Appreciating *plei-plei* around mobiles: Playfulness in Rah Island

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ABSTRACT
We set out to explore and understand the ways in which mobiles made their way into an environment—Rah Island in Vanuatu—for the first time. We were struck by their playful use, especially given the very limited infrastructure and inexpensive devices that were available. Based on our findings, we discuss tensions between playfulness and utility, in particular relating to socio-economic benefits, and conclude that playfulness in these settings needs to be taken as seriously as in any other setting. Additionally, we formulated three challenges when designing for play in similar settings: (1) engage intimately with the materials of inexpensive ICT; (2) revisit design recommendations for playfulness to ensure that they can travel/translate into other cultures; and (3) alleviate existing tensions.

Author Keywords
Playfulness; third wave HCI; ICT4D

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H.5.m [Information Interfaces And Presentation]: Miscellaneous;

INTRODUCTION
The rapid pace of mobile device adoption in the developing world is evidenced by some astonishing figures: it accounted for nearly 4 billion subscriptions in 2010, and represents a segment of nearly 70 mobile subscriptions per 100 people, approximately 73% of all global subscriptions [39]. While acknowledging that the 'developing world' is not a monolithic, all-encompassing term [31], for the past years, the growth and adoption of mobiles in such areas has been of increasing interest to the research community [33]. This comes as no surprise, as this penetration of a technology into communities which have traditionally been at the margins in the adoption of innovative, and more specifically digital, technologies, is unprecedented.

To contribute to our understanding of why the mobile is so desirable and what we can learn from that when designing technology, we focus on some of its non-instrumental uses and what we may call a playful attitude towards interaction (elsewhere [10] we have published an analysis of the data focusing on bodily re-orientations and somaesthetics).

This paper refers to lessons learned during our fieldwork in Rah, a small island in Vanuatu (a Melanesian nation in the South Pacific), where mobiles were introduced for the first time just as we arrived. Below we start by uncovering some of the different types of playful modes of appropriating mobiles we observed. We then discuss tensions that emerged between these playful uses and other, more instrumental goals, which some viewed as being of a higher importance. There is a similar ongoing discussion within the field of Information and Communication for Development (ICT4D) on the tension between 'needs' and 'desires' of those receiving ICT. We see reminiscences of this utility vs. playfulness tension also in the HCI field. We conclude that design for playfulness needs to be taken seriously for all user groups, no matter their socio-economic status.

Based on these insights, we formulate three design challenges: (1) intimate engagement with the materials of inexpensive ICT; (2) revisit design recommendations for playfulness to ensure that they are relevant and useful cross-culturally; and (3) the need to alleviate existing tensions.

PLAYFULNESS
Play, playfulness, or being playful, are complex terms to define and understand. It has often been downgraded, both in our language and in the study of human behavior, as Riezler points out: "We say 'merely playing' whenever we are not serious […] the 'merely' points to a deficiency, to something that is absent in playing" [28]. In many languages, such as Greek, there are even terms that differentiate a type of 'mere play' (παιχνίδι, associated with trifle pursuits, of no real value) from other types of play like: αγώνας for a sports match or election campaign. In Bislama (the most widely spoken language in Vanuatu [25]), the term used for such 'mere' play is *plei-plei* and it is often associated with frivolous pursuits, children or child-like activities.

In his classic text *Homo Ludens,* Huizinga talks about play as a foundational aspect of culture [15]. He does not mean that it is a manifestation of culture, but rather as preceding and constituting it. He separates 'play' from 'ordinary life', seeing it as an act of freedom, orderly, and pursued for its own sake. Similar to Huizinga, Riezler argues that we need to move away from the idea that playing should be seen as a means to reach something else—of higher importance—and

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instead should upgrade it to a valuable goal in itself [28]. He connects the ability to play to 'freedom' or 'liberation'.

The pursuit of play for fun and enjoyment as an autotelic activity (pursued for its own sake) has been addressed by many classical psychologists, most recently by Apter who emphasizes the importance of these activities in his Reversal Theory [1]. This also resonates well with Csikszentmihalyi's influential concept of flow [8], and the pleasure found in such activities, pursued for their own sake, and rewarding in and of themselves.

Brown & Vaughn provide an in-depth analysis of the many different types of play existing in humans and animals alike, as well as the different dimensions of its importance, from 'normal' brain development to a transformative force capable of improving people's lives dramatically, vital for survival. They empasize the importance of playing, stating that "*the opposite of play is not work, it is depression*", and urge us individually to do a search within our own personal histories in order to empower ourselves [6].

As pointed out by Lindley et al.,[21], play and playfulness are complex concepts that seldom are properly unpacked in HCI, despite the fact that quite a lot of attention is given to what Bödker names "*third wave HCI*" [7]– that is, focusing on experiences, emotions, fun, and play rather than solely on utility, work, and work-oriented group communication.

