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Re-storying marine conservation: Integrating art and science to explore and articulate ideas, visions and expressions of marine space

Ruth E. Brennan[a,b,*]

[a] Trinity Centre for Environmental Humanities, School of Histories and Humanities, Trinity College, Dublin 2, Ireland
[b] Scottish Association for Marine Science, Laurence Mee Centre for Society and the Sea, Oban, Scotland, United Kingdom

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1. Introduction

Increasingly, voices from the arts, humanities and social sciences are underlining the importance of an integrated approach to addressing contemporary societal challenges such as climate change, resource scarcity, food and energy security, and environmental degradation (including biodiversity loss, ocean acidification and marine pollution) (e.g., Holm et al., 2015; Holm and Winiwarter, 2017; Ohlmeyer, 2016). The question of whether environmental change is good or bad is decided by different human value systems – it is a matter of societal choice how the world we live in ought to be (Brennan, 2018; Cote and Nightingale 2012; Cronon 1992; Mee et al., 2008). However, the conservation policy narrative tends to be presented as what is objectively needed, without questioning the politics of the particular ways in which conservation issues and policies are framed (see, for example, Dove et al., 2011; O'Neill, 2001; Nightingale, 2013; Schultz et al., 2005). It does not usually acknowledge that this narrative is, necessarily, underpinned by normative assumptions, specific worldviews and value systems that may conflict with values held by those who have not shaped the policy narrative. The arts, humanities and social sciences have a crucial role to play in providing deeper insights into human motivations, values, worldviews and choices (Holm et al., 2015). Connecting these insights with the natural and technological sciences opens the door for interdisciplinary dialogue to "engender plural representations of Earth's present and future that are reflective of divergent human values and aspirations….this might insure publics and decision-makers against overly narrow conceptions of what is possible and desirable as they consider the profound questions raised by global environmental change" (Castree et al., 2014, 762).

Bringing together the practices of the arts, humanities and sciences (social, natural, technological) is gaining support (e.g., AHRC, 2017; Jeffries, 2011; Mulrooney Eldred, 2016; Mundus maris 2017; Pomeroy, 2012). The benefits from these interdisciplinary collaborations include: making scientific knowledge more accessible to its publics, in addition to creating new publics ('publics' meaning different communities of people who engage with such knowledge, including citizens and interest groups), for example by creating spaces for people to visualise complex data or to discuss the role and impact of science in society; making science more innovative and more accountable to society; expanding artistic practices through artists using scientific tools and technologies; creating participatory spaces that connect the production of scientific knowledge and other forms of knowledge of non-expert citizens (such as 'subjective' experiential knowledge); connecting diverse stakeholders as well as different cultural, political and institutional contexts; helping critical spaces to emerge that draw attention to the politics and ethics of scientific practices and processes, question the power of science and stimulate deeper engagement with complex problems; and challenging accepted ways of framing the people, objects

* Permanent address: 18 Clandonagh Road, Donnycarney, Dublin 5, Ireland.
E-mail address: ruth.brennan@tcd.ie.

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and concepts that artists and scientists engage with by opening up different ways of looking at scientific issues and related societal challenges (Born and Barry, 2010; Hawkins and Marston, 2015).

Almost three decades ago, Art & Science Collaborations, Inc. (https://www.asci.org/), was established to encourage dialogue and collaboration between the different fields and to increase the visibility of art-science work. More recently, the STEAM movement has championed the integration of the arts into the well-known STEM quartet of science, technology, engineering and mathematics (http://stemtosteam.org/). The concept of art-science collaborations has garnered high-profile support. For example, since 2011, the European Organization for Nuclear Research (CERN) has implemented an arts programme (Arts@CERN) supporting art-science collaborations via the COLLIDE International Award. In 2016, a partnership between CERN and the Foundation for Art and Creative Technology was established "to influence an international and flourishing scene of art and science [and] to explore crossovers and dialogs between artists and scientists at CERN" (CERN, 2017). It has even been suggested that, beyond the cross-disciplinary dialogue created by art-science collaborations, a 'Third Culture' is emerging through the 'new art movement' that fuses art with science and technology (Miller, 2014). Although the term 'art-science collaboration' usually brings to mind a natural/STEM scientist working with an artist, collaborations between artists and social scientists also exist. This is hardly surprising given that social scientists and artists actively study, reflect on and critique society and social relationships to open up new perspectives on complex societal challenges. This paper illustrates how a collaboration between a marine social scientist (the author) and a visual artist that combined art and social science research approaches helped to inspire different ways of approaching a marine protected area dispute between a small island community in Scotland and the Scottish Government. It documents an example of an artist and scientist with overlapping (as opposed to the more usual mutually exclusive) practices, in terms of artistic and scientific approaches to the research material. Specifically, this collaboration involved a participatory mapping process that resulted in an interactive, online, cultural map of the sea (Sea Stories) based around the island of Barra, Outer Hebrides, Scotland. It was developed by the artist and scientist in association with a local community organization, and involved school pupils in interviewing local Barra fishermen and older members of the community. This map was created during a time of tension, when many of the islanders were resisting the proposed designation of two European-driven marine protected areas off the coast of Barra. These marine protected areas were proposed to protect an inshore cold water coral reef complex (*Lophelia pertusa*), sub-tidal sandbanks, sub-tidal rocky reefs and harbour seals (*Phoca vitulina*), as part of the Natura 2000 network under the European Habitats Directive (92/43/EEC).[1]

