Context*. Juta, Cape Town.
- Landry, B. M., Guzdial, M., 2006. iTell: Supporting Retrospective Storytelling with Digital Photos. In: Proceedings of the 6th ACM conference on Designing Interactive systems - DIS '06. ACM Press, New York, New York, USA, pp. 160–168.
- Mbiti, J. S., 1990. *African Religions and Philosophy*, 2nd Edition. Heinemann.
- Miruka, S. O., 2001. *Oral Literature of the Luo*. East African Educational Publishers, Nairobi.
- Sherwani, J., Ali, N., Rosé, C. P., Rosenfeld, R., 2009. Orality-Grounded HCID: Understanding the Oral User. *Information Technologies & International Development* 5 (4), 37–49.
- Spitalnik, D., 2004. Electronic Media and Oral Traditions. In: Peek, P. M., Yankah, K. (Eds.), *African Folklore: An Encyclopedia*. Routledge, New York and London, pp. 109–113.
- Tacchi, J., Apr. 2009. Finding a Voice: Participatory Development in Southeast Asia. In: Hartley, J., McWilliam, K. (Eds.), *Story Circle: Digital Storytelling Around the World*. Wiley-Blackwell, Oxford, UK.
- Winschiers-Theophilus, H., Bidwell, N. J., Blake, E., Koch-Kapuire, G., Rehm, M., 2010. Being Participated: Community based design an extension to participatory design. In: Proceedings of the 11th Conference on Participatory Design 2010: PDC 2010. ACM Press, to be published.
- Zenani, N. M., Scheub, H., 1992. *The World And The Word: Tales And Observations From The Xhosa Oral Tradition*. University of Wisconsin Press, Madison, Wisconsin.