Chapter 2
More Than Just Networking for Citizen Science:
Examining Core Roles of Practitioner Organizations

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ABSTRACT

Citizen science activity is growing rapidly around the world and diversifies into new disciplines with recent advances in technology. This expansion is accompanied by the formation of associations and networks dedicated to citizen science practitioners, which aim at supporting citizen science as a research approach. This chapter examines how four such organizations in the United States, Europe, Australia, and China have begun to take shape, and are working with citizen science communities and stakeholders in respective regions and globally. Challenges and future plans of these groups are also discussed. This chapter identifies three core roles of citizen science practitioner organization: 1) establishing communities of practitioners, 2) building expertise through sharing of existing and developing new knowledge, and 3) representing community interests. By focusing on this hitherto neglected phenomenon, the authors aim to stimulate further research, discussion and critical reflection on these central agents in the emerging citizen science landscape.

INTRODUCTION

Citizen science projects are scientific research projects that rely on public participation (Bonney, Ballard, et al., 2009). Citizens have a long history of participation in diverse scientific investigation activities stretching back to the foundation of learned societies, natural history museums, and universities (e.g.,

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Dickinson, Zuckerberg, & Bonter, 2010; Mahr, 2014). Today, such projects exist all over the world, and advances in computing and mobile communication technologies have allowed projects to expand in geographic scale and diversity (Sullivan et al., 2014; Dickinson et al., 2012). Bias and sampling errors that once plagued citizen science data can now be avoided by implementing rigorous design strategies (e.g., Bonney, Cooper, et al., 2009; Tinati et al., 2015), and by analyzing data with improved statistical models (e.g., Bird et al., 2013). Projects vary greatly in focus, activities performed, geographic scope and other factors (Kullenberg & Kasperovski, 2016; Shirk et al., 2012). Despite this heterogeneity, some trends in terms of types of activities and key actors have been identified in recent studies.

Haklay (2015), for instance, distinguishes the following levels of engagement and types of activity: Passive Sensing, Volunteer Computing, Volunteer Thinking, Environmental and Ecological Observations, Participatory Sensing and Civic/Community Science. This typology is coherent with a classification developed by the Socientize consortium in the White Paper on Citizen Science for Europe (Serrano Sanz, Holocher-Ertl, Kieslinger, Sanz Garcia, & Silva, 2014), which includes Data Collection, Analysis Tasks, Serious Games, Participatory Experiments, Grassroots Activities, Collective Intelligence and Pooling of Resources as prototypical citizen science activities. Other participatory approaches that overlap with citizen science in terms of methodologies and normative claims are the Do-It-Yourself (DIY) movement (Nascimento, Guimarães Pereira, & Ghezzi, 2014) and the maker scene (Walter-Herrmann & Büching, 2013).

With regard to prominent topic areas of citizen science projects, Kullenberg and Kasperovski (2016) categorized citizen science into three main clusters in a recent bibliometric study. The biggest cluster is in the natural sciences covering research on biology and often deals with environmental issues, such as nature conservation (e.g. flora and fauna monitoring projects) or urban living quality (e.g. water monitoring), and curiosity of natural phenomena (e.g. identifying astronomical anomalies or ways in which proteins fold). The second cluster is geographic information research and comprises approaches such as geographic information systems that include public participation (e.g., Sieber & Haklay, 2015). The third cluster includes research in social sciences and epidemiology, where a range of methods that involve citizen contributions to research is found, for instance participatory health research (e.g., Wright, Gardner, Roche, Unger, & Ainlay, 2010), participatory action research (Nielsen & Nielsen, 2006), and transdisciplinary research (Jahn, Bergmann, & Keil, 2012). Discussions of these approaches, however, appear to be rather limited to the respective social science subdomains and are not well linked to more general debates in citizen science (Crain, Cooper, & Dickinson, 2014). Digital humanities are another popular field for citizen science projects (Kullenberg & Kasperovski, 2016), which includes research in genealogy, history (e.g. Zooniverse project Ancient Lives, Williams et al., 2014), and linguistics (Newman, 2014). One might thus argue that citizen science constitutes a widespread phenomenon, which finds application in a number of topic areas and scientific disciplines, while it appears as a rather fragmented field of research practices with various subdomains developing distinctive yet overlapping methodologies and discussions in the respective research communities.

Although citizen science has gained substantial momentum regarding diversity, reliability, and recognition, several challenges remain. For example, the European Union identified funding, education and training, evaluation, and technology access, as well as data policy, dissemination, and support as key challenges that must be carefully taken into account when working towards the improvement of citizen science throughout the region (Serrano Sanz et al., 2014). Additional challenges include mechanisms for assuring policy impact for relevant citizen science studies, as well as data management, data sharing, data visualization, and professional development (Haklay, 2015). These and similar obstacles are