"SEA" the Future - Through A Glass, Brightly … Face to Face

[*Background: The following is the formal version of an invited presentation[1] to the London Ocean Forum[2] on the theme "People who see the sea": who are we, who should we be and how do we get there? This presentation was given in the session exploring ways to build two-way connections between ocean academics and the communities who live near the areas we study, and in particular on how to build strong bridges between local communities and the people who study their regions?]*

The first part of my title[3] reminds us that how humans see the sea is crucial to the future of life on this planet, which we persist in calling "earth" although nearly three-quarters of it is "ocean",[4] as pointed out by, amongst others, Arthur C. Clarke. Please try to keep the duality see/sea in mind as you read this.

The second part[5] illustrates an approach to gaining knowledge that is particularly relevant to our attempts to see the sea, because it envisions an exchange between peers. Humanity and the sea are these peers: this is the "Face to Face" I am contemplating here. Although we will always have to see the sea through some form of mediation, which raises its own issues addressed below, I changed the original "darkly" to "brightly", as scope for optimism remains.

The "glass" is usually considered to be a mirror in the original Greek, but I also intend to retain the other meaning[6] here: not only because it scans better, but also because we would do well not to look for our own reflection, for once, in what we see. Have you noticed how difficult it is to see one's reflection in the sea?

'Sea blindness' is a concept usually associated with the public's lack of knowledge of the shipping world and the dependence of trade on the sea. However, sea blindness also afflicts humans (with the exception of a few fast-disappearing traditional coastal communities) on just about every marine metric, including that of the critical importance of the sea to our well-being.

A telling example of traditional coastal communities seeing the sea is Pacific Islanders thinking of themselves as "Oceanians". They speak of their world as 'our sea of islands' in the striking imagery of Dr. Epeli Hau'ofa, who considered himself to be Tongan, Fijian and Oceanian. Oceanians see the sea as a medium of connection between - not of separation from - each other. The sea joins the Pacific Islands and Pacific Islanders; it does not isolate them. Voyaging between islands, using traditional navigation techniques, requires envisioning the *islands* as moving. They themselves, the island voyagers in their vessels, are the fixed point.

Seeing is not simple – it takes different forms. Seeing as a means of learning is not straightforward, because valuable sources of learning may well be in plain sight but invisible to both untutored and over-tutored eyes. Identifying and removing those blinkers are essential to

[1] 17 June 2019, kindly hosted by the Wellcome Foundation, London.

[2] Organized by the London Ocean Group, a community of London-based academic researchers with an interest in the ocean. It includes physical and biological researchers, social scientists, and those who study risk, policy and law. The long-term aim is to move towards being a virtual oceanography institution for London, with a cross-disciplinary community that can share knowledge and build collaborations based on those new links. For more information, see website on: https://mecheng.ucl.ac.uk/londonoceangroup/.

[3] Inspired by the title of an early publication on marine careers by the Institute of Marine Engineering, Science and Technology (IMarEST), www.imarest.org.

[4] The difference between "ocean" and "sea" is a fruitful topic for further exploration …

[5] A quote from St. Paul's Letter to the Corinthians (1/13:12-13).

[6] As expressed in the King James translation.

seeing fully. The anthropocentric blinker (i.e., where it is asked, 'How is this good for me?') especially impedes seeing to learn.

An example of this, again from the Pacific, where I had the great good fortune to encounter early in my marine life Dr. Bob Johannes, whose seminal book "Words of the Lagoon" dramatically illustrated the rich learning - just about all of it new to science - about the sea that was to be gained by both sitting down and going to sea with traditional island fishermen and asking them - to their initial utter astonishment - how they saw the sea. He nearly convinced me to do the same for the women gleaners of the intertidal zone in these communities for my graduate work, but I had already lost my heart to the deep sea by then. Nevertheless, he planted a seed which unexpectedly germinated much later in a completely different context (described below) and it is why, to my delight, Dr. Helen Czerski, the organizer of this innovative Forum and the creator of the excellent London Ocean Group, asked me to speak on "people who see the sea", rather than on topics I am usually associated with (Fe/Mn nodule/crust geochemistry and ecology, marine scientific research, marine environment, law of the sea and deep sea mining).

However, we must beware of the tyranny of the visual. The deceptive opacity of the sea makes it particularly vulnerable to the 'out of sight, out of mind' syndrome, and bedevils not only our attempts to understand the sea, but also to protect and preserve it.

The great Pacific Island navigators not only use visual cues, such as stars, clouds, water colour and birds, to orient themselves on a journey between islands. Crucial to their portfolio of navigation skills is their ability to disentangle complex wave and current patterns to discern the effects of waves reflected off real, but invisible, islands. They do so by using the entire body as the sensor – usually by lying flat out and face down on the bottom of the vessel – with their eyes closed. Training for this requires immersing themselves well beyond the reef in the deep sea, learning to feel its movements and to differentiate between swell, tide, local currents and deflections from other islands (Brower, 1983). This is physical oceanography seen without eyes and learned through the body. It adds an additional level of meaning to the concept of 'physical' in physical oceanography.

The tyranny of the visual adds other unhelpful aspects when it comes to seeing the sea. For example, we cannot see the adverse effects of noise pollution, acidification or warming on the sea itself. Would we care as much about the effect of warming on corals if they did not lose their vibrant colours because of it, even though we know this means that they are dying?