Others have brought attention to playful, autotelic activities, for example Juhlin and Weilenmann's work on hunting [18] or Jeffrey and Shaowen Bardzell's work on sex [2], both of which focus on the activities themselves, helping support the growing interest in the domain. Indeed, later in the paper we will come back to some of the design recommendations for playful or ludic engagement brought forth by HCI-researchers, such as in design for playfulness [21], design methods aimed to bring playfulness into the process [11,23], playfulness as expressed in game play [29], or ludic engagement [12]. Our aim here is to emphasize the importance of play in every setting and situation, showing how these same design recommendations could be applied to open up for less expensive technologies for playful use.

ON SELECTING THE LOCATION AND PROCESS

We conducted 2-monthes of field work between January – March 2010 on Rah Island in Vanuatu, a Melanesian nation in the South Pacific composed of approximately 83 islands. In Vanuatu mobile penetration varied greatly. Some locations such as the urban centers of Port Vila (the capital) and Luganville had full and reliable coverage, while some villages and even full islands had absolutely no coverage.

There were two people directly involved in the study: the first author, a PhD student in HCI, and an MSc student in anthropology. The partial sponsorship of an anthropology student was intended to provide the study with a much-needed sensibility for conducting fieldwork. We also consulted with an anthropologist who had spent a longer period of time in Vanuatu and who accompanied us in the field.

The field work reported here took place on Rah Island where the first mobile tower began operating the day of our arrival. This was a fortunate coincidence. Rah Island is part of The Banks group, one of the most northern island groups in Vanuatu. There was no centralized electricity production, making digital technology uptake and usage particularly challenging for this community, consisting of approximately 96 members [38]. The fact that very few people had regular income also made us curious as to the obvious desire people had in acquiring these technologies. Most mobiles were introduced in Rah, by the company TVL, which sold an old Alcatel model as part of a promotional package months before there was any network.

During our fieldwork approximately 50 pages of notes from ethnographic observations were gathered, around 1300 pictures, and about 4 hours of video. The latter was more difficult to collect due to different situations that made it inappropriate and/or impolite to film. We also conducted 10 semi-structured interviews with different people in Rah and held an open assembly with most of the population (requested and organized by one of the chiefs) where we explained the purpose of our visit, answered questions, and collected notes from the public discussion that emerged. Quotations were translated from the Bislama and French into English by the researchers.

The data analysis was conducted by the two authors who invited several research colleagues to openly discuss different portions of the data. The playfulness aspect of the mobile phone introduction in Rah was one of the topics which spurred the most discussion and interest. Other results from this study have been reported in previous work (such as bodily practices around mobiles [10]). Here we focus on insights into non-instrumental, playful practices that people engaged in, and that partly seemed to justify the enthusiasm around this technology.

PLEI-PLEI IN RAH

Let us now turn to our fieldwork and the different ways in which people in Rah engaged in *plei-plei* around mobiles, starting with the obvious–playing games–and then moving step-by-step from playing by oneself to more social play.

Although introduced immediately upon our arrival, some people in Rah, in particular the younger generations, seemed to already be quite savvy mobile users from day one. Wondering how that expertise had been developed, we learned they had already begun using their mobiles before the network was in place. In fact, we observed this behavior around other villages in the neighboring island, Motalava, where network connectivity was mostly not yet available. We saw people walking around with their mobiles, fully charged, despite the lack of connectivity. We asked ourselves: what were people doing with their mobiles?

Game play

The games on the mobile were without a doubt one of the most appealing features used in this offline mode. The phone most people owned came with a version of the clas-

sic game Tetris. We had the chance to witness many times people sitting around playing the game on their mobiles: "*The pikinini [Bislama term for children] spend the whole day playing on the mobiles… they don't want to work anymore…*" complained Fajo. In fact this idea that it was mainly the children playing the games was one that we came across a variety of times, but this was far from the whole story; through helping many adults with phone-related problems, we observed what was being used on their mobiles, and many times, we noted the game Tetris set on pause. When explicitly asking about this, younger ones would mostly smile and nod in acquiescence, whereas adults would typically deny this usage, despite our direct observations of grownups engaging in the game playing.

Playing with ringtones

Music and multimedia were, in general, a very desirable aspect of mobile phone interaction. Unfortunately for most people, the devices they possessed supported nothing more than polyphonic ringtones. But the fact that most phones only supported very simple sounds did not mean the people were hesitant to make extensive use of this capability. In fact, people would be playing with these ringtones at all times, switching between different ringtones to listen to them. During our weeks in Rah, ringtones were permanent and ubiquitous. This was indeed one of the most contrasting aspects in Rah, where one was surrounded by dense bush, water, and nature in general, and yet from all directions one could hear a cacophony of ringtones. This could last until late in the night and would begin again very early in the morning. Of course the novelty aspect played a role here, and similar behaviors were observed in developed and developing countries alike. Still we couldn't help but be reminded of the enjoyment of even the simplest interactions.

