

Bird is the word – on the importance of ethical and effective scientific communication

SAM DUPONT¹, GREGORY PUNCHER² AND PIERO CALOSI³

¹Department of Biological and Environmental Sciences, University of Gothenburg, The Sven Lovén Centre for Marine Sciences – Kristineberg, 566 Fiskebäckskil, Sweden, ²Alma Mater Studiorum – Università di Bologna, Biology, Geology and Environmental Sciences, 48123 Ravenna, Italy, ³Département de Biologie, Chimie et Géographie, Université du Québec à Rimouski, 300 Allée des Ursulines, Rimouski, Québec G5L3A1, Canada

Back in 1963, the proto-punk band The Trashmen released the single Surfin' bird (written by Frazier, White, Harris & Wilson Jr. and released in November 1963 by Garrett label; <https://www.youtube.com/watch?v=ZThquH5toow>). Fifty years later and despite the obscure lyrics, the song remains iconic in western pop culture; e.g. through the recurrent appearance in the TV show Family Guy (e.g. I dream of Jesus episode, released on 5 October 2008; <https://www.youtube.com/watch?v=2WNrx2jq184>). It is thought that the line 'everybody knows that the bird is the word' was inspired by a highly successful and catchy radio jingle released/commissioned in post prohibitionist USA by the Gallo brothers to boost the sales of their inexpensive fortified Thunderbird wine: 'What's the word? Thunderbird' (<http://www.absurdintellectual.com/2009/06/05/everybodys-heard-that-the-bird-is-the-word-but-its-not-what-they-think/>). This illustrates how a simple and catchy message can have a profound and long-lasting influence on society.

Keywords: communication, ocean literacy, climate

Submitted 13 January 2015; accepted 15 January 2015; first published online 13 March 2015

This type of advertising trick is also used in the context of scientific disinformation. As an example, the Competitive Enterprise Institute, a non-profit USA-based think tank funded by companies including Exxon Mobil, the Ford Motor Company Fund and Pfizer, released a short TV advertisement in an attempt to discredit the Al Gore movie *An Inconvenient Truth* (<http://www.imdb.com/title/tt0497116/>). This TV advertisement uses a simple and catchy message 'they call it pollution, we call it life' to discourage any political action aimed at reducing carbon dioxide emissions (https://www.youtube.com/watch?v=R5D_WeWXioU).

More than ever scientists should be more effective at communicating their work. Learning communication strategies and advertising tricks from 'ad men' may help the community in achieving an effective way of communicating robust scientific messages. When it comes to the responsibility of society for causing climate change, the science is strong (e.g. The Intergovernmental Panel on Climate Change is now using the terminology 'virtually certain' when referring to the anthropogenic origin of some global environmental changes). However, the scientific community is still struggling to deliver a strong message to citizens and policymakers. This limits the ability of politicians to deliver clear messages to their electorate and promote effective policies, and even worse enables others representing the interests of industry to

express simplistic unfounded opinions (for an example, see <https://www.youtube.com/watch?v=MAuWztI1Eec>). As highlighted by the comedian, musician and communicator Tim Minchin in his address at the University of Western Australia graduation ceremony in 2013: 'The idea that (...) the science of anthropogenic global warming is controversial is a powerful indicator of the extent of our failure to communicate. The fact that 30 percent of the people just bristled is further evidence still. The fact that that bristling is more to do with politics than science is even more despairing.' (<http://www.news.uwa.edu.au/201309176069/alumni/tim-minchin-stars-uwa-graduation-ceremony>).

This need for more incisive scientific communication has recently been highlighted in various international conferences and reports including the Rome declaration published this year by the European Marine Board and calling for 'sustained support for ocean literacy, best practice in science communication' (see JMBA editorial by Thorndyke & McGowan, 2014). Traditionally scientific communication is linear (the science supply paradigms), with scientists providing information that is believed to be useful for stakeholders. However, research demonstrates that this kind of information is a weak policy instrument (Sterner, 2003). In the context of global environmental change, it is complicated by competing values, uncertainties, and complexity in causation.

A more efficient strategy would be to work across social, natural and communication sciences to optimize communication of scientific information of high certainty and targeting societal values in the form of simple, but not simplistic, accessible messages. This will allow rising above the zone of

Corresponding author:
S. Dupont
Email: sam.dupont@bioenv.gu.se

complexity to consensus: i.e. from low direct societal values and high uncertainty typically associated with global environmental sciences and decision-making to information directly relating to societal values and high scientific certainty (Figure 1). However, it is also critical that scientists learn from advertising and other professional communicators to communicate more effectively without compromising the scientific accuracy of their message, and their ethical or moral values.

There are examples of complex scientific concepts being successfully pitched to a general audience. Successful conservation campaigns in the past have all provided simple messages associated with familiar experiences, which increases the capacity of an audience to internalize information. The complex results published by Munday *et al.* (2009) on the negative effects of ocean acidification – the increase in ocean acidity associated with the release of atmospheric CO₂ – on the homing ability of the clown fish were reported in simpler terms ‘Nemo can’t find his way home’ using a direct reference to the Pixar movie ‘Finding Nemo’ (<http://www.imdb.com/title/tt0266543/>). This significantly contributed to the awareness of ocean acidification and its impacts on marine species and ecosystems worldwide.

