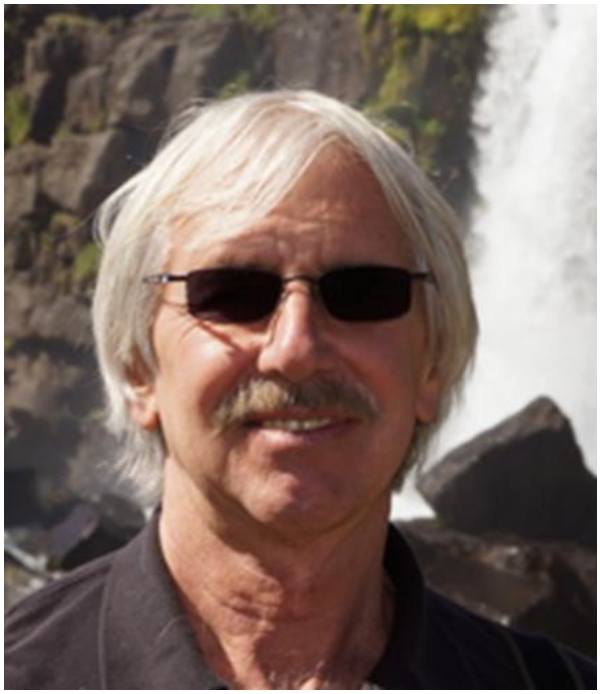
NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

BIOLOGY COLLOQUIUM

Friday, 19 Oct 2018 | 4pm | DBS Conference Room 1

Hosted by Dr Ryan Chisholm



By
John Stephen Lansing

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Steve Lansing is Director of the Complexity Institute & Professor, Asian School of the Environment at Nanyang Technological University in Singapore. He is also a Senior Research Fellow at the Stockholm Resilience Centre, an External Professor at the Santa Fe Institute and the Vienna Complexity Hub, and president of the Anthropology and Environment Society of the American Anthropological Association. His recent research has to do with adaptive self-organized criticality in coupled social-ecological systems, and co-phylogenies of languages and genes from 67 villages on 17 islands in the Malay archipelago and Papua, which led to the discovery of two unknown species of archaic human ancestors, and an unknown community of cave-dwelling hunter-gatherers in Borneo. In 2012 he developed a UNESCO World Heritage for the subaks and water temple networks of Bali.

Islands of Order

Not long ago, both ecology and social science were organized around ideas of stability. This view has changed in ecology, where nonlinear change is increasingly seen as normal, but not (yet) in social science. This talk describes two surprising discoveries about emergent cultural patterns in traditional Indonesian societies.

The first story is about the emergence of cooperation in Bali. Along a typical Balinese river, small groups of farmers meet regularly in water temples to manage their irrigation systems. They have done so for a thousand years. Over the centuries, water temple networks have expanded to manage the ecology of rice terraces at the scale of whole watersheds. Although each group focuses on its own problems, a global solution nonetheless emerges that optimizes irrigation flows for everyone. Did someone have to design Bali's water temple networks, or could they have emerged from a self-organizing process?

The second story is about language. Richard Dawkins memorably described genes as a "River out of Eden", an unbroken connection between the first DNA molecules and every living organism. We are not accustomed to think of language in the same way. But we each speak a language that has been transmitted to us in an unbroken chain stretching back to the origin, not of life, but of our species. In a study of 982 tribesmen from 25 villages on the islands of Timor and Sumba, we use genetic information to seek patterns in the branching patterns of 17 languages since the Pleistocene.

Artwork by Ann Nee, DBS, NUS