Playing through tweaking

Exploring the mobile phone in all possible manners, even without any connectivity, was also prevalent. People were constantly changing wallpapers, color schemes, and ringtones, and they would then show the new look of their mobiles to others. This aspect was not only quite visible around Rah by simply observing people walking around and tweaking their devices, but became all the more apparent by the frequent requests we would get to fix people's mobiles. Usually, we were asked to fix the phones as the owner believed that it had been physically damaged from water exposure or some other cause, but that was rarely the real reason for the problem. Most times the problems were due simply to 'over-tweaking': sometimes the language was changed into an unknown language, and people would be lost trying to get it back to English or French, while other times the sound was set to a minimum and people assumed that the speaker on the mobile was broken, while still other times the contrast on the screen was set to levels that led people to believe that it had broken. As in the previous accounts, though we want to focus and learn from these behaviors, that is not to say they are purely specific to Rah and some may even be familiar to the reader.

Playing with limited interaction

Other interactions were performed in the absence of mobile credit. Unlike the previous accounts, this happened where there was connectivity but where people lacked credit on their phones to perform any interactions with an associated cost. Complaints regarding the high costs of calls were frequent, but it was noticeable that, despite the lack of credit, people were placing the mobiles to their ears, oftentimes phoning the free mobile services.

Everywhere we could hear ringtones, this time as a result of incoming messages. The primary reason to keep the mobile's battery charged was of course largely due to the possibility of receiving both incoming calls and messages, but this was not the only reason. Instead, people were, for example, checking their available credit using one of the free services. This would tell them not only the money available for calls, but also the number of free SMS available, a part of the starting promotional package included with the acquisition of the mobile and the corresponding SIM card.

The activity did not seem to be the monitoring of the exact amount available that spurred this interaction, since the regularity with which this was performed was such that the credit would not vary significantly and often, not at all. What seemed more interesting was the possibility of having a two-way interaction, free-of-charge. Perhaps the sensation of receiving replies following requests, of performing commands which echoed back, was satisfaction enough.

For instance, this pleasure in small interactions was also noticeable when people constantly monitored the state of their network coverage, an activity that sometimes lead to real-life debate about it: "*Look, now I have no network again*", Jorege, one of our informants, would say at times when confronted with no signal, or "*Here I have one stick*", referring to the bars/sticks on the top-right corner of the screen, indicating the signal strength.

Finally, there was *plis kolmi* (Bislama for 'please call me'). This is a service often present in both developing and non-developing countries alike, and it allows for one to send a message to another person with the content: "*plis kolmi [number of sender]*". In Vanuatu it was free and extensively used. From a request for someone to call back, to a specific signal prompting a predefined action, such as 'When I give you a missed call come to the market', the possibilities of this service are very much open-ended. This feature has been documented to serve a wide variety of purposes, most notably in Horst and Miller's description of a set of social practices around this functionality in Jamaica, including its role in supporting romantic relationships [14].

In Rah, the usage of the "*plis kolmi*" service was frequent, generally to send signals such as calling people over for *kava* (a root used to make a traditional beverage), and represented yet another free mode of interaction people seemed eager to explore.

Playing with coverage

Playing with network connectivity itself was often turned into a playful activity, as looking for reception in a peculiar and often irregular landscape (see Figure 1), made limited coverage a near constant. One such encounter occurred when we were walking along the hills leading to Mount Suretamate volcano near Lalntak, in Vanua Lava. As we were heading deeper into the bush, we were also moving away geographically from the location of the TVL tower, the only one providing service for the entire region. Many obstacles presented themselves, such as hills, streams, rocks or dense vegetation. After such obstacles, Rob, who had brought his mobile along with him, would scream that he had reception. This would be followed by laughter or surprise among the others present, including ourselves, for the simple and surprising fact that the network would still reach these areas. When there was no network, he would move about in the nearby landscape, climbing rocks and up trees, raising his arm, trying to find a point where there would be reception again, and in finding it, he would scream success once again. This went on until the point where there was no more network to be found, at which point he stopped checking his mobile as frequently.

Figure 1: Searching for reception

It is interesting to notice people trying to make sense of the invisible landscape of coverage, by mapping it to their readily available landscape, such as coconut trees, hilltops, and the middle of the water. Similar to Rob in the example above, people did this in a playful manner, almost like a game in which the goal was to find where the network connectivity began and ended. Exploring network coverage in harder to reach landscapes constituted an extra challenge. This was done with great enjoyment and entertainment for all present, and became a kind of challenge in the landscape to find connectivity as it became more and more scarce.

