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On the subject of typology: How Irish coastal communities' subjectivities reveal intrinsic values towards coastal environments

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ABSTRACT

Ireland is working to double the economic contribution of its €2.2bn marine sector by 2030 by focusing on expanding offshore energy, shipping, commercial fishing, and tourism sectors. This growth will be sensitive to environmental considerations, with a stated goal of achieving healthy ecosystems 'that provide monetary and non-monetary goods and services'. Such a goal may prove challenging if short-term economic priorities threaten long-term ecosystem functions and resilience. This study determines the intrinsic value of the marine realm via attitudinal data of stakeholders by employing a grounded theory approach utilizing Q-methodology. Stakeholders were sorted into three categorical factors (Nature Collaborators, Sustainability Seekers, and Nature Technicians), each representing a significantly distinct ecological thought. It is evident within the scope of this study that stakeholders value and understand intrinsic value, despite it not being adequately represented in policy decisions to date. This research seeks to demonstrate how stakeholder engagement and Q-methodology can be utilized to address current policy shortcomings in the EU and Irish context, specifically when attempting to modernize policy approaches to be holistic and integrated.

1. Introduction

Productivity of coastal and marine (maritime) environments has grown by 500% since 1980 (Golden et al., 2017), fueled by a combination of intensification efforts, technological advancement, and diversification across several economic sectors. The World Wildlife Fund (WWF) calculates that the global "gross marine product" is at least US$2.5-trillion (Hoegh-Guldberg et al., 2015). Yet, this pales in comparison to the maritime resource base – the myriad, interconnected physiochemical and ecological processes (Daily, 1997) that ultimately support the full suite of ecosystem goods and services that provide the natural capital base for all economic productivity (Costanza et al., 1997) – estimated by the same WWF report as "at least US$24 trillion." Indeed, scholarly attention has focused on how best to estimate the full non-use and option values of assets that are a factor larger than the market goods and use values they produce. The purpose of such efforts, at least in part, is to highlight the maritime environment's natural capital assets, champion sustainable practices and economic activities, and help insure that policies safeguard its functional resilience and conservation (Daily et al., 2011). Central to this pursuit is developing a fuller understanding of community attitudes toward their maritime environment and natural resources. Understanding how these attitudes dictate which resource use behaviors are socially acceptable leads to insights into underlying community values and ethics, the subject of this paper.

1.1. Ecosystem valuation

Understanding how users or communities value a natural resource is fundamental to understanding whether the resource is being used sustainably, and the conditions that are needed for such an outcome to be possible. Critical assessments of how natural resources are valued have progressed greatly from the time of Malthus (1853, 9), who framed "the soil, mines, and fisheries of the habitable globe" in clear market economic language. Nearly 70 years later, A.C. Pigou (1920, 12) expounded upon "uncompensated services and disservices", known today as economic externalities,

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that are not captured in market transactions. Economic externalities, Pigou wrote, may be beneficial (e.g., services) or detrimental (e.g., disservices) not only to the individual, but also to the community, and more broadly, the larger society.

The modern conservation movement has continued to focus in on negative externalities, particularly how economic pursuits impact society and the natural environment. J.V. Krutilla (1967, 778) wrote that, "the central issue seems to be the problem of providing for the present and the future the amenities associated with unspoiled natural environments, for which the market fails to make adequate provision." Indeed, successfully balancing the consumer demands of a modern economy with the long-term requirements for a healthy, sustainable human-environment relationship, remain a pressing challenge (Pretty and Ward, 2001; Braat and de Groot, 2012).

Today, efforts center on not only estimating the utilitarian value of market goods and services, known as "use values", but also non-use and option values that intrinsically exist outside the market. Together, these values reflect the total economic value (TEV) of a system. Efforts to determine TEV are "a watershed in the importance given to the environment within the decision theory" (Plottu and Plottu, 2007, 52). TEV encompasses deeper values of the environment, and in doing so establishes a link between economics and ecological concepts like resilience, conservation, and stewardship. Further, TEV is a reflection of a community's ethics and identity toward the environment they live in and the ecosystem goods and services they rely upon for food, livelihood, and, ultimately, identity. The lasting relationship between a community, its environment, and what aspects of the environment the community values and conserves introduces ethical considerations (Jax et al., 2013) that change the concept of "value" from a modest economic accounting of market goods and use values to something far more valuable and essential.

