Information to Impact: Effectively Communicating Science to Save the Oceans

Jolisa Brooks and Gyan de Silva

ABSTRACT

The complexity of the ocean and its interaction with anthropogenic stressors solidifies its status as a super-wicked problem. However, the issue's very nature provides an opportunity for innovation and coalition building amongst the public and private sectors. The Collective Intelligence Network for Saving the Oceans (CINSO) uses humanistic communications to effectively transform scientific information into impact; we have to relate the real changes in ocean health to the cultural, social, professional, and epistemic language of our audiences. Instead of promoting polarizing, science-monopolized media narratives, CINSO helps curate media that connects science and environmental stressors to the lives of all people, not just liberal environmental justice warriors. When we speak to the individual and community using humanistic communications, we: 1. Acknowledge that cultural identity can overpower scientific reasoning, 2. Abandon the communication models of knowledge deficit fallacy that belittles skeptics and knowledge surfeit that bombards the public with facts, and 3. We account for community members' beliefs and empower them to have a voice and place in the conversation. CINSO recognizes that scientists should not monopolize environmental stories, but rather we should actively engage practitioners, journalists, researchers and community members through fact-based narratives. Our network gives these groups the tools to communicate science effectively and galvanize their communities to act. The language determinant/ values-based analysis is a useful science-communication tool. This application involves presenting a scientific concept or opportunity through the lenses of Research, Policy, Business, Media and Community. In the context of CINSO we are using Tim Lenton's "Earth System Tipping Points " to create opportunities that build resilient and sustainable communities in the Caribbean; curate large-scale media; increase private sector investment; and influence policy outcomes. The CINSO network is a collaborative effort between Yale University, National Geographic Society, Tim Lenton, and Paul Lussier.

ANTIQUATED MODELS FOR SCIENCE COMMUNICATION

Scientists have monopolized the global environmental conversation for far too long and this deference to science as an authority has had polarizing effects. The antiquated model of science communication asserts that public disenchantment with climate science is formed and fueled by "information deficit". There are two aspects to this belief: (1) Public uncertainty and skepticism towards modern science including environmental issues and

technology is caused primarily by a lack of sufficient knowledge about science and the relevant subjects; (2) By providing the adequate information to overcome this lack of knowledge, the general public opinion will change and decide that the information provided on the environment and science as a whole is reliable and accurate. Another facet of the antiquated science communication model is "information surfeit" or the overindulgence of data [1]. This excess of information is indicative of our current science communication model [2]. The media has bombarded the public with facts and evidence of anthropogenic climate change, and has unsuccessfully tried to galvanize the public behind fear. Information surfeit, even if done from a humanistic standpoint, is precarious because scarring individuals into believing does not give them the tools to act on that fear [3].

Paul Lussier (Director, Science Commmunications with Impact Network) has ushered in a new engagement strategy known as humanistic communications: an ambitious discipline that provides a "holistic framework for research and capacity mobilization" [4]. Collaboration and co-designing with societal partners is integral to creating solutions that better respond to environmental challenges [4]. Humanistic communications is a framework that engages policymakers, individuals, industry, media, communities, and scientists. This methodology was conceived with the understanding that humans are complex beings that are moved, persuaded and engaged by not only "facts", but culture, conviction, positionality, identity etc. Therefore, we have to communicate the real effects of climate change in the cultural/social/professional/epistemic language of our audiences [5]. Language determinants provide tools to communicate effectively across sectors [6] [7].

BUILDING NARRATIVES

The Language Determinant framework is a tool to identify points of engagement for stakeholders in different categories (Research, Policy, Business, Media and Community) [8]. We applied this tool to CINSO as a first step in mapping stakeholders and their values. This was not simply an exercise in framing, but in identifying different opportunities and leverage points for each stakeholder group around a single environmental concept, in this instance: ocean tipping points and island resilience. This, effectively, involved designing a continuous rewards system to draw and retain partners in the network. For example, a

---

[1] Dickson, D. 2005. The Case for a 'deficit model' of science communication. *Science and Development Network*.

[2] Nordhaus, Ted; Michael Shellenberger. The Death of Environmentalism: Global Warming Politics in a Post-Environmental World. (2004) (37pp)

[3] Marshall, George. Don't Even Think About It: Why Our Brains are Wired to Ignore Climate Change, Bloomsbury Press (October 2014) (pp 1-51)

[4] Lussier presentation at IPCC Expert Meeting on Communication. Oslo Norway, 2016. Session 16: Beyond the Transmission Belt – "Upstream Communications" And Stakeholder Values. http://www.ipcc.ch/pdf/supporting-material/EMR_COM_full_report.pdf

[5] Boykoff, MT (2009), Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change. Glob. Environ. Polit. 9 (2) 123-128

[6] Hoffman, Andrew. How Culture Shapes the Climate Change Debate, Stanford Briefs (March 11, 2015) (pp. 1-90)

[7] Gregory, Jane and Miller, Steve (2000), Science in Public: Communication, Culture and Credibility, (London: Perseus)

[8] Hulme, Mike. Why We Disagree About Climate Change, Cambridge University Press (May 25, 2009) (pp xxi-108)

network pilot project was proposed for the British Virgin Islands (BVI). BVI has a vast extent of coral. Therefore narratives were developed to represent coral reefs as a significant source of opportunity, not just for research but for:

- Business - eg. ecotourism, technology
- Community - eg. culture, education, ecosystem services
- Policy - eg. local economic development, chance to increase voter base
- Media - eg. powerful stories of human endeavour, progress, cultural identity and learning across all sectors.