Playing with information

Exchanging information and knowledge are vital components in any culture, and the ability to verify the veracity of information is a challenge that pervades every society. Though it is well beyond the scope of this work to analyze, dissect, and evaluate the full length of mechanisms and practices to share and verify what is trustworthy information that have evolved throughout time, mobiles have now entered the equation, changing how information and gossip travels between groups of people in the different islands.

We first became aware of the complexity of information exchange in Rah, and the ways in which it was not immediately revealed or evident to us, during a hurricane warning. The winds were strong and many people told us they heard a hurricane was forming. Traditionally people referred to this as “coconut news” or “coconut wireless”, in a joke about the unreliable nature of the rumors, and beyond that, it was very hard to verify whether or not that was true. Anxiously we tried to contact friends in Port Vila, without success given that the network was unavailable, most probably in connection with the cloudy weather. This serves to illustrate not only that we were completely at a loss when faced with this situation, being absolutely powerless to confirm or disconfirm the information, but that people in Rah seemed to deal with this with much greater ease, being more used to dealing with, and evaluating, this sort of more nebulous information exchange.

One episode, which partly exposed the novel aspect of the mobile in the process of exchanging information, came about upon the reception of an unusual SMS: “*One boy is drinking the blood from a young girl in Freswota Park. Come and share with your friends*”. This was the message that we, and others, received on our mobiles, while we were visiting The Banks islands. What struck us after getting this message was not so much that the mobile was used to spread stories whose veracity was doubtful, but rather the fact that this vampire story became the main topic of conversation for several days. It seemed that people had an overall difficulty in, not only confirming the authenticity of this story, but also dealing with this information in a more general sense. Many asked us about it, since they lacked a reliable source to confirm. We proceeded to call some of our contacts in Port Vila but failed to get an absolute confirmation about the story in question. What seemed for us to be much more pressing information to verify (the hurricane warning) was dealt with easily by the people in Rah, whereas the episode described in the message, seemingly of a less urgent nature from our perspective, inspired much greater of anxiety and curiosity. For the vampire story, people came to us for confirmation whereas for the hurricane news, we were the ones anxiously asking for news.

While we, the researchers, and perhaps the reader, have a certain worldview in which hurricanes represent a pressing concern whereas the vampire story does not, this represents a particular perspective, and we are unable to fully unpack the perspective people in Rah have towards these episodes. What we could tell was that the vampire story provided the topic of conversations for the next several days, fueled intense debates, jokes, and comments about the narrated episode, and at the very least, added to the life in Rah during those days, in a playful way. And what was obvious

was that the introduction of the mobile represented a change to the local social life in Rah which seemed to be both welcomed and appreciated.

Social play

People in Rah would often pass along SMS with greetings or with jokes. For instance, we were the recipients of messages with various original ways of wishing "Good night". Encouraging such behavior was the fact that everyone had received 1000 free SMS to send as part of the startup package provided by the telecom operator. But sometimes, those messages were not only sent to friends and acquaintances. We received a significant number of calls which we assumed to be wrong number. At first, given our very limited knowledge of Bislama, it was impossible to establish any kind of communication. We were subsequently informed that it was very common for people to call randomly chosen numbers, sometimes to ask for money, but most commonly, to make conversation and to start a friendship. A local, who had lived in Port Vila, told us that "*I met many girls this way [laughter]. Young boys and girls do this a lot to meet new people*". While on a bus in Port Vila, we also heard a radio show in which the host hosted a debate around this.

In Rah perhaps given the generally compact geographical distribution of their pre-existing social networks, there may have been an added motivation to adopt this interaction. This compact nature was emphasized to us by Jorege, who told us that one of the kids had set up his contact list along with many others, and given that everyone received their phones at the same time, this resulted in everyone having almost the exact same contact lists.

We also heard different accounts of forbidden romantic encounters being secretly mediated via mobile. With Rah being a small island with a small population, one can imagine this being not so easy to effect, but the phone seemed to assist people in accomplishing that, to the point that Fajo complained about this, stating that: "*Many mobiles already ended up in the toilet because of infidelity*" and that young boys and girls were engaging in these sorts of encounters, making it harder to control their 'inappropriate' behaviors.

Another aspect is that this social play was occurring within geographically compact networks. Fajo pointed out the proximity of many of thee interactions: "*They [Jorege and his brother in law, present during our talk] call each other all the time, just to say: The kava is ready' [Both burst into laughter]*", when they lived a couple of dozen meters away.

We argue that it is difficult to try and derive meaningful instrumental value from these encounters and rather that it is important to view these social play interactions as possessing intrinsic value, being entertaining in themselves.

Playing with the surface aesthetics

People complained extensively about the phone most were provided with, and many usability issues were brought up. For instance, some options were misunderstood leading people to erroneously erase information. Despite our own experience with mobiles, developed over many years of use, we often found it difficult ourselves to help people revert some of their mistakes. The usability and clarity of options was substantially lacking. As can be noted from our discussion, there was not much entertainment value "straight out of the package" in these mobiles, the only game being Tetris. Most entertainment value discussed, people had to create themselves.

