ASU Center for Organization Research and Design
Arizona State University

CORD Lecture Series presents:

Deputy Group Leader Jeanne Fair

Thursday May 2, 2019

11:00-12:00 pm

UCENT 480a Downtown Phoenix Campus

Abstract

Transdisciplinary Research, Transformational Learning, and Transformative Science:
The Structure of Scientific Revolutions Revisited

Mechanistic understanding of the relationship between inter- and trans-disciplinary research and potentially transformative science is lacking. Dr. Jeanne Fair from Los Alamos National Laboratory will review a case study of a highly successful, long term, transdisciplinary research effort that lead to the discovery of Hantavirus in 1993 in New Mexico. The review of this historical scientific event shows that transformative research depends on human and material foundations within disciplines, effective collaborative mutualism across disciplines, and a learning process that enables knowledge synthesis across diverse perspectives. The review shows that deliberate engagement in disorienting activities that arise during transdisciplinary collaboration initiates transformational learning, the key mechanism for generating new, creative scientific understanding. The model provides a generalized mechanistic framework for understanding how transformative science is generated, consistent with classic studies of the structure of scientific revolutions. The initial Hantavirus outbreak in the four corners area of the Southwest lead to strong relationships between researchers of different disciplines and several decades of strong scientific collaboration.

Jeanne Fair is a scientist and Deputy Group Leader for Biosecurity & Public Health at Los Alamos National Laboratory with a focus in epidemiology and animal disease ecology. Dr. Fair is the principle investigator for a long-term (23 years) research project on the impacts of environmental stress on avian populations and infectious diseases and was the Editor-in-Chief of the *Guidelines for the Use of Wild Birds in Research.* In 2009, Fair was a lead analyst for the Department of Homeland Security's modeling of the H1N1 influenza pandemic our Nation's Critical Infrastructure. Recently, Dr. Fair has several projects measuring the evolutionary pressures of pathogens (metagenomics) and stress on immune function and relationship to public health. From 2013-2016 she was on assignment as a Science Program Manager with the Cooperative Biological Engagement Program for the Defense Threat Reduction Agency working with Central Asia and the Middle East.