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# Designer Experience and Knowledge Sharing Evolution: A Namibian Context

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**Abstract**

In Namibia, like many other African countries, a Rural-Urban migration has disrupted traditional means of intergenerational knowledge transfer. As a consequence, many elders with a vast indigenous knowledge (IK) pass on without having shared their knowledge. Thus, we have engaged with IK holders in developing technologies to preserve IK. Developing technologies with a number of communities throughout Namibia has been an evolutionary experience. Observing steep learning curves of young researchers getting a grasp of designing culturally relevant mobile technologies matured with the IK holders' understanding of the implemented technologies.

**Author Keywords**

Indigenous Knowledge; Design; Human Computer Interaction; Research; Cultural Heritage Preservation; Cross-Cultural Design; Interaction; Participatory Design;

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

**1. Introduction**

A number of projects have been initiated worldwide as of recent years, concerned with indigenous knowledge (IK) preservation. Only few initiatives embraced a new paradigm of Participatory Design in order to collaborate with rural communities of various origins to design

technologies that will allow the communities to build vast repositories of their own knowledge for preservation purposes. One of these projects includes the IndiKnowTech project well recognized for various achievements in technologies co-designed with rural communities across Namibia.

The IndiKnowTech research cluster was founded in the year 2008. Since the start of its endeavors the researchers have adopted an action research paradigm referred to as community-based co-design, which in its origin was evolved from participatory design principles [1]. This overarching paradigm promotes that interactions between the indigenous community and the researchers ensures mutual learning. Through long term engagement the indigenous communities have sufficient time and exposure to learn enough about technologies to become meaningful co-designers. While we as designers over time learn about the cultural practices and conceptualizations necessary to develop meaningful technologies within the IK holders' context.

The most important aspect of this methodology is that the IK holder is at the core of all communication channels. He is no longer a mere user, he is a co-designer of the end product. Within the project various technologies have been developed in co-ordination with a small community in Otjisa, situated in northern Namibia. The Otjisa community consists of OvaHimba, a semi-nomadic community, who have maintained their traditional lifestyle. They are also a marginalized tribe, they keep to themselves for most parts of the time, except for specific necessities that are purchased at the nearest town.

The project has received attention from various universities worldwide and through this has been able to attract international students from diverse fields ranging from mobile development to 3D designers. Those students join the project temporarily while working on their degrees but contributing to the overall aim of the project. The first author joined the project in 2015 as a Namibian honors student yet from a different ethnicity than the community co-designers. He was eager to fulfill his part in the development of technologies that would not drive industry giant's profit margins, but would influence the generations that have been around for many years by preserving their cultural heritage for the generations to come.

Since the start of the project we have learned much about co-designing with indigenous communities and most importantly had the amazing experience of witnessing how one of the community elders became a meaningful co-designer after a steep technology learning curve along the design process.

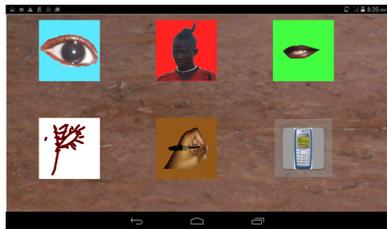
## **2. IK holder learning curve**

### *2.1 Mainstream technology exposure*

Considering that technology has been developed within an era of ubiquitous computing, based on years of adaptation and various previous user experiences a common design and interpretation of interfaces and interactions was established. When we approach Indigenous communities, we confront them with mainstream technologies incorporating values of a technology-savvy society, often alien to them. For example, an app to enable IK holders to collect different media, was developed by one of our foreign collaborators using standard icons to depict actions (see figure 1).



**Figure 1:** Media Collection Tool V1



**Figure 2:** Media Collection Tool V2

The evaluation session of the application revealed a number of shortcomings of the interface design. Most importantly community members could not relate to the icons.

### 2.2 Co-design session of interface objects

Based on this a joined co-design workshops to redesign the interface with the community was held. The co-design workshops evolved around finding locally meaningful relevant items/actions that could be used to provide appropriate visual hints as to what functionality lies behind an interface button. Various icons were suggested by the community and implemented into the application as depicted in Figure 2 [3].

On our latest visit to our co-design community in Otjisa we presented a new concept, namely crowdsourcing. The implementation of a crowd sourcing mobile application would enable the village elder to directly communicate with participants in the crowd. He could then request 3d models of traditional objects/items that they would like to make use of in one of the main curation technologies called the homestead creator [2]. The homestead creator is a 3D mobile application that enables the IK holders to virtually recreate their homesteads to replicate the important cultures and traditions around their village construction and the items around their homesteads [2].

