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Food and Water in Arid Lands
Dialogues across Contemporary and Traditional Knowledge
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A Call for Cross-Cultural Dialogue about the Future of Water and Food in Arid Lands

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We invite you to join with others of many cultures for a dialogue about the future of water and food in desert landscapes of this planet. Along with its many partners such as the International Traditional Knowledge Institute, the University of Arizona College of Social and Behavioral Sciences is honored to be hosting and convening this dialogue that will include practitioners of both “Indigenous” and “Western” sciences. We ourselves simply wish to listen and to better understand what these distinctive funds of knowledge can offer toward more equitable, elegant and energy-efficient means of managing water and food resources in arid zones.

Our interest is fostering more productive dialogue and long-term collaboration among those conversant with both Traditional Knowledge and “modern” knowledge of desert food and water resources. We wish to grasp where they see potential complementarities, conflicts and creative tensions between these funds knowledge. Such collaborations can potentially move us all toward a more just and resilient future in the face of climate change.

From the start, it must be acknowledged that Western science has been “privileged” in many ways and in many countries for its seemingly singular contributions to the management of water and food-producing lands. The playing table has not been level, at least not over the last century. As Zuni farmer and artist Jim Enote has recently expressed in the essay called *A Place for Mediation*,

Unfortunately, in modern-day land management, this kind of [distinctive indigenous] knowledge sustained and practiced by Native peoples has been dismissed as too esoteric or anecdotal. And recent confluences of conventional environmental science and indigenous knowledge speak to an optimism that has not been successfully realized. But this is a new era, a new occasion, and a different stewardship dialogue has emerged.

In the June 2016 cover story for *BioScience*, several University of Arizona teachers, researchers and alumni attempted to chart out where approaches to the stewardship of land, water, plant and animal life embedded in indigenous, Western and citizen science either converge or diverge. While certainly not the defining characteristics of every practitioner of each of these domains of knowledge, we can quickly see how different values, tools and objectives are made manifest in each of these three expressions of science:

	Indigenous science/ Traditional knowledge	Western science	Citizen science
Goals	Usually offering data and pattern analysis specific to or bounded by a culturally defined space and time	Seeking universals and testing theories through experiments, the analysis of data, and models	Offering local data to those seeking universals and testing theories
Participants	Largely done by “proto-professional” naturalists: foragers, hunters, fishers, farmers, and shamans	Largely done by academically trained professionals and technicians, some of them naturalists	Largely done by enlightened/committed “amateur” naturalists, often trained in other professions
Framework	Done in multigenerational communities primarily for the community	Done by individuals, small teams, or cybernetworks for universal benefit	Done for pleasure by individuals or cohorts of volunteer participants in informal networks often guided by professionals
Worldview	Highly varied, but often seamlessly linked to spiritual dimensions and ethical–moral considerations	That technical knowledge is authoritative but in most cases, WS is wary of spiritual dimensions and ambivalent on the ethical–moral context	That technical knowledge is “good but CS is variable in directly addressing spiritual, moral, and ethical dimensions, depending on the community
Methodological concerns	Less object–subject dichotomy and more integration	Insists on separation of object– subject	Ambivalent on object–subject dichotomy
Location/Scale	Embedded in cultural cosmology specific to place	Increasingly done irrespective of place or focused on model systems	Preferably affectionately done as place-based inquiry

We are in no way asking for endorsement of this particular framework by participants in the upcoming dialogue. Instead, we are simply asking everyone to recognize that forms of science and stewardship other than their own may need to be integrated into the future management of scarce and often imperiled assets and resources in desert landscapes.

More pointedly, we might argue that the gravity of the environmental and social challenges facing humankind have not at all been averted or quelled through the near-exclusive employment of the modern Western scientific paradigm.

Over the last century and a half since Darwin published *The Origin of Species*, the loss of fresh water and food biodiversity required for our survival has accelerated instead of being fully controlled by Western technologies and scientific premises. It is not that Western science has “failed” *per se*, but it is obvious that this paradigm alone has not been sufficient to keep us out of hot water!

In short, we may need a broader set of values and a more extensive tool kit to deal with the challenges now lurking on our very doorstep. The most lasting solutions to these problems are likely not to emerge solely from Western scientific think tanks and laboratories, but from embracing the full range of ethnicities, languages, genders and “races” that include innovators, observers, food producers and cultural practitioners who are daily engaged in safeguarding and stewarding natural resources.

Should you believe that Western science alone is “adequate” to relieve all of our current resource scarcities stresses and disparities, look again: in 2015, United Nations document called *Water for Life* sounded the alarm regarding our society’s vulnerability to water scarcity and food shortages:

By 2025, two-thirds of the world's population may live in water-stressed conditions and global water demands are expected to increase by 40%.

The U.N. High Level Committee on Programmes also reminded us of a rather direct but often forgotten correlation between water security and food security:

The link between water and food is a simple one. Crops and livestock need water to grow. Agriculture accounts for 70% of all water withdrawn by the agricultural, municipal and industrial (including energy) sectors. Water is the key to food security.

This fundamental relationship between water and food is nowhere more evident than in the arid and semi-arid landscapes which cover a third of the earth’s terrestrial ecosystems, and where 2 billion individuals of the world’s human population were born or have taken refuge.

Of course, with accelerating climate change, both the affordable access to sufficient quantities of water for food production and to uncontaminated drinking water have fallen out of reach of poor and marginalized societies in many desert regions. That may be why, in 2015, Pope Francis so inextricably linked these two issues in his interfaith encyclical, *Laudato Si: On Care for our Common Home*:

... access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights. Greater scarcity of water will [also] lead to an increase in the cost of food and the various products which depend on its use. Some studies warn that an acute water shortage may occur within a few decades unless urgent action is taken. The environmental repercussions could affect billions of people; it is also conceivable that the control of water by large multinational businesses may become a major source of conflict in this century.

Just this year, Professor Edna Hayes explained in *Nexus: the Water, Energy and Food Security Platform* why there is currently such a strong focus on collectively recognizing the vulnerability of interactions among critically-important resources:

While the water-energy-food nexus is all around us, it is rarely seen, considered or understood by the public or indeed by some policymakers. In most cases, this is because of the sheer complexity of the nexus, but also due to the fact that the connections are often indirect and at scales of influence beyond the immediate "sight" of consumers and decision-makers.

Hayes then reminds us what is at stake if we don't get these relationships right:

The total global population is increasing and is expected to reach 9.6 billion by 2050, with an estimated 70% living in towns and cities. If these trends continue, by 2050 water demand is projected to increase by 55%, energy demand is projected to increase by 80% and food demand is projected to increase by 60%. There is a growing appetite for integrated thinking and resource management, but future projections place more demands on an increasingly stressed planet with limited resources while taking on board equitable distribution of benefits, illustrating the urgent need for systems or nexus thinking.

Among the many questions we and others are currently asking, let us just encourage you to bring your own traditions, experience, intelligence and compassion to bear on three, if only for starters:

1. What does Traditional Knowledge or Indigenous science offer to those who wish to see the management of water and food resources guided by more integrative thinking that does not privilege one scientific tradition over all others?
2. What are the best practices for bringing keepers of Traditional Knowledge, values and practices together with Indigenous, Western, Eastern and citizen scientists, and what are the unresolved perils, problems or imbalances still plaguing such dialogues?
3. How might a collaborative conservation approach--one which recognizes both the convergences and differences in values and knowledge among various cultures-- bring us to more just and inclusive means of conserving and restoring the springs, rivers and rainwater harvests as well as the food-producing capacity of this planet which we call our common home?