On a level of visual aesthetics, the surface of the phone did not please people in Rah, particularly because they all looked the same. To distinguish them from one another, people placed stickers on their phones, adorned them with different types of lanyards and we even saw a case where someone made a burn mark with a cigarette on the mobile's casing to differentiate it from the others (see Figure 2).

Figure 2: Two different decorations on two different phones

People in Rah had heard about mobiles before they were available on the island and some, who, for example, had visited Port Vila recently, had even experienced them. This engendered some false expectations regarding the types of phones they were going to have access to: they were expecting more multimedia possibilities, cameras, as well as internet access. None of those aspects were found in the available devices, making people generally disappointed with the phone itself.

Summary: forms of play

Despite their limited functionality, unstable infrastructure, and lack of usability and appealing aesthetics, people in Rah engaged in many kinds of *plei-plei* with their devices.

Loosely building on Lazzaro's characterization of the emotional reasons why we play games [19,20] and without attempting to claim that we necessarily understand the underlying emotional reasons why people in Rah engaged in these playful behaviors, we see reminiscences of her four categories: *easy fun, hard fun, people fun* and *serious fun*.

Hard fun involves getting rewards after figuring something out, such as solving puzzles in Tetris. Easy fun concerns explorations and "*wanting to figure it out, excitement and adventure, liking the sound of cards shuffling*". This maps

to what happened in Rah when exploring the network coverage, the joy gained from simple interactions with the free services for credit balance, and calling unknown numbers. People fun, or social bonding, was apparent in how they phoned friends in a nearby house just to ask if the kava was ready, or sending good night SMS. Finally, by serious fun, Lazzaro refers to those activities that provide meaning and value that might change players. This was perhaps not yet available in what people in Rah were able to access

By drawing a parallel to Lazzaro's work, our aim is simply to point out that many of the behaviors in Rah are very similar to those we already know of in HCI, even if their form is shaped by the specifics of the technology and conditions in Rah.

TENSIONS IN RAH

As can be seen from the data analysis, people in Rah engaged in many playful activities, ranging from playing games, changing ringtones, engaging in social play, to personalizing their mobiles to change their surface aesthetics. Many of these behaviors are effects that we recognize from first encounters with mobiles in other countries [22]. Still, there are playful behaviors specific to Rah, and we would like to pay special attention to those.

An economically constrained community

One might argue that these playful behaviors are due to the fact that, for most people in Rah, the mobile represented their first interactive digital device. It is not surprising then that people enjoyed all these interactions, no matter how basic they may appear to those who have long enjoyed digital interactions and perhaps would not spend the same amount of time switching ringtones or wallpapers on their phones. But there are some reasons why we perhaps should not dismiss this behavior so lightly, one being the fairly substantial cost these behaviors also entailed.

The only activity necessary to keep the device running was to charge its battery. While in some countries this might be trivial, it is not so in Rah. In Rah there is no centralized electricity generation and the remaining alternatives are not always available and/or affordable. Two methods exist, with the first consisting of charging the mobile using solar power. These devices are relatively expensive to a family in Rah, and at the time cost around 6.000 Vatu (roughly $USD 60 USD) for the simplest available solar charger in Port Vila. Among the population of 96 people [38] with around 50 mobiles reported, only four solar-powered devices for charging mobiles were encountered.

The second means available for charging was gasoline generators. Fuel was relatively expensive, costing between 200-500 Vatu ($USD 2-$USD 5) per liter, and was not always available. Running the generator with approximately 50/100 Vatu worth of fuel yielded a charge for "*one or two [power] bars [(the ones displayed on the screen for battery level)] […] [which] lasts for less than one day*" as Bryan put it. The costs for either method were roughly similar to the other.

In either case, both possibilities are very expensive, in a place where income of families is very low and extremely unstable. This was not just a concern that we express as observers but was coming from within the community itself. Although it is difficult to estimate the income per household, as there is no reliable data and the income in most cases is extremely irregular, it is worth noting that only two households reported having income from salary, and six reported owning their own business [38].

Critical voices in Rah

There was an ongoing debate in Rah on how to approach this technology, and the interplay between work and play: "*Young people do nothing but play games!"* complained Fajo, "*They do not want to help their parents in the gardens anymore […] games are just a waste of battery*". These complaints were not just aimed at young people: Fajo also attacked the trivial usage of the mobile among adults: "*They [Jorege and his brother-in-law who were present during our talk] call each other all the time, just to say: 'The kava is ready' [Both burst into laughter] […] They laugh! But this costs money! They call each other when they could just walk over or shout*". These concerns were often echoed throughout Rah, someone even telling us that "*the constant ringtones and calling distract from work*" going as far as to say that "*the mobile did not solve any problem*" since they had the shortwave radio, which was free, and landlines, which were cheaper. Thus, in contrast to the enthusiasm, there was a debate going on which not only dismissed the mobile as trivial but also as an economic burden.

