The Promise of Integrated Coastal and Ocean Management: Questioning the Past, Rethinking the Future

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Introduction

There is general agreement that the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro provided global recognition and acknowledgement of the dismal failure of sectoral management in understanding, anticipating, and responding to consequences arising from our interactions with other biotic and abiotic components of coastal and marine ecosystems. The conference is credited with also providing a globally accepted alternative approach to marine and coastal area management and development as outlined in Chapter 17 of Agenda 21. One that spans not only multiple jurisdictional levels but requires the co-ordination of sectoral activities and influences across the land-sea-air interface. With over 178 heads of state signing the final text of the agreement at the Rio Conference, the stage was set to adopt and implement integrated coastal and ocean management (ICOM).

In her 1995 reflection on progress regarding the implementation of Agenda 21 and the integrated approach for managing coastal and ocean activities, Elisabeth Mann Borgese cautioned that we needed to take a long-term view and not be frustrated by the apparent lack of political will and means available for implementation that she was observing some three years after the Rio Earth Summit. She had reason for such optimism as within a few years, scholars and practitioners alike from across the globe were documenting the exponential growth in projects and programs focusing on developing and implementing ICOM.

1 United Nations Conference on Environment and Development, UN Doc. A/Conf.151/26 (Vol. 11), 13 August 1992.
2 E. Mann Borgese, “Commentary: Earth Summit Implementation: Progress Achieved on Oceans and Coasts,” Ocean & Coastal Management 29, no. 1–3 (1995): 13–21.
3 B. Cicin-Sain and R.W. Knecht, Integrated Coastal and Ocean Management: Concepts and Practices (Washington, DC: Island Press, 1998), 517; A. Vallega, Fundamentals of Integrated Coastal Zone Management (Dordrecht: Kluwer, 1999), 267; J. Sorensen, “Baseline 2000
In this essay, my intent is not to detail how one goes about implementing the ICOM approach or to evaluate the myriad of reported successes and failures that have been communicated by ICOM scholars, practitioners, and critics over the past twenty-five years. I will instead focus on two areas more worthy of reflection, which I hope Elisabeth Mann Borgese would have found interesting and provoking. Drawing on the work of biodiversity researcher Raphaël Billé, the first focuses on observing past practices and the apparent unchallenged acceptance of assumptions that have obtained an aura of dogma for many who teach and work in this field. The second area raises concern over our naïveté surrounding the resolution of current and future issues confronting coastal and marine socio-ecological systems at a time of unprecedented and dynamic global change.

Questioning the Past

Having taught a graduate-level course on ICOM to master’s students in marine management for over a decade, I have found that many of them unquestioningly accept the theories and underlying assumptions that they have been exposed to in the abundance of readings, lectures, and seminars attended since starting graduate school. To counter this perceived intellectual apathy, the first reading assigned to them in my class is Billé’s 2008 paper challenging the ‘entrenched illusions’ associated with integrated coastal management. The resulting class discussions always fulfill my intended effect, with one student this year stating how angry she was after reading the paper as it meant that many of the supporting arguments used in her thesis required a rethinking! Using examples drawn primarily from a European context, Billé sets out to question the validity of key assumptions underpinning the progress associated with ICOM since Agenda 21.

The first of these illusions centers on the notion that managing problems in the coastal zone can be achieved through co-ordination, using processes of stakeholder consultation, and consensus building. If this is indeed so, Billé asks, “Does presenting environmental management as a pure problem of co-ordination tacitly imply the existence of one general interest, with objectives

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Background Report: The Status of Integrated Coastal Management as an International Practice (Second Iteration),” Urban Harbors Institute Publications Paper 31 (Boston: University of Massachusetts Boston, 2002).

