Virtualizing succession and sustainability

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How do we as a society imagine our future? With social and natural environments changing, often quickly, it's difficult to imagine how our society might look a generation or more into the future. How can we then develop robust solutions for the sustainability challenges we face? Courses in sustainability offer insights; still sustainability science remains a developing field of study.

The solutions are to be found with practitioners, who live, interact and decide in society, says Arnim Wiek. Wiek collaborates with stakeholders from government, business and civil society to create solutions to sustainability challenges, such as climate change or detrimental urban development. At the same time, he is committed to build problem-solving capacity in the next generation of sustainability researchers and professionals.

An assistant professor in the School of Sustainability within the Global Institute of Sustainability at Arizona State University (ASU), Wiek is wont to describe himself as a "collaborative researcher and educator." His multifaceted, transformative agenda in sustainability science pursues the question of how research between scientists and non-academic partners is best initiated, facilitated and institutionalized to create and implement sustainability solutions.

One of Wiek's key research strengths is looking forward. For example, in scenario building, a method of complex systems analysis that incorporates the panoply of social, economic and environmental variables within sustainability science to examine potential long-term

outcomes, Wiek turns to explore science-based visualizations of future pathways. Such virtualizations draw from an "interdisciplinary suite of methods from sustainability, environmental, decision and computer sciences to gaming, virtualization, education and policy analysis" aimed to enhance the connection between the science and the public.

"Visualizations of future scenarios are powerful tools for exploring the effects of our everyday actions and decisions. In particular, they allow for in-depth examinations of the critical question: what burdens we are willing to place on future generations?" Wiek says.

"Visualizations speak to people," he points out. "But it is important to visualize different possible future scenarios - and not just one, as it is usually done in movies. Only then, with this emphasis on choice, can future visualizations foster our capacity to think in alternatives and sophisticate our decision-making."

"Yet," Wiek adds. "There is still a great deal of research ahead of us to better understand what types of visuals are most informative for different types of decision-makers and most conducive to stimulate actions and behavioral change for sustainability."

How to teach a new generation of responsible citizens to be both empathetic and smart remains a tall order for an emerging field of science. Wiek reserves particular passion for the collaborative advancement of core competencies in sustainability and establishment of a framework for academic program development in sustainability science. This devotion drives his work at ASU, and forms the basis for his American Association for the Advancement of Science (AAAS) 2010 Forum on Sustainability Science Programs, co-chaired with Amy Fuller, a member of AAAS's International Office. The forum encompasses an open roundtable discussion, a poster session and networking group. This trifecta offers extensive opportunities for the

kind of collective, creative dialoguing necessary to affect and improve the way that sustainability science is taught and advanced institutionally. As a prelude to forum discussions, Wiek and Fuller solicited survey responses, an assemblage of core competencies that cut across programs and scientific communities, to launch discussion. Their hope is to advance vetted core competencies in international sustainability science that balance human needs with natural systems and empower "relatively young academic programs in shaping their profiles, designing and revising their academic programs and achieving their ambitious missions."

"Interestingly, we see a strong convergence in the discourse on core competencies in sustainability. The majority of contributions argue for systems thinking, exploring the future, balancing different values, and creating strategies for change - all of which constitute sustainability problem-solving capacity," says Wiek. "This is important because it shapes the profile of our sustainability science programs and professionalizes our field."

"However, we seem to believe that we can just continue with the same old content and teaching habits and still reach the new, ambitious goals we have set forth for our sustainability programs. That is wrong," says Wiek. "We need to fundamentally change what and how we teach if our graduates should be capable of acting and behaving differently in the world—and become the 'change agents' we promise them to become."

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