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Introduction

This special issue contains a few of the many papers that were presented at the first Indigenous Knowledge Technology Conference (IKTC2011) in November 2011, in Windhoek, Namibia. We sought to pursue a critical dialogue about tensions associated with representing and disseminating indigenous knowledge (IK) digitally and involving IK-holders in designing and using technologies compatible with their knowledge systems. These issues concern academics, practitioners and policy-makers who approach the intersection of technology, culture and knowledge from various perspectives, from socioeconomic to technology development.

We chose the conference theme, 'Embracing IK Systems in a new Technology Design Paradigm', to raise awareness of the differences between IK systems and the knowledge systems that underlie technology development. Numerous initiatives aim to use conventional digital technologies to enable diverse, and often remote, communities to share their wisdom and practical know-how; however, often, such endeavours overlook the mismatches between technologies and the very systems that indigenous people use in daily life to organize and make sense of the world. Further, many indigenous communities, especially in rural places, have few opportunities to contribute to design or appropriate new technologies, such as social networking sites or virtual and augmented realities.

To create a new paradigm for technology design we need to challenge some of the power relations and boundaries that exist between cultures and between different cultural forms and products. We adopted two strategies to do so. Firstly, we sought submissions to IKTC2011 in varied representational forms, including written, oral, music, dance, etc. Secondly, we consulted with 25 experts with a proven sensitivity to IK to create a process for reviewing submissions. Determining a simple and inclusive process for review was deeply provoking; since, at every step, from using the technological review tool to planning conference sessions, we found ourselves asking 'whose epistemology' and 'whose ontology' are we advancing? We faced paradoxes repeatedly as we sought to factor in that approaches are legitimate for very different reasons in community of practices that differ from our own. A total of 50 reviewers and meta-reviewers reviewed 38 written papers, posters, panels, interactive demonstrations, performances and workshops; they accepted some immediately and some through a shepherding process. Submissions explored various conceptual, reflective and practical issues from collecting and protecting data to technology solutions to concerns about language translation. To further counterbalance the way academe privileges a certain discourse form we also included in IKTC2011 additional cultural performances, dance, poetry and visual art.

Over 80 presenters and delegates from four continents engaged in the three days of formal sessions at IKTC2011. The conference was hosted by the Polytechnic of Namibia School of Information Technology, in partnership with CSIR-Meraka (South Africa). For many international presenters this was a first trip to Africa which provided them with an insight into the commitment of southern Africans to protecting and promoting their IK.

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Indeed, the Namibian government illustrated such commitment through its support of IKTC2011 and, in opening the conference on behalf of the Head of State, Namibia's Minister of Education, Dr Abraham Iiyambo, expressed concerns about the risks to IK posed by globalization and Africa's increasing modernization and urbanization.

We have selected a small range of papers for this special issue. On the one hand these papers are examples of knowledge management systems that may positively contribute to the lives, livelihoods, dreams and aspirations of people globally. On the other hand the papers illustrate epistemological and methodological approaches, which may, or may not, be compatible with diverse ways of knowing about and experiencing the world. For instance the first three papers, all coming from South Africa, leave open many questions about how our conceptual models can maintain the integrity of IK despite the transformations that occur as technology interacts with different ways of knowing, doing and being. Greyling and McNulty's paper describes a library-based project for community members to generate and store content using mobile and web technologies. The ways such systems represent and distribute information seems a far cry from the everyday practices in which IK is embedded. However, their potential for protecting IK becomes more apparent when we account for concerns that IK cannot be detached from the languages through which it is expressed and that languages are changing with the increased use of cellphones in Africa. IK is dynamic, situated and socially embedded and in driving any initiative forward we need to ask ourselves what should be the role of digital IK repositories in the everyday life of communities? Masinde and Bagula's paper on a system to support farmers' indigenous strategies to predict and cope with droughts, using information from Wireless Sensor Networks, indicates one way that IK repositories may prolong the lives of IK-holders. However, by explicitly integrating local and scientific knowledge this work also reveals just how difficult it is to design technologies that respond as much to daily practice, lived experience and oral narratives as they do to logico-positivist paradigms. One way to explore mismatches between the information embedded in IK and in technology is to create a system and simply try it out. This is essentially part of the thinking with South Africa's National Recordal System, which, as Alberts *et al*. explain, defines structured metadata while collecting IK stories.

The next four papers in our selection shift emphasis to questions regarding the ways IK-holders can influence the trajectory of designing, developing and deploying technologies and the silos that bound professions and practices. Continuously reflecting on approaches to document IK remains essential as shown by Shapi *et al*.,'s methods for collecting data on traditional uses of medicinal plants, livestock movement, and traditional food and beverages. Zaman *et al*. turn to approaching the knowledge management systems of indigenous communities holistically and propose a process-oriented knowledge management model. Reitmaier provokes us to reflect on the way technologists engage with IK-holders, noting that 'empathy' rather than 'analyzing or categorizing' nourished his design ideas. Reitmaier's paper illustrates, again, the potential of using cellphones in Africa for IK preservation; but, unlike ICT-design's standard practice of constructing the user as an atomic, self-referential individual, he sensitizes us to the role of interactions between people in collaborative creativity. We cannot assume similarity between the aspirations of people globally involved in using technology for supporting IK. However, it is clear that initiatives, all over the world, must respond to the spiritual as much as the social and economic aspects of IK and at the same time empower indigenous people in harnessing the tools and representations priveleged by the powerful. Thus, people in developing countries who have turned to geographic mapping can learn from the approach

Gardner-Youden's indigenous collaborators in Canada adopted in strengthening the role of IK in the developing community mapping.

This special issue is just the start of disseminating, and extending on, the conversations that happened around IKTC2011. Over the next year we are collating a much larger volume which more directly addresses the paradoxes we encounter in pursuing a new paradigm for technology design. However, meanwhile, we hope that this special issue will tempt you to engage in the field of IK technology and join our unfolding journey and dialogue.

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