



ACSA Publications Listing

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Journal Articles - Conference Proceedings Articles
Dissertations - Books & Chapters

From the moderators

Thank you to everyone who contributed to this issue of the ACSA Publications Listing.

The ACSA Publication Listing is a quarterly electronic listing of publications in the field of citizen science within the Australian community. The listing is intended to share information with those interested in the Australian citizen science community. The deadline for contributions is announced two weeks prior to the listing. Contributions may be submitted at any time.

Please only submit those publications where you are the author (to prevent duplication) and only include those that have been accepted for publication.

Julie Banfield & Jessie Cappadonna

Abstracts of recently published journal articles

Public Interest in Marine Citizen Science: Is there Potential for Growth?

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Social studies in citizen science typically focus on existing project participants. We present results from an online survey of 1145 marine users to identify broader public interest in marine citizen science. Although we found considerable community interest, the most enthusiastic tended to have a higher education in science, were under 45 years old, primarily enjoyed SCUBA diving, and had contributed to scientific research in the past. The type of research organization involved in a project played a role in people's willingness to share information. The discourse of public participation in scientific research encourages public involvement in all aspects of the scientific process; however, we found that the respondents were primarily interested in data-collection opportunities. Feedback and past experiences in research were important considerations for gaining and retaining the volunteers. Our results indicate considerable potential for growth in volunteer recruitment, which can contribute constructively to scientific and public knowledge of the marine environment.

Published in *BioScience*, 2016, 66(8), 683-692.

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Radio Galaxy Zoo: discovery of a poor cluster through a giant wide-angle tail radio galaxy

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We have discovered a previously unreported poor cluster of galaxies (RGZ-CL J0823.2+0333) through an unusual giant wide-angle tail radio galaxy found in the Radio Galaxy Zoo project. We obtained a spectroscopic redshift of $z = 0.0897$ for the E0-type host galaxy, 2MASX J08231289+0333016, leading to $M_r = -22.6$ and a 1.4 GHz radio luminosity density of $L_{1.4} = 5.5 \times 10^{24} \text{ W Hz}^{-1}$. These radio and optical luminosities are typical for wide-angle tailed radio galaxies near the borderline between Fanaroff-Riley (FR) classes I and II. The projected largest angular size of $\approx 8'$ corresponds to 800 kpc and the full length of the source along the curved jets/trails is 1.1 Mpc in projection. X-ray data from the *XMM-Newton* archive yield an upper limit on the X-ray luminosity of the thermal emission surrounding RGZ J082312.9+033301 at $1.2 - 2.6 \times 10^{43} \text{ erg s}^{-1}$ for assumed intra-cluster medium temperatures of 1.0–5.0 keV. Our analysis of the environment surrounding RGZ J082312.9+033301 indicates that RGZ J082312.9+033301 lies within a poor cluster. The observed radio morphology suggests that (a) the host galaxy is moving at a significant velocity with respect to an ambient medium like that of at least a poor cluster, and that (b) the source may have had two ignition events of the active galactic nucleus with 10^7 yrs in between. This reinforces the idea that an association between RGZ J082312.9+033301 and the newly discovered poor cluster exists.

Published in Monthly Notices of the Royal Astronomical Society, 2016, 460(3), 2376-2384.

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Citizens as Scientists: What Influences Public Contributions to Marine Research?

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Public participation in science is burgeoning, yet little is known about factors that influence potential volunteers. We present results from a national survey of 1,145 marine users to uncover the drivers and barriers to a sightings-based, digital marine citizen science project. Knowledge of marine species is the most significant barrier and driver for participation. Many marine users perceive that they have insufficient knowledge of marine species to contribute to the project, yet they expect to learn more about marine species if they were to participate. Contributing to scientific knowledge is also a strong driver for many marine users to participate.

Understanding drivers, barriers and information sources for public participation in marine citizen science.

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Interviews were conducted with 110 marine users to elicit their salient beliefs about recording marine species in a citizen science project. The results showed that many interviewees believe participation would increase knowledge (either scientific, the community's, or their own). While almost half of the interviewees saw no negative outcomes, a small number expressed concerns about targeting of marine species by others, or restrictions on public access to marine sites. Most of the people surveyed (n = 106) emphasised the importance of well-designed technological interfaces to assist their data collection, without which they would be unlikely to engage in the project.

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E-print: jcom.sissa.it/archive/15/02/JCOM_1502_2016_A02

Associations for Citizen Science: Regional Knowledge, Global Collaboration

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Since 2012, three organizations advancing the work of citizen science practitioners have arisen in different regions: The primarily US-based but globally open Citizen Science Association (CSA), the European Citizen Science Association (ECSA), and the Australian Citizen Science Association (ACSA). These associations are moving rapidly to establish themselves and to develop inter-association collaborations. We consider the factors driving this emergence and the significance of this trend for citizen science as a field of practice, as an area of scholarship, and for the culture of scientific research itself.