Taking this one step further would require researchers designing experiments directly targeting societal values. This can be done by extending the Krogh’s principle ‘For such a large number of problems there will be some animal of choice, or a few such animals, on which it can be most conveniently studied’ (Krogh, 1929) to societal values through a focus on charismatic species and key endpoints.

To test this idea, we performed an experiment testing the impacts of ocean acidification on a locally relevant seafood species in Sweden – the shrimp *Pandalus borealis* – and a neglected important endpoint: taste and texture. The sea has always played an important role in Scandinavian countries, which have been seafaring and fisheries nations for over a thousand years. In particular, the Swedish West Coast’s seafood is often referred to as The Shellfish Coast for the quality of its seafood which is highly regarded worldwide. It is famous for lobster, oysters, langoustine, mussels, fish and particularly northern shrimps, which are an integral part of local folklore and cultural heritage. We predicted that if we could identify an effect, this would attract public attention

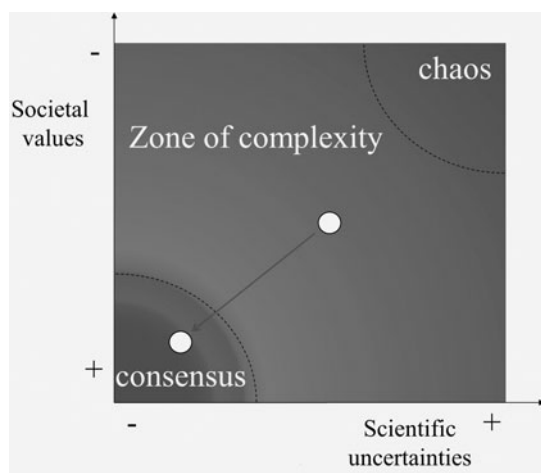


Fig. 1. Scientific certainty versus societal values in decision-making processes (modified from Sundlof, 2000). A more targeted communication strategy would allow moving from the zone of complexity to consensus.

and could be used as a communication opportunity to engage in dialogue with the Swedish public concerning the anthropogenic impact on the marine environment. Our study demonstrated that ocean acidification was negatively impacting the taste and appearance of local shrimp (Dupont *et al.*, 2014). After publication, we worked with the University of Gothenburg press office and the team of science-based communication professionals at COMPASS to produce a press release that was released both in Swedish and English (<http://tinyurl.com/jwo2vj7>). We focused on a simple story and used catchy quotes such as ‘Ocean acidification is often referred as the silent storm because you can’t see it, you can’t hear it, and you can’t smell it, but our research suggests that you just may be able to taste it’. As predicted, this attracted the interest of different media (newspaper, radio, TV, social media) in many countries (e.g. France, India, Norway, Russia, Spain, UK, USA) and languages including the high-ranking scientific journal *Science* (<http://news.sciencemag.org/climate/2014/12/less-tasty-shrimp-thanks-climate-change?rss=1>).

In the face of global changes, scientists ‘don’t have the luxury of remaining silent’ (Sander in Vaidyanathan, 2014). We are calling for a more ethical and effective form of scientific communication. This can only be achieved through the improved training of scientists in various forms of communication incorporating strategies derived from psychology, sociology and various stakeholders’ cultures as well as support and rewards from academic institutions.

REFERENCES

- Dupont S., Hall E., Calosi P. and Lundve B. (2014) First evidence of altered sensory quality in a shellfish exposed to decreased pH relevant to ocean acidification. *Journal of Shellfish Research* 33, 857–861.
- Krogh A. (1929) The progress of physiology. *American Journal of Physiology* 90, 243–251.
- Munday P.L., Dixon D.L., Donelson J.M., Jones G.P., Pratchett M.S., Devitsina G.V. and Døving K.B. (2009) Ocean acidification impairs olfactory discrimination and homing ability of a marine fish. *Proceedings of the National Academy of Sciences USA* 106, 1848–1852.
- Sterner T. (2003) *Policy instruments for environmental and natural resource management*. Washington, DC: Resources for the Future, RFF Press.
- Sundlof S. (2000) The role of science in regulation and decision making. *AgBioForum* 3, 137–140.
- Thorndyke M. and McGowan F. (2014) Editorial. *Journal of the Marine Biological Association of the United Kingdom*. <http://dx.doi.org/10.1017/S0025315414001738>.
- and
- Vaidyanathan G. (2014) What have climate scientists learned from 20-year fight with deniers? *Scientific American*. <http://www.scientificamerican.com/article/what-have-climate-scientists-learned-from-20-year-fight-with-deniers/>.

Correspondence should be addressed to:

S. Dupont
Department of Biological and Environmental Sciences,
University of Gothenburg, The Sven Lovén Centre for
Marine Sciences – Kristineberg, 566 Fiskebäckskil, Sweden
email: sam.dupont@bioenv.gu.se