



# ECOCENE

CAPPADOCIA JOURNAL OF ENVIRONMENTAL HUMANITIES



Volume 1/ Issue 1/June 2020

Environmental Humanists Respond to the World Scientists' Warning to Humanity



## The Language of Warning: The World Scientists' Efforts to Communicate and the Challenge of Poignancy

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Slovic, Scott. 2020. "The Language of Warning: The World Scientists' Efforts to Communicate and the Challenge of Poignancy." *Ecocene: Cappadocia Journal of Environmental Humanities* 1, no. 1 (June): 44-51. <https://doi.org/10.46863/ecocene.33>.

Research Article/ Received: 20.05.2020 /Accepted: 06.06.2020

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# The Language of Warning: The World Scientists' Efforts to Communicate and the Challenge of Poignancy

by Scott Slovic



## Abstract

*It's one thing to issue a clarion cry (or multiple clarion cries), and yet another thing to be heard. The world scientists' warnings about the direness of our climate predicament have offered detailed, authoritative information about the condition of the planet, but they fall short in the critical area of poignancy. The recent warnings are not the first of their kind—prominent climate scientists have been issuing such documents for decades. And yet even as scientists' knowledge of planetary systems has become more refined, their attentiveness to the language of warning—and what works and what doesn't—has not progressed noticeably. Psychologists, communication specialists, and humanities scholars in various disciplines (creative writing, literary studies, philosophy) have long noted that humans are vulnerable to psychic numbing when inundated with abstract information, particularly when this information concerns large-scale phenomena—this includes global climate change. While recognizing the importance of the world scientists' efforts to evoke an “emergency response,” this article attempts to warn against warnings that do not heed the psychological realities of how the human mind processes data. It is important to calibrate warnings to the sensitivities and insensitivities of human readers. The public cannot heed what it cannot hear.*

Keywords: language, poignancy, psychic numbing, communication, data



## About the Author

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# The Language of Warning: The World Scientists' Efforts to Communicate and the Challenge of Poignancy

Scott Slovic

Tucked into my battered copy of David Quammen's 702-page tome *The Song of the Dodo: Island Biography in an Age of Extinction* (1996) is a yellowing review of Stephen H. Schneider's *Laboratory Earth: The Planetary Gamble We Can't Afford to Lose*, penned for *The New York Times Book Review* in January 1997 by Quammen, one of our best science communicators. It is instructive to consider Quammen's concerns about *Laboratory Earth* as we turn to think about the value and limitations of the "World Scientists' Warning of a Climate Emergency," which appeared in *BioScience* in January 2020, some two decades following Schneider's clarion cry. Some might argue that a 700-page doorstop of a book is unlikely to lure the general public toward a deeper appreciation of the threat of extinction and the necessity of action, but such an assumption would miss the magic of a book rich with dramatic metaphors (ravaged ecosystems compared in Section 1 to a beautiful Persian carpet knifed into thirty-six separate throw rugs), novelistic narratives of the author traveling to remote jungles and visiting with scientists to talk about their research passions and the plight of the biosphere (who can forget Edward O. Wilson, in his office at Harvard, wishing that he had a more unusual and memorable name, perhaps a name like "Dr. Edward O. Stonebreaker"?), and lucid, plain-spoken explanations of biogeography, equilibrium theory, wildlife management, and insularity. Quammen's (1996) imagined death of the last dodo bird (the poster species for extinction) reads, in part, as follows:

To be rare is to have a lower threshold of collective catastrophe. Any misfortune, even one that would seem small by an absolute standard, is liable to

be a total misfortune. A modest-sized disaster can push a rare species immodestly close to oblivion. At the end, the last individual's death might turn out to be accidental, independent of the factors that shoved the species into the foyer of extinction . . . . *Raphus cucullatus* had become rare unto death. But this one flesh-and-blood individual [the last dodo bird] still lived. Imagine that she was thirty years old, or thirty-five, an ancient age for most sorts of bird but not impossible for a member of such a large-bodied species. She no longer ran, she waddled. Lately she was going blind. Her digestive system was balky. In the dark of an early morning in 1667, say, during a rainstorm, she took cover beneath a cold stone ledge at the base of one of the Black River cliffs [of Mauritius]. She drew her head down against her body, fluffed her feathers for warmth, squinted in patient misery. She waited. She didn't know it, nor did anyone else, but she was the only dodo on Earth. When the storm passed, she never opened her eyes. This is extinction. (275)

Before offering the speculative narrative, Quammen explicitly signals that he is fictionalizing this imagined demise of a species. "Imagine," he writes, "that the last dodo didn't perish on Iverson's islet. Imagine a single survivor, a lonely fugitive at large on mainland Mauritius at the end of the seventeenth century. Imagine this fugitive as a female . . ." (1996, 275). This fictionalizing gesture does not undermine the scientific heft of the book, but it brings the concepts and data to life, making them real and convincing for readers. So when Quammen reviewed Schneider's book, a direct precursor to today's "World Scientists' Warning," his concerns about the language of *Laboratory Earth* were sadly prescient. They suggest that today's scientists—and the general public—have learned much more about the dire condition of the planet since 1997, but there remain important lessons to learn about the poignant and effective use of language.

Admittedly, the "World Scientists' Warning" appeared in *BioScience*, not in the *New Yorker* (where Rachel Carson's *Silent Spring* initially was published), and the scientists have also managed to sidestep some of the pitfalls Quammen points out in *Laboratory Earth*, such as burying the lead. The 2020 warning articulates "clearly and unequivocally," in the opening paragraph, that "planet Earth is facing a climate emergency" (Ripple et al. 8) and concludes three pages later with the assertion that our species' prospects will be greatly improved "if decision-makers and all of humanity respond to this warning and declaration of a climate emergency and act to sustain life on planet Earth, our only home" (12). But the warning still falls into the trap, perhaps in the interest of efficiency, of presenting bullet-point summaries without strong, engaging prose. The bulk of the four-page statement consists of twenty-nