

**Session III – Connecting People and the Ecosystems That Support Them  
4:00 PM**

**Toward Hybrid Science: Integrating Indigenous Knowledge and Geographic Information Systems**

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**Abstract**

Digital technologies, including geographic information systems (GIS), may serve as technological interfaces for the development of what has been described as “hybrid science,” through processes that combine indigenous and scientific knowledge systems. One tenet of hybrid science is that “any science, local or global, depends on interaction between socially and culturally placed humans who embody differing skills” and materials (Sillitoe 2007, p. 12). Combining knowledge systems is not an easy proposition. But the need to do so is clear. Historically, many well intended development projects have failed in the developing world (Pearce 2000; Dichter 2003; Wallace 2000). Donor states and institutions have assumed that scientific and technological systems could diffuse and be implemented universally, any place on the planet. At the same time, local and indigenous knowledge systems have been marginalized, dismissed, characterized as primitive, chaotic, and irrational (Stevens 1997; Menzies 2006). Yet both ‘Western’ science and local-indigenous knowledge of the environment can offer important insights into the conservation, management, and sustainable development of water resources (Sillitoe 2007). Indigenous and scientific knowledge systems should not be seen as competing paradigms, but rather should be seen as complementary systems having strengths and weaknesses (Menzies 2006). The dichotomy between indigenous and scientific knowledge may not be a productive model for promoting sustainability within the framework of global networks in which the primary interests are adaptability, sustainability, and co-management (Agrawal 1995). Reciprocity between knowledge systems must occur if future development projects are to do well on a global-scale. This paper proposes a hybrid blend of indigenous and scientific knowledge systems. I will give one brief example of process-mapping that combines elements of one indigenous language (Kiowa), a water resource map legend/key, and geographic information systems. The author is a member of the Kiowa Tribe of Oklahoma, USA. Such research must begin at a very basic level, exploring ontologies but eventually arriving at conceptual models and simulations that can be employed in the field.