Even when we use other sensory technical media to learn about the sea, such as acoustics (e.g., echosounders) and (geo)chemistry (e.g., conductivity-temperature-depth (CTD) instruments), the data obtained must be translated into images in order to be useful. Those data are also used as the basis for models of the sea and its living and non-living processes. Dr. Joseph Reid, the eminent physical oceanographer specializing in ocean currents, won the Albatross Award (oceanography's equivalent to the Nobel Prize) for "his outrageous insistence that ocean circulation models should bear some resemblance to reality." Modelling requires filters and judgments chosen and implemented by humans. What essential information about the sea do we miss with these filters and judgments: in other words, information we can only obtain by looking *directly*, with our own eyes - albeit still through a glass - into the sea?

I emphasize 'directly' because when we try to see the sea, we now do so ever more remotely from the sea itself, through, e.g., camera-equipped devices. The number of human-occupied research submersibles, never large, has plummeted. Just as moving formerly human interactions online to be mediated by machines is probably unhealthy in terms of how humanity is seeing itself, engaging ever more remotely with the sea in order to gather information about it

is unlikely to help us to see it most constructively and productively. Nor, to recall the concept of exchange introduced earlier as an intrinsic component of learning through seeing, is it likely to enable the sea to engage with us in response. It is that engagement that seeing for learning should foster. However, it is not easy to have an exchange with the sea.

Dr. John Craven, a dedicated and creative marine engineer who never ceased his search for new ways to see the sea, once summarized his lifetime's experience of working in and with the sea as follows: "If you bring something new to the sea, the sea will bring something new to you" (Craven, 2001).

Our removal from direct experience of the sea risks denying ourselves the chance to receive something new from the sea. It also results in the diminution, if not whole-scale removal, of our empathy, and hence, in our alienation from physical realities. This is one reason why the military always refers to civilian suffering and death caused by military action as "collateral damage."

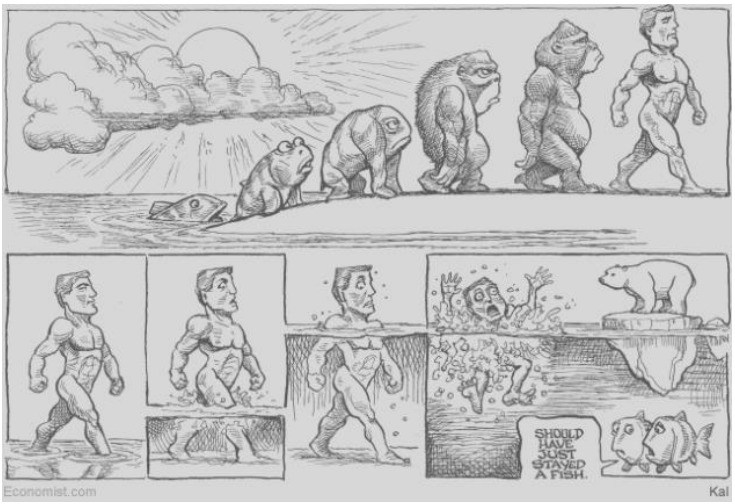
I serve on the PhD committee of a student at the University of Hawai'i who is exploring the anthropology of deep-sea mining for hard mineral resources found in the sea. Her field work includes voyaging on deep-sea mineral resource, technology and environmental assessment vessels to ascertain how the technicians, scientists and crew see the sea and this resource, particularly in the context of their perception of sustainability of any eventual mining. One striking early finding from her work describes how the use of remote sensing equipment led to her shipmates' descriptions of the sea between ship and seabed as 'liquid rock' (Harris, 2016).

We are a deeply visual species. We hunger for direct experience. I have not yet met anyone who considers watching a video of Venice to be the equivalent of actually going there. Despite my overall *caveat* about visual tyranny, let us use this predilection for the directly experienced to our and the sea's mutual benefit: to promote exchange; to leave options open for something new to be brought to us by the sea; for us to at least see something new.

This means, *inter alia*, putting scientists back in research submersibles, and to (re)invest in long-term, direct observational presence by real humans in the real sea.

As illustrated by this brilliant cartoon by Kal from *the Economist* (17 April 2019, p 12):[7]

<u>we could try to see the sea as if we had to live in it again.</u>



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[7] https://www.economist.com/the-world-this-week/2019/04/17/kals-cartoon.

It also means visiting those now evanescent traditional coastal communities and asking them to teach us what they have learned from their centuries of direct interactions with the sea. This is not an easy task, and it is urgent, as some of the best - i.e., usually the oldest - sources are becoming forgetful or dying.

Inspired so long ago by Bob Johannes, about six years ago I began to practice what I preach here, in that well-known marine community of Hemis National Park located in Ladakh, a small, very traditional Tibetan Buddhist enclave which is trying to preserve its snow leopards and its way of life in the Indian Himalaya at over 4,000 m altitude. As the Himalaya is largely uplifted sea floor, this adds a whole new meaning to the concept of "high seas."

Dr. Czerski knew about my first-hand experience of how to connect with traditional communities, and of the rewards, the frustrations, the difficulties, and the sadness in witnessing the inexorable tragic loss of invaluable knowledge by the relentless march of time, even in so few years. Nevertheless, this conservation project, which is still ongoing, has already enabled and inspired everyone involved to see themselves, their community, their snow leopards, their mountains - and their tourists - in many new ways. One of the tangible results is a small book, *Tales of the Snow Leopard*, offered as a template for other - terrestrial and marine - communities interested in conducting similar work. All proceeds from the Tales benefit the Park.

Anyone who would like to explore further how to see the sea through the eyes and other senses of coastal communities, and learn from them, is warmly invited to get in touch with me.

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