Citizen Science and Social Action

A Summary of Dr. Ashley Rose Mehlenbacher's Talk for RCIScience
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By Jenessa Doherty

The world is full of complex problems, from climate change to understanding galaxy formation, and we often look to science to make sense of the world and answer important questions that help influence future behaviours or solve past problems. We put a lot of trust in experts to analyze data, identify patterns, and examine trends. When complete, we expect and often assume that these findings are to be shared in a sound, accurate, reproducible and measureable way. But who are today's science experts? And as the landscape of sharing information changes, do we really trust experts anymore? Or is it simply that the growth and speed of information sharing makes us all think we're experts? These are the questions Dr. Ashley Rose Mehlenbacher asks in her talk "Citizen Science and Social Action."

The reality, argues Dr. Mehlenbacher, is that the 21st century is replete with issues and problems that require different people to come together in order to identify creative solutions. In addition to the multidisciplinary science teams and experts which we have come to expect and accept, we now have new groups of non-experts contributing to the discovery of these solutions. But how do we build trust in these non-experts and what roles do they or should they play in the dissemination of scientific knowledge? To answer this, it would help us to first identify how we define experts.

The Making of an Expert

Traditionally, an expert was considered someone who was formally educated, trained or held an accreditation of some sort. However, the distinction between an expert and a "lay-person" is slowly eroding and these traditional markers do not necessarily guarantee more "expertise" than a "non-expert" who is informed and has acquired expertise without formal training or accreditation. Dr. Mehlenbacher contends that the evolution of the concept of "expert" is apparent through changes in our communication – including media technologies – which have enabled us

to question traditional experts and re-define how we measure and monitor expertise.

This has, in part, led to a changing culture of trust in scientists. The growing doubt of experts and whether or not scientists have the best interests of the public at heart is something that is being more regularly questioned as is evidenced by the anti-vaccine movement, or the strategic introduction of new words into our vernacular such as "post-truth," argues Dr. Mehlenbacher. These changes are explored in books such as "The Death of Expertise" or "Are We All Experts Now?." She reasons that, as we re-think expertise, citizen science can help on two fronts. First, by immersing everyone in science, citizen science can help assuage the growing scepticism of science as a knowledge-making practice by making scientific method more accessible. Second, citizen science can also help address concern over information blackouts following technoscientific disasters, such as the Gulf Oil spill, where corporations or governments do not make available the full extent of information.

Citizen Science

Returning to the notion that the world is full of complex problems. Citizen science, Dr. Mehlenbacher explains, is a way to empower everyday people to get involved with finding creative and civically-empowered solutions to these problems, making things like large data collection and analysis a lot easier, faster, and more robust. She explains two types of citizen science. The first: "top-down", which involves a scientist setting up a project and soliciting help from participants (citizen scientists), citing, for example, Foldit – a game which enables citizen scientists to work online, either independently or together, to determine the different ways you can fold proteins to viable forms thus increasing our overall knowledge and understanding of this process. Another example, Fukushima InFORM, is a network that includes citizen scientists to collect and assess data and identify radiological risks to Canada's coastal regions. The second type of citizen science: "bottom-up" - a grassroots movement directing a focus towards a specific research path, for example, the highly significant work of the independent research group Safecast, which collects, shares, and helps the public understand radiation contamination data. Another example is Public Lab, which also builds tools and develops innovative methods for environmental monitoring.

The opportunities for citizen scientists continues to grow and Dr. Mehlenbacher identifies that, although science itself is an important process, citizen science enables that process to be understood,

challenged, and improved to a much larger group of people. Ultimately, she argues, we need **both** traditional experts and citizen scientists to solve the complex problems of the world in fair, equitable, and civically engaged ways.

For more information on citizen science projects you can get involved with, visit www.scistarter.com or connect with [Dr. Ashley Rose Mehlenbacher](#) at arkelly@uwaterloo.ca.

About the Author

Jenessa Doherty is a graduate of the Masters of Environmental Studies program at York University where she also worked with the Sustainable Energy Initiative and the President's Sustainability Council. Her research focuses on energy systems and landscapes and explores pathways to practical, achievable and sustainable transitions to a low-carbon economy