In short we want to point out that people in Rah were concerned about how to best live their lives in light of the changes that come with the arrival of new technologies. Such discussions resonate with those occurring within our own culture on how people spend too much time on computer games or how social isolation may result from too much time online [26].

Expectations on socio-economic gains

Watson suggests in a similar study of an isolated island community in Papua New Guinea (another Melanesian country) that isolated communities (such as Rah) may benefit little on a socio-economic level from information and communication technologies [35]. But even if it at this early stage it would be nearly impossible to observe such impact in Rah, it would also be both wrong and premature to dismiss that potential out-of-hand. People looked for those opportunities as well, such as Jorege, for instance, who ran a kava business in Rah. He told us he provided most of the kava consumed there and in Motalava as well. His plantations, however, were located in Vanua Lava, an hour or two away from Rah by *speedboat* (a regular boat with an engine). The reason Jorege wanted his plantation in Vanua Lava, as opposed to Rah, where he also owned land, was due to the fear of children stealing the kava, which was not an issue in his home village of Lalntak in Vanua Lava.

This business model implied regular trips between the islands. The main limitation for this was the cost of chartering

a boat, which could rise to a prohibitive amount. The mobile, for Jorege, presented an opportunity for a more dynamic management of his business: "*I need the mobile to contact Lalntak and ask for more kava when it runs out*".

Summary

Jorege is a clear example of how the playful attitudes towards mobiles were not the whole story on the mobile's desirability. While we focus on playfulness in this paper, we do not want to dismiss the potential socio-economic benefits and other uses that may come from the introduction of ICTs. In fact, research in Vanuatu suggests that ownership of mobile telephony can provide valuable assistance to small/medium-sized businesses [30]. Other research in developing countries has made correlations between increased GDP and mobile phone penetration, both in some Africa nations [36], as well as within states in India [17].

In this paper, we rather offer a complementary analysis and discussion on a different motivation for technology, specifically mobile phone, adoption, which resists a purely socio-economically based explanation. Playfulness, enjoyment, entertainment and fun are valid, and perhaps even the most valid, desirable aspects of mobiles.

A SIMILAR DEBATE IN ICT4D

Despite the fact that we are studying a community within the developing world, and dealing with the introduction of a form of ICT, we must explicitly state that our aim and domain is not within ICT4D. However, we found that there is a discussion taking place in the ICT4D research area, regarding welfare, agency, instrumental use of technologies, and socio-economic burden/benefit which follows similar lines as the tensions we observed taking place in Rah.

One example we found interesting is discussed by Ratan et al., describes how a farmer in India who was provided with a video system for watching educational videos about farming, was instead using the system to watch a famous soap opera [27]. When the researchers accidentally found out about it and confronted the farmer, he said that he was so tired after a day's work that the last thing he wanted to do was to watch educational crop-growing videos. In this we see a tension between high level goals regarding the improvement of one's socio-economic status through an ICT4D intervention and what was seen as a more trivial appropriation of that system. Furthermore, we can see people working to appropriate and use technology for purposes other than those which would seem more appropriate given the improvement of their socio-economic conditions.

Heeks, who is an authority within the ICT4D field, has also discussed this tension in a blog post called "Mobiles for Impoverishment?" [13]. Heeks presents a series of articles on mobile uptake in the developing world and discusses the aspect of economic burdening that these devices may have versus their real or perceived socio-economic benefits. He concludes however that: "*the significant amounts being spent by the poor on mobiles indicate that phones have a significant value to the poor*". He then proceeds to appreciate that "*we [the ICT4D community] have long known […] that 'poverty' is not just about money and, hence, that poverty interventions and tools can usefully target more than just financial benefits*". This tension between perceived value and the financial efforts expended by the poor to acquire these technologies is visible in other developing countries, as Song points out, where people can spend more than 50% of their income on personal access to ICT [32], despite this representing an effort some would consider as excessive. In counterpoise, a survey undertaken in Tanzania reported that fewer than 15% of mobile owners believed that the benefits of owning mobiles justified the costs [24]. Heeks comment on this—"*Um . . . so if you believe that guys, why on earth do you own a mobile?*" [13] — evidences that a richer story is waiting to be told.

The ICT4D community has been debating this tension between perceived needs, desires, and appropriation of technology to fit those desires, and in this paper we argue that playful interactions are part of just such desires. Smyth et al., sum up this problematic by raising the question: "*Are needs really more urgent than desires? Who defines which is which? Do researchers exaggerate the urgency of 'needs' due to their own biases and preconceptions?*" [31].