Developing a narrative of multiple groups yielding continuous benefits out of coral conservation, would present an ecosystem of opportunities, around reefs in BVI, for different stakeholders to step into.

FROM PRISTINE SEAS TO OCEAN TIPPING POINTS

Before the advent of CINSO, the National Geographic Society employed a global oceans program, named Pristine Seas. This program aimed to explore 'wild oceans spaces' and concentrated heavily on the ocean's visual aesthetic beauty, as well as scientific research. Essentially, Pristine Seas was a program that promoted science through mainstream media. This approach of presenting a science and nature-based aesthetic through media is a commonly used approach to communicate environmental science. However, this approach often excludes people from that image of nature, and where people are included they are portrayed as an external force that often does not belong [9] [5].

Professor Tim Lenton, leading Earth Systems Scientist from the University of Exeter, suggested Oceans Tipping Points as a suitable focal point for CINSO. Oceans Tipping Points refer to points beyond which aspects of the ocean change into alternative states with new and different properties from those that human beings are adapted to [10]. Tippings points were the ideal focus as they represented both ecological and human implications and stories. Thus, it could form the basis of a new media series (currently under development) portraying a socio-ecological system, of which people were an integral part as opposed to the antagonist. This was in line with the principle of 'Systems Thinking' which asserts that, much like an ecosystem, systems work better and are more resilient when they are more diverse [11]. A CINSO media series would portray the diversity of nature, and the diversity people as a major part of that natural system, centered around Oceans Tipping Points [12]. CINSO is also activiely curating social media to enable communities to engage in citizen science.

CONCLUSION

The impact of human-induced stress on oceans, is highly complex and carries the risk of pushing oceans systems beyond tipping points. Complex problems require equally

[9] McKibben, Bill. EAARTH, Henry Holt and Company (2010) (Preface, Chapter 1).

[10] Hoegh-Guldberg, Ove, et al. "Coral reefs under rapid climate change and ocean acidification." science 318.5857 (2007): 1737-1742.

[11] Meadows, Donella H. Thinking in systems: A primer. chelsea green publishing, (2008).

[12] Steffen, Will, et al. "The Anthropocene: From global change to planetary stewardship." AMBIO: A Journal of the Human Environment 40.7 (2011): 739-761.

complex and interconnected systems to address them. The Collective Intelligence Network for Saving the Oceans (CINSO) aims to be such a system. CINSO uses humanistic communications to develop opportunities for different stakeholder groups to co-create outcomes on a global scale in an attempt tackle oceans tipping points. In the process, each group will yield positive outcomes for themselves in a continuous process.

ACKNOWLEDGMENTS

CINSO's work is a collaborative effort with Yale University, Science Communications with Impact Network (a network spanning the private and education sector), National Geographic Society, Tim Lenton and Paul Lussier. We would like to offer a special note of thanks to Adam Fishman, Caroline Hobbs, Ana Lambert, David McCarthy, and Martin Becker-Toro. Thank you to Mr. Lussier for being at the center of this synergetic network. Lastly, we offer our appreciation to Yale School of Forestry & Environmental Studies and The Carpenter Sperry Fund for financially supporting this endeavor.

References

1. Dickson, D. 2005. The Case for a 'deficit model' of science communication. *Science and Development Network*.

2. Nordhaus, Ted; Michael Shellenberger. The Death of Environmentalism: Global Warming Politics in a Post-Environmental World. (2004) (37pp)

3. Marshall, George. Don't Even Think About It: Why Our Brains are Wired to Ignore Climate Change, Bloomsbury Press (October 2014) (pp 1-51)

4. Lussier presentation at IPCC Expert Meeting on Communication. Oslo Norway, 2016. Session 16: Beyond the Transmission Belt – "Upstream Communications" And Stakeholder Values. http://www.ipcc.ch/pdf/supporting-material/EMR_COM_full_report.pdf

5. Boykoff, MT (2009), Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change. Glob. Environ. Polit. 9 (2) 123-128

6. Hoffman, Andrew. How Culture Shapes the Climate Change Debate, Stanford Briefs (March 11, 2015) (pp. 1-90)

7. Gregory, Jane and Miller, Steve (2000), Science in Public: Communication, Culture and Credibility, (London: Perseus)

8. Hulme, Mike. Why We Disagree About Climate Change, Cambridge University Press (May 25, 2009) (pp xxi-108)

9. McKibben, Bill. EAARTH, Henry Holt and Company (2010) (Preface, Chapter 1).

10. Hoegh-Guldberg, Ove, et al. "Coral reefs under rapid climate change and ocean acidification." science 318.5857 (2007): 1737-1742.

11. Meadows, Donella H. Thinking in systems: A primer. chelsea green publishing, (2008).

12. Steffen, Will, et al. "The Anthropocene: From global change to planetary stewardship." AMBIO: A Journal of the Human Environment 40.7 (2011): 739-761.