It is rare to find communities' cultural connections with the sea included in marine spatial planning processes, even though the importance of 'cultural values' is increasingly recognised (Gee et al., 2017). Participatory planning processes (including mapping) have the potential to aid dialogue around marine and coastal environments and related spatial planning by recognising and making visible the social relations, cultural diversity and divergent value sets which form part of the relevant socio-ecological system (Cormier et al., 2016). For example, a participatory mapping process might highlight a fear that a conservation initiative could result in loss of local control over marine resources and/or change the prevailing socio-cultural context. There is increasing recognition that marine spaces are socially produced (see Brennan, 2018; Levine et al. 2015; Rossiter et al., 2015). Maps can produce reality as much as represent it through the choices made about what is, and is not, represented on a map (Crampton, 2001; Smith and Brennan, 2012). What is intertwined in everyday life is often represented as separate (Eden et al., 2000; Latour, 1993). The creation of a conservation map involves a deliberate choice of particular species, habitats, ecosystems, geographic areas, biological concepts and understandings of nature over others (Harris and Hazen, 2006). It is arguable that participatory mapping in conservation can be used to complement existing conservation maps. This of course depends on the power relations, positionalities and potential for genuine cooperation between the different 'mapmakers'. Parker (2006) suggests that the process of creating a 'community map', whereby issues of place and representation are negotiated amongst members of the community, is as important as the map itself, but cautions that such maps can marginalize 'outsiders' in the community who do not agree with what the map portrays. To the extent that community maps can help to "challenge map silences that imply the absence of peoples or resources, heighten consciousness, and counter deficit maps" (Parker, 2006, 477), they have the potential to reflect a representation of the social networks intertwined with the bio-physical environment, to broaden conceptions of how the world we live in ought to be and to draw attention to diverse ways of valuing a particular environment.

Even with participatory mapping, it is extremely difficult to capture the dynamism inherent in a system of complex human behaviours, culturally specific values and worldviews and mobile species and to articulate the complexity of the marine space (see Levine and Feinholz, 2015; Sullivan et al. 2015). In addition, maps of bio-cultural diversity tend to be terrestrial (e.g. Stepp et al., 2004) and do not normally encompass marine socio-ecological systems, although such diversity has been shown to exist in the tropics, around coral reefs and in coastal areas of linguistic diversity (Stepp et al., 2004; St. Martin, 2012). There are limited examples of the mapping of marine bio-cultural diversity. In Northern Norway, various projects on mapping private and collective rights to marine resources have remapped Northern Norwegian fjords as sites of language, knowledge, history, culture and practices specific to the Sami (Brattland, 2010; Brattland and Nilsen, 2011). An Inuit atlas of the Northwest Passage shows an intricate series of trails across the sea ice that intersect and join places where Inuit have lived (Pan Inuit Trails, n.d.). The purpose of the atlas is to provide a sense of how the waters and adjacent lands of the Northwest passage were used by Inuit and to challenge typical perceptions of the Arctic as uninhabited and sparsely populated (Rogers, 2014). Recent work by O'Donnell et al. (2013) has identified a range of values, from economic to intangible, in relation to fishing communities on Canada's Pacific North Coast. Other recent work includes participatory mapping for coastal and marine planning in Australia (L.V. 2016), and the inclusion of cultural data in the Shetland Marine Spatial Plan (SIMSP, 2015), although the focus was on the tangible elements of cultural ecosystem services such as recreation and aesthetic appreciation (ICES, 2013).

Visual participatory methods encourage reflexivity by speaking directly to the subconscious and, as such, can help participants shift their perspective on how they are located in the world (Harper, 2002; Mitchell, 2011). They allow participants to tell their stories in a way that can express several layers of meaning, depending on who the viewer is. From 2011 to 2016, the author collaborated with visual artist and film-maker, Stephen Hurrel, on four art-science projects (www.mappingthesea.net). Collaboration started following a joint participation in a 2011 Cape Farewell art-science expedition (www.capefarewell.com), which involved sailing to islands in the Outer Hebrides, Scotland, to explore ideas around sustainability in the context of climate change. It became evident on that expedition that the situated or contextualised research methods used by the author as a social scientist to explore the dispute on Barra closely resembled working methods used by Hurrel in his socially-engaged art practice. At the time, the author was engaged in preliminary qualitative fieldwork on Barra to gain insights into the roots of the marine protected area dispute through exploring the cultural, social and historical context of the local community. The author's research design supported an inclusive

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01992L0043-20070101&from=EN.