TENSIONS IN HCI

It is interesting to draw the debate seen in both Rah and ICT4D into how generally in HCI, we also debate, or avoid debating, the preponderance of digitally-centered use focused towards social media, entertainment, games, and pornography, and whether this is a rational choice *vis-à-vis* the financial means in our society. Rather, the debate on these issues focuses on social isolation and wellbeing – or if one so pleases, happiness.

As Bell pointed out in her keynote to CHI2010, we have avoided (with some few notable exceptions) documenting practices and designing technologies for religion, sports, and sex, to name but a few [4]. These aspects, in particular sex and pornography, represent a very large part of internet usage. However, serious acknowledgement within HCI is not yet present, for instance in the share of publications.

We take to mean that, in debating people's desires towards technologies and their perceived necessity and utility, the HCI field should begin a concerted effort towards research on, and design for, playfulness in both more traditional as well as within economically constrained settings. In reviewing our data on *plei-plei* in Rah, we find that the devices had very few inbuilt opportunities for playful, entertaining and creative engagement, such as games for instance.

At the same time, people were still able to be very innovative and playful with what was available to them. New solutions can often be built on top of such creative innovations. Donner, for example, points to how the service *plis kolmi* mentioned above, was built after people started 'beeping'. Beeping refers to making a 'missed call'. This possibility (often not costing any money), has been adopted in a wide variety of ways, for business, for supporting rela-

tionships or for signaling events, as Donner points out [9]. The 'call me' services were deployed since they helped to unburden the network from all the 'missed calls'.

As we can see, people appropriate technologies, sometimes resulting in a redesign of these same technologies. We argue however that people should not have to work so hard to get enjoyment from their devices. This calls for important additions to the research agenda in third wave HCI.

EXTENDING THIRD WAVE HCI

We propose adding three goals to the third wave research agenda to fit with settings as those in Rah:

1. Engage intimately with the materials of inexpensive ICT.
2. Revisit design recommendations for playfulness to ensure that they can travel/translate into other cultures.
3. Helping to alleviate existing tensions.

1. The materiality of inexpensive technology

The first, admittedly simple, insight is that if we are going to design for playfulness in contexts similar to Rah, we need to engage with what low-cost mobiles and ICT, unstable infrastructures, and poor network coverage affords. Our design methods need to be such that we gain a firm understanding of what those digital materials offer when designing for play, seeing limitations as opportunities for design.

And, in fact, many of our methods in HCI already take such issues seriously [5,34]. Sundström et al., offer ideas for how to take materials into the design process when the focus is on experience [34] and could easily be used in these settings. By experimenting with low-cost technology and creating what the researchers call Inspirational Bits, both designers and people inside the community are allowed to have fun with, and take advantage of, what is already there.

The ideas on seamfulness by Chalmers and colleagues [5] also focus on how to take advantage of technology that is not always perfect. For example, turning the lack of connectivity in the seams between Wi-Fi hotspots into possibilities for games. The playful search for connectivity Rob engaged in could easily be turned into a game thriving on the specific conditions that exist on an island like Rah [10].

To support personalization, aesthetics, and personal expressivity, we could, even for low-cost mobiles, allow for simple changing of wallpapers, ringtones and casing, by improving the interface to the mobile's settings, adding software for creating your own ringtones, and so on.

In short, this paper can be viewed as a call for an intimate engagement with the technology at hand and how it unfolds in the environment where it is used, in our design processes.

2. Reformulations of design insights

Designing for playfulness in settings like Rah is not only a matter of figuring out how to turn deficiencies and constraints in the available technology into possibilities for design. We also need to review what has been said in general about how to design for playfulness to evaluate if it still holds when we move it from a technologically advanced society into a developing country. Our second proposal is therefore to revisit prior design insights on how to design for ludic engagement [12] and playfulness [21] and translate them into settings like those in Rah.

We might argue that the insights on how to design for playfulness should be generic enough to travel across different contexts, cultures, and settings – and indeed some of them do – but there are, of course, also differences in how playful activities with technology, or through technology with others, unfold depending both on the design itself but also on the cultural settings where it is placed.

We note, for example, that those who have tried to design explicitly for playfulness often recommend designing for some form of openness that allows for appropriation; this often addresses the issues of how subcultures develop their own forms of play. Lindley et al., express this as a "*combination of a clear structure with openness*" [21]. Which in their case is a messaging system named Wayve that allows for certain combinations of multimedia to be sent between households that have the Wayve hardware. When deploying Wayve in the U.K., Lindley et al. found that users enjoyed self-expression, being witty, and expressing themselves in artistic ways. The openness of the Wayve platform allowed them to create their own forms of playful interactions. This is similar to what Höök argues on how to design for appropriation [16]. We need to open 'inscribable surfaces' in our designs that users can fill with content. Those surfaces are more easily appropriated if they are familiar to us. When we can recognize ourselves, sometimes by how others express themselves, sometimes through recognizing our physical selves in them, we become engaged and playful.