4. R. Billé, “Integrated Coastal Zone Management: Four Entrenched Illusions,” Surveys and Perspectives Integrating Environment & Society 1, no. 2 (2008), http://sapiens.revues.org/198.
common to society as a whole?" 5 Clearly this is not the case, and the limitations imposed by consensus in addressing the multiple values and interests in coastal and marine social systems become evident. Situations in which there is an absence of conflict or unequal power relationships among the diversity of stakeholders are relatively rare in ICOM.

The second illusion centers on the notion of coastal management being led by a single coastal manager, be it an individual or organization. While individual coastal projects may have identifiable project managers under a particular agency, the approach leading to successful integrated management of socio-ecological systems clearly is not under the control of a single coastal manager or unit. Billé suggests that possible explanations for this continued illusion is the perception of control it allows and the convenient veiling of the reality of power struggles and conflict in the coastal zone.

The third illusion focuses on the notion of a community as coherent, egalitarian, and consensual, thereby advancing calls for a community-based response to managing coastal and marine socio-ecological systems. Additional characteristics associated with the illusion are that there is community leadership and a defined territory to be managed by the ‘community’. Despite evidence to the contrary, Billé suggests an explanation for the longevity of the illusion may be found in the synonymous use of the terms ‘community’ and ‘local’ and the not necessarily valid assumption that community-based management includes public participation and inclusion of local needs and knowledge in management decision making.

The final illusion relates to the belief that more knowledge leads to better decisions, what Billé identifies as the ‘positivist illusion’. While numerous examples from across the globe invalidate this assumption, efforts aimed at ICOM still focus heavily on filling knowledge gaps. Paradoxically, while scientists generally address their understanding of uncertainty associated with socio-ecological systems with the call for more research, they are also among the first to (correctly) note that we can never acquire all the knowledge needed to make fully informed decisions. While not disputing the need to be better informed, ICOM requires interventions in the form of actions, using the best available knowledge. As quoted from R.E. Johannes and cited by Billé, “the key question ... is no longer what data is needed to make the right decision, but rather what are the best decisions that can be made given the (incomplete and controversial) knowledge on hand.” 6 This is the precautionary principle as applied to ICOM.

5 Id., at 2.
6 Id., at 9.
Rethinking the Future

In a world in which uncertainty is the name of the game, the only thing that is certain is that this world will change.7

Despite some skeptics, the human ability to fundamentally influence processes essential to ecosystem functioning has resulted in both intended and unintended consequences, manifested at scales ranging from local to global. Given the increasing speed with which drivers of change are affecting coastal and marine socio-ecological systems, the demand for ICOM to effectively respond to these challenges is equally pressing. I will use two examples to highlight the urgent need for practitioners and scholars of ICOM to re-evaluate whether current approaches and tools will be appropriate to address this new reality and its prevalence for surprises.

The first example focuses on the need to rethink our present ability to manage for change rather than stability. This need became particularly poignant following the shock of the 2004 Indian Ocean tsunami, the 2011 Fukushima nuclear accident, Hurricanes Harvey, Irma and Maria in 2017 in the Atlantic Basin, recent landslides and flooding, and the 2008 financial crisis, just to mention a few. The recent works of Simon Thrush and colleagues in New Zealand and that of Henrik Österblom at the Stockholm Reliance Centre in Sweden are used to support the points made here.8 As noted by Thrush, from a natural science perspective, regime shifts tend to be unwanted and many ecologists focus their efforts on understanding the factors responsible for maintaining system integrity. Likewise, in the policy realm, the ‘governors and the governed’ strive for an environment that assures stability rather than uncertainty and change. Yet the evidence from the interconnected social and natural world is that we need to expect and be able to make decisions that robustly deal with surprises. More so than those living inland, coastal populations whether in urban or rural settings are at the forefront of having to deal with the surprises and shocks that are becoming the new reality.