Maritime environments present a special challenge for valuation efforts because many possess the characteristics of economic commons (McCay and Acheson, 1990). Like land commons (Hardin, 1968), maritime commons suffer environmental and social damages in the name of securing market goods and capturing economic use values. Users see little benefit in conserving the commons and taking on stewardship roles (McCay and Jentoft, 1998), and as a result, ecosystem goods and services – non-use and option values - tend to be undervalued (Gómez-Baggethun et al., 2010). Preparing a full accounting of all values in the maritime environment requires developing ecosystem-based management (EBM) policies and practices that are conservation-minded (Slocombe, 1993; Levin and Lubchenco, 2008), a radical departure from the anthropocentric, economics-biased policies and practices of the past (Berkes, 2004; Attfield, 2011). Central to EBM efforts is the process of developing policies that match community ethics and values (Slocombe, 1998).

The motivations to pursue an accounting of the full TEV of the maritime environment are clear. Despite national regulations and international directives, over 30% of global wild fish stocks are being overfished and risk collapse, and another 58% are fully exploited (FAO, 2016). A globalizing economy is changing consumer preferences for how goods are packaged, shipped, and sold. Plastic production has increased by 620% since 1975, and now exceeds 275 million metric tonnes annually (Jambeck et al., 2015). Inadequate waste collection systems and indiscriminate littering by individuals have made plastic litter a ubiquitous feature of the landscape, and the world's oceans its ultimate repository. It is estimated that there are more than five trillion pieces of plastic floating in the ocean (Eriksen et al., 2014), each a very real threat to marine life (Derraik, 2002). Large plastics, like lost fishing line and nets, entangle birds and marine mammals. Smaller plastic fragments, including microplastics, are mistaken as food, and are ingested. Endocrine disruptors like bisphenol-A leach out of plastic over time (Flint et al., 2012), and represent a currently unknown risk to marine wildlife.

At the ecosystem level, coral (Kennedy et al., 2013), seagrass (Waycott et al., 2009), and mangrove (Polidoro et al., 2010) systems are just three visible examples of marine and coastal systems experiencing significant losses despite best management efforts (Crain et al., 2009). Climate change and rising atmospheric carbon dioxide levels are warming and acidifying oceans, in turn disrupting currents and primary productivity, impacting maritime community health and distribution, reducing habitat complexity, and increasing storm-related damages (Hoegh-Guldberg and Bruno, 2010). Taken all together, evidence at all spatial scales suggests that economics-focused policies and practices that have been less than effective at slowing environmental damages, much less achieving sustainability for the world's maritime wealth.

1.2. Ecosystem values and ethics

The field of environmental ethics is young in relation to other scientific fields (Norton and Minteer, 2002), though its lineage can be traced back to the essays of Leopold (1933) and Thoreau (1854), among others. Discussions a generation ago focused on developing ethical arguments for conservation policies and practices, often making moral appeals to consider both the natural world and future generations of society (Passmore, 1976; Partridge, 1981; Rolston, 1988; Weiss, 1990). More recently, environmental ethics have been couched in language that elevates our concepts of value (Daily et al., 2000, 2009). Vogel (2002, 23) made clear the importance of incorporating ethics in the decision-making process, writing "not all practices are equal: those that acknowledge human responsibility for transforming the world are preferable to those that don't."

Vogel is describing the concept of ethical action (Moore and Nelson, 2011). In an era of natural resource scarcity and accumulating damages across a range of spatial and temporal scales, society needs responsible, ecocentric policies and practices for interacting with the environment and utilizing its natural capital. These policies and practices should be consonant with a society's value system, and in the language of environmental ethics, should prioritize the functionality and long-term sustainability of ecosystem goods and services. Further, to be fully effective, policies and practices cannot be dictated to communities in a purely "top-down" fashion. Changes in behavior must have an organic element, and at least partially originate from within communities themselves. As a community changes its own behaviors, it embraces a new set of ethics and what is acceptable. In instances where these ethics move from an anthropocentric to ecocentric focus, new, community-supported policies and practices are developed that more fully recognize the full value the environment and its natural capital. In short, local, "bottom-up" support is essential (Dietz et al., 2003).

1.3. Linking knowledge, values and ethics

The final consideration in the context of community values and ethical behavior is to examine the important role of community knowledge. Knowledge informs behavior. Behaviors are linked to values as users tend to not rationally engage in behaviors that might cause damages to themselves, their livelihood, and importantly, their family and community (Ostrom et al., 1999). There is truth in the notion of the "wise, old fisher", that venerable member of the community who has accumulated a lifetime of knowledge in pursuit of their occupation without jeopardizing their promise of future catches. Experience has taught them where, when, and how