When addressing ludic engagement, Gaver et al., also talk about openness but in a slightly different form, connecting it to ambiguity. Their position is that a ludic design should not "*be 'for' anything, but instead offer a range of possible actions and meanings for people to explore*" [12]. By designing technology that does not have an obvious narrative or intended meaning – that is ambiguous – users have to explore it and create their own narratives. This in turn encourages ludic or playful engagement. In a sense, contrary to Lindley and Höök, this builds on processes of defamiliarization [3]. Many of Gaver's designs are in tight dialogue with technological debates and developments in our society, for example, on how to design technology for the home. As such, they might not translate easily to settings like those in Rah, where there is still no discussion on home automation.

However, translating these insights on openness, ambiguity, familiarity, and defamiliarization into what could be viable in places like Rah shows some interesting potential.

First, the data we captured in Rah reinforces the insight that open, inscribable, surfaces spur appropriation: looking for reception in the landscape based on the connectivity icon spurred both play and exploration, rendering new meanings to both the landscape and the connectivity function. Similarly, the 'tweaking' behavior used the settings in the phone

in playful ways, allowing for personal expressivity and fun beyond their intended meaning. But, as noted above, the settings menus in these particular mobiles did not always lend themselves as easily to this. Still, both the connectivity icon and the settings functionality became open 'surfaces' or 'interactions' that were inscribed with meaning beyond the original design intentions.

Second, no matter which group of users we choose to design for, be it people in Rah, teenagers with limited income, or middle class people in a wealthy nation, we will encounter culturally and contextually specific issues that determine what those users find playful. Either we must design very tightly-drawn applications, like specific games, specific provocative digital art pieces, etc., closely in sync with each group's practices, or leave surfaces open for appropriation.

3. Alleviating the tension

In supporting playfulness we need to consider the tension and concerns expressed by people in Rah and ICT4D on how resources are spent. Concerns on economic burden and time spent on playfulness are legitimate and, while we cannot solve all the underlying concerns through technological interventions, we can at least suggest some directions which might contribute towards better alternatives.

People in Rah were often using the mobiles to communicate with people at a close distance. Wi-Fi and Bluetooth technologies may provide an alternative here; if people could communicate without needing to resort to the network, given the compact nature of their social network, they could cut costs significantly. Zuckerman suggests that the Wi-Fi infrastructure in developing countries, put in place to support internet access as part of the One Laptop Per Child (OLPC) initiative, could be used as a means to connect mobiles, helping to avoid costs [37]. In Rah there was no such infrastructure, though one can imagine potential Wi-fi hotspots being placed for local communication.

People in Rah and Motalava were not directly involved in the process of building and maintaining their communication infrastructure, but some expressed a strong desire to do so. Jorege mentioned that they could have placed a cheaper tower in Rah, rather than the one in Motalava, built upon the "Big Rock" in Rah, a promontory rising well above the rest of the island: "*We already have the tower [pointing at the rock], we just need to put the device on top, and whenever a hurricane comes we can bring it down [so it does not get damaged], then we can place it back up again*".

Rather than waiting for companies to take the full initiative, residents wanted to help this process as it would ultimately benefit them as well. Partly this wish was based on prior experiences of the long down times for the older, pre-existing landline infrastructure that, as people pointed out, could stay down for months at a time.

This tension will always occur to some extent as these technologies cost time and money, so even if some of the tension can be alleviated, some debate is likely to remain.

CONCLUDING REMARK REGARDING SERIOUSNESS

In the introduction, we noted how playfulness tends to be downgraded in our society into "*mere play*" [28]. Throughout our paper, you can see how this degradation of play and playfulness has colored our analysis, our arguments for getting involved with the *plei-plei* in Rah, our design suggestions, and our constant worry about how *plei-plei* can be allowed, in limited ways, without consuming valuable resources: resources which could be better used for something else – for the serious, for the real. Turning back to Riezler, he urges us to question the whole idea that we should take seriousness for granted and see play only as an addition. Instead, he says, play is humanity's triumph:

"Man's playing is his greatest victory over his dependence and finiteness [...]. He can also play, i.e., detach himself from things and their demands and replace the world of given conditions with a playworld of his own mood, set himself rules and goals and thus defy the world of blind necessities, meaningless things, and stupid demands. Religious rites, festivities, social codes, language, music, art – even science – all contain at least an element of play. You can almost say that culture is play. In a self-made order of rules man enjoys his activities as the maker and master of his own means and ends. Take art. Man, liberated from what you call the real world or ordinary life, plays with a world of rhythms, sounds, words, colors, lines, enjoying the triumph of his freedom. This is his seriousness. There is no 'merely'". – Riezler, p 513 [28].

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