Interview with Staff: *Dr. Ioan Fazey*

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On May 27th, I took some time to sit down with Ioan Fazey, a former professor here at St Andrews (he now teaches at the University of Dundee). Our conversation explored some of the most important issues faced by graduates of the St. Andrews University Sustainable Development program: What is the use of a contemporary education in sustainable development? How can an education focused on the principles of sustainability produce successful professionals and individuals who are equipped to both succeed and promote the development of a society that strives to balance social, environmental and economic considerations? With Dr. Fazey's assistance, I sought to assess the value of an education in sustainable development and to briefly summarize the benefits of adaptive expertise.

To provide a bit of context, David Orr, a professor of environmental studies at Oberlin college and author of one of the S.D. department's core texts, *Earth in mind: on education, environment, and the human prospect*, argues that there is no such thing as a "side effect" or an "externality". The detrimental environmental and social impacts of our behavior do not simply disappear if they are levied against other individuals or future generations. As we continue to aggressively consume natural resources while generating excessive waste and rampant environmental degradation, a complex range of problems have emerged.

As Orr argues, our failure as a species to acknowledge the detrimental consequences of our actions is evidence of a considerable educational failure. In shaping young professionals, there is a particular failure to educate individuals to think more broadly and to perceive systems and patterns within the world around them. Orr calls for

new forms of education that do more than prepare the young to compete in the global economy. For Orr, the discipline-centric education that enabled us to industrialize the earth will not necessarily assist us in confronting the damage caused by complex patterns of industrialization.

Sustainable development is not a panacea for the world's social, environmental and economic limitations; however, it is a process that strives to creatively respond to our world's contemporary limitations. Dr. Fazey's recent work is particularly focused upon exploring educational strategies that are inspired by the adaptive management of systems. Throughout his academic career, his work has relied heavily on systems thinking and resilience (see the paper by Lukas Bunse in this publication.) Adaptive management in particular is a strategy that acknowledges the broad sets of systems which define our world which and are inherently dynamic and multifarious.

Ecosystems such as wetlands are defined by complex networks of nutrient, water and energy flows that can be examined in isolation, but collectively determine the success of the broader biome. Given a major disturbance or perturbation, a wetland, or any other ecosystem, will only survive if it is able to adaptively and resiliently respond to its new conditions. Catering such a response would require a sophisticated understanding of the processes of each region as well as the ways in which human activity is associated with the broader natural environment.

In a 2010 paper with he co-authored, Fazey employed New Orleans as a brief case study in adaptive management. As the city continued to gown along Louisiana's flood plains, it continued to expand into areas that are prone to aggressive environmental change. Flooding is a necessary process within floodplains which are highly vulnerable to major floods, storm surges and hurricanes. As New Orleans continued to expand, construction on these floodplains exacerbated existing environmental tensions. The development of paving and concrete specifically limited the formerly undeveloped environment's innate ability to combat flooding through natural cycles of resource flow and the growth of water retentive vegetation.

To combat the environmental woes created by aggressive urban development,

quick technological fixes in the form of levies were employed to mitigate the negative impacts of flooding. Such a myopic solution focused on optimizing levy development, a quick technological fix, rather than engaging with the systemic social and environmental challenges that define the relationship between human development and floodplain ecosystems. As Fazey's work concludes, interdisciplinary research is required to properly engage with the full range of processes and feedbacks involved in the dynamic relationships between people and the ecosystems upon which we depend.

Sustainable development students in particular should be taught to understand the deeper connections at play within a given system and its interrelated social, environmental and economic components. A broad set of knowledge and deeper analysis of interrelated positions and ideological considerations offers the opportunity to holistically understand our world and the systems, which have come to define it.

My discussion with Fazey and its focus on the adaptive educational strategies that he has researched, brought to mind a recent David Attenborough quote, taken from BBC One's *Africa* series: "Every day the animals of Eastern Africa gamble with their lives, but despite the continual changes they face, their extraordinary adaptability just tips the odds of survival in their favor. East Africa may seem very cruel, but there is nowhere else that provides such rich opportunities for those that are prepared to take them. And in the end it was these ever-changing Savannah's that produced the most adaptable species of them all... ourselves."

Interdisciplinary and adaptive expertise that acknowledge the impacts of anthropogenic activity and our species relationship with the broader biosphere are crucial to ensuring a successful future for our own species on an increasingly strained planet. Climate change and its associated range of environmental tensions will require complex global responses that involve cooperation and collaboration between local, regional, national and international considerations. Leading such activity will be a diverse set of progressive, adaptively educated individuals that can manage our contemporary worlds' diverse systems of social, environmental and economic influence.