Published in Citizen Science: Theory and Practice, 1(2): 1, pp. 1-10.

doi: <http://dx.doi.org/10.5334/cstp.55>

Abstracts of recently published conference proceedings articles

Calls from the wild: Engaging citizen scientists with animal sounds

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Sound allows people to intimately relate to nature. When people search for wildlife they often rely on their expert knowledge to recognise animal calls. The process of learning these calls involves social engagement and repeated identification in situ. Rare, cryptic, and migratory animals, however, are difficult to hear when people are only at a given location for minutes or hours. This makes many species difficult to study on a large scale, further confounded because human presence may disturb individual animals and reduce their likelihood of detection. Acoustic monitoring has great potential to engage people with animal calls. It can reveal hidden subtleties of animal lives and allow the health of populations to be monitored over long periods. Here, we explore new ways to engage people with natural sounds. We begin with an exploration of the artefacts and practices of birdwatchers, and then online citizen scientists (voluntary contributors to scientific research). Next, we consider how these practices can extend to design novel, interactive user interfaces for people to listen to calls from the wild and make ecological discoveries.

In Proceedings of the DIS '16 Companion: Proceedings of the 2016 ACM Conference Companion Publication on Designing Interactive Systems, 157-160. New York, New York, USA: ACM.

doi: <http://10.1145/2908805.2909413>

Abstracts of recently published dissertations

DIM AND DIMMER: An exploration of the production and diffusion of scientific knowledge in Australia between the 1770s and the 2010s

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Despite growing public concerns around socio-scientific problems and the significance of these problems to everyday life, there is a dearth of sociological literature addressing the production and diffusion of the natural sciences in Australia. In particular, critical analyses of scientific knowledge production and diffusion relative to the actions of the state, the market and civil society are largely absent. This thesis sets out to mitigate this situation by contributing a critical historiography of scientific knowledge production and diffusion as it relates to Australia since white settlement. It is anticipated that this work will open up the topic for further academic research and rational debate.

This thesis explores the production and diffusion of scientific knowledge through the lens of social dynamics that have emerged in Australia between the 1770s and the 2010s. The research relies primarily on the theoretical work of Max Weber in order to identify and analyse the conception of rationality and its application to social action that is present in the policy and praxis of the natural sciences in Australia. In particular, the relationships between the state, the market and civil society are analysed using secondary data drawn from published histories, official documents and the formal policies and practices of the state and the market during this period.

A tripartite analytical model has been created specifically for this thesis and is utilised to trace scientific knowledge production and diffusion through the transformative social processes associated with instrumentalism, bureaucratisation, developmentalism, environmentalism, postmodernism and neoliberalism. Rationality is applied in three ways: as non-instrumental science produced to further human understandings of the natural world and to promote the development of civil society; as pre-instrumental science produced by the state to in order to develop markets and for other instrumental purposes such as national defence strategies; and as instrumental scientific knowledge produced by the participants in the market expressly to enhance their own position in the market.

The research reveals that instrumental rationality has been an enduring concept in the policy and praxis of the natural sciences in Australia. Moreover, this thesis finds that a strong tension is often present between non-instrumental notions

of scientific knowledge and those practices that are predominantly instrumental. Through each of the periods studied the state and the market have been close confederates, often working together to realise instrumental outcomes through the knowledge produced by natural science. In particular, administrative and economic ends are seen to be primary; ends associated with more normative intentions, such as the nurturing of civil society, have been regularly overlooked in favour of strictly instrumental aspirations. This continuing instrumentality has altered the relationships between the state, the market and civil society during each period studied. On the current trajectory, the policy and praxis of the natural sciences in Australia may yet begin to compromise the sovereignty of that nation state and the authority of its citizenry.

Published on the Macquarie University Digital Theses collection in the Macquarie University Library
E-print: hdl.handle.net/1959.14/1151474

Abstracts of recently published books and chapters

Analyzing the Role of Citizen Science in Modern Research Citations information

Edited by L. Ceccaroni & J. Piera

As the need for sustainable development practices around the world continues to grow, it has become imperative for citizens to become actively engaged in the global transition. By evaluating data collected from various global programs, researchers are able to identify strategies and challenges in implementing civic engagement initiatives.

Analyzing the Role of Citizen Science in Modern Research focuses on analyzing data on current initiatives and best practices in citizen engagement and education programs across various disciplines. Highlighting emergent research and application techniques within citizen science initiatives, this publication appeals to academicians, researchers, policy makers, government officials, technology developers, advanced-level students and program developers interested in launching or improving citizen science programs across the globe.

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DOI: <http://dx.doi.org/10.4018/978-1-5225-0962-2>

Chapter 1 – Civic Education and Citizen Science: Definitions, Categories, Knowledge Representation

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The first goal of this chapter is to propose a slight re-framing of citizen science, which will contextualize the information presented in the rest of the book. The authors propose a perspective on and a definition for citizen science (which is alternative to the numerous previously documented definitions) as: “work undertaken by civic educators together with citizen communities to advance science, foster a broad scientific mentality, and/or encourage democratic engagement, which allows society to deal rationally with complex modern problems”. By explaining the rationale behind this definition, the authors also hope to raise awareness of the role that the meaning of words and phrases (semantics) plays in understanding and supporting citizen science. A second goal of this chapter is to explain how different organizations already use certain software solutions to organize knowledge about citizen science, how these systems can be classified and how they can facilitate or impede interoperability – the ability of humans and machines to pass information between each other.

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

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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.