To our surprise, we found that the IK holder was able to make very sophisticated inputs into the design process as well as the application interface design. Besides choosing culturally relevant metaphors for the depiction of icons, he also requested certain interaction techniques to be changed from scrolling to tapping and determining amount of displayed items at a time. He has gained a

deeper understanding of the technologies, their purpose and how to integrate them in his daily life. From this it became very clear that our efforts for mutual learning experiences was successful and that the IK holder was able to grasp the complexity of the application. The IK holder's family, usually present at the design sessions, also made very valuable contributions to the workshops. The experience that was shared not only by the first author but most of the co-researchers was the enthusiasm displayed by the IK holder and his family when selecting cultural items to represent the application features.

### 3. First Author's Reflections

As newly introduced designer to the project, equipped with technology skills in line with market trends one first has to learn that there are a different kind of users out there. The journey that lead us to the development of the various icons depicted above was an exceptional journey into the mind of IK holders.

As a mobile developer, the first author had to leave behind his modern-day experiences to custom build a new set of application affordances that tied into the everyday culture and traditions of the IK communities.

When the first author attended his initial session with the community he felt out of place due to various aspects of which the main one was the language barrier. He does not speak their local language and every interaction had to be translated by the help of co-researchers that do speak the language. These difficulties however did not remain an imminent concern as the village elder was very hospitable and made us a part of his circle with no hesitation whatsoever.

The most inspiring experience during this phase was revolved around the selection of the video recording functionality icon, depicted in the middle button of the top row in figure 4 above. As a core of their cultural integrity they hold family as a very important aspect in their lives. Due to this the village elder as a figure of authority in the development of the mobile technology felt the need to include his eldest son as part of the application design literally. Hence the image of his son with his traditional hairstyle.

This phenomenon was also a very important revelation in not only the technology development but also the advancement of the first authors design understanding based on the phenomenon of designing culturally relevant technologies. We discovered that the new co-designed icons had a grave impact on the usability of the application features for the IK holder, because they tied culturally relevant activities to the functionalities and this enabled them to formulate a better understanding.

However, the one icon that really made an exceptional impact on us as designers and the first author as a student and inexperienced new comer in field of IK: the village elder's son representation. It was the main cause of a plunge in the usability of the application, mainly due to the fact that there was no logical connection between his son and the functionality behind the button. He therefore constantly forgot that his son represented the video capture action. However, from this "design slip" the IK holder learned firstly that he can influence changes on the system and secondly the importance of well thought through design decisions. As a designer student, the first author learned that users also need to experience design glitches in order to learn, much the same as the designers.

#### 4. Establishing a Co-Designer Relationship

Through this succession of technology evaluations, design sessions, and discussions following verbatim principles a two-way communication channel was created between us as researchers/developers and the village elders as depicted in figure 3.

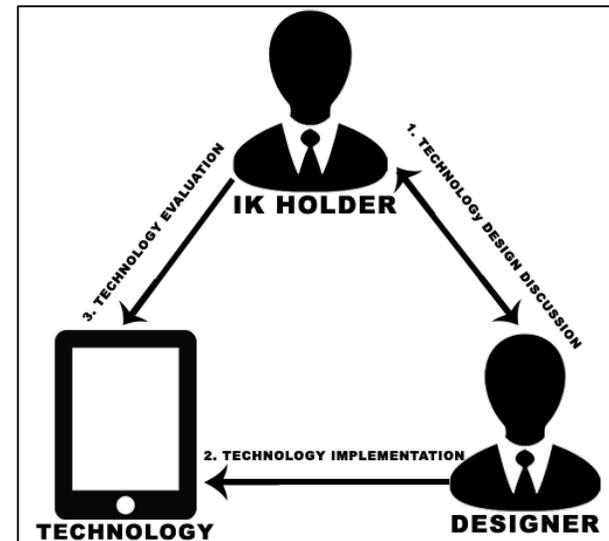


Figure 2: Interaction Flow

Besides a mutual respect and trust created over time throughout numerous interactions, the communication channel was established through the many joint sessions governed by mutual learning. On the one side we exposed the community to technologies, prototypes, representations such as diagrams as used in the computer science field, as well as design and evaluation techniques allowing the community to comprehend our conceptualizations [4]. While on the other side the

community involved us into their world through conversations, storytelling and daily activities.

After each development cycle, we left the village elder with the updated android tablet to interact with when we are not around. This enabled them to grow their knowledge/understanding of technology on their own terms/time.

Through this whole community co-design process, the first author learned a lot of culturally relevant information about the community. On the other hand, it was very clear that the knowledge sharing evolution helped prepare the community members for the task of preserving their knowledge because they shared our concerns of the IK that is being lost on a rapid scale due to the large numbers of IK holders passing on.

### **Acknowledgements**

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