Reminding us of the imperfect nature of knowledge and the unpredictability of multidimensional socio-ecological systems due to as yet unknown interconnected pressures, Thrush’s and Österblom’s work serves as a siren call

7 E. Mann Borgese, Sustainable Development in the Oceans (Halifax: International Oceans Institute, n.d.), at 15.
8 S.F. Thrush et al., “Addressing Surprise and Uncertain Futures in Marine Science, Marine Governance, and Society,” Ecology and Society 21, no. 2 (2016): 44; H. Österblom et al., “Marine Ecosystem Science on an Intertwined Planet,” Ecosystems 20 (2017): 54–61.
to expect more uncertain futures. Preparing for the unexpected requires scientists as well as policy-makers and practitioners to be aware of shocks that "may originate outside traditional marine ecosystem science, and make this 'unknown' part of the wider research and policy agenda."9 This will require existing ICOM governance processes to not only become more participatory, but for the tools being used to explicitly address issues of power imbalances and inclusivity in order for decisions to be robust.

This brings me to the second example highlighting the need to reassess the consequences of the tools being used today to potentially deal with current and near future surprises in coastal and marine socio-ecological systems. While more attention is being paid to the challenges and opportunities of using new technologies such as remote sensing, geo-visualization, and big data analytics to contribute to ICOM solutions spanning across scales of governance,10 this example focuses on the growing acceptance of marine spatial planning (msp) as the tool to manage conflicts and assure a level of predictability in a marine area being managed.11

Apart from the potential mismatch in designating zones for marine-based activities given the previously discussed increasing prevalence for surprises in socio-ecological systems, an issue warranting attention is the process surrounding what and how data are included to provide data layers used in decision support. Given the already mentioned need for governance processes to be more participatory, inclusive, and aware of power imbalances to help mitigate increasing shocks, current MSP practices need rethinking. As noted by Boucquey and colleagues,12 due to the close relationship between ecosystem-based management and MSP, deciding what data are collected is generally skewed towards those characterizing the natural ecosystem and the socio-economic

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9 Id. (Österblom et al.), at 58.
10 W. Ouellette and W. Getinet, "Remote Sensing for Marine Spatial Planning and Integrated Coastal Areas Management: Achievements, Challenges, Opportunities and Future Prospects," Remote Sensing Applications: Society and Environment 4 (2016): 138–157; R. Newell et al., "Visualizing Our Options for Coastal Places: Exploring Realistic Immersive Geovisualizations as Tools for Inclusive Approaches to Coastal Planning and Management," Frontiers in Marine Science 4 (2017): 290; A. Rumson et al., "Coastal Risk Adaptation: The Potential Role of Accessible Geospatial Big Data," Marine Policy 83 (2017): 100–110.
11 A.O. Tuda et al., "Resolving Coastal Conflicts Using Marine Spatial Planning," Journal of Environmental Management 133 (2014): 59–68; C.M. Botero et al., "An Indicator Framework for Assessing Progress in Land and Marine Planning in Colombia and Cuba," Ecological Indicators 64 (2016): 181–193.
12 N. Boucquey et al., "The Ontological Politics of Marine Spatial Planning: Assembling the Ocean and Shaping the Capacities of 'Community' and 'Environment,'" Geoforum 75 (2016): 1–11.
activities that are taking place in order to determine the effect on the system through the use of models. This exercise of power by MSP experts can potentially reduce the diversity of interpretations by which different actors experience the natural system, leaving stakeholders involved in MSP with “little opportunity to initiate particular self-characterization or to suggest different modes of representation.”

Conclusion

This essay has attempted to provoke discussion on the readiness of ICOM practitioners, scholars, and decision-makers to effectively address the increasing prevalence of surprises and shocks that have become the new reality for coastal and marine socio-ecological systems. It does so by first questioning our acceptance of ICOM assumptions from the past and calling for a rethinking of our current approaches for dealing with the future. What is not in question is the promise of ICOM to help address the challenges and seize opportunities at a time of great change in marine ecosystems and in our use of the sea and its resources. This is the ‘new reality’ facing coastal and marine socio-ecological systems.

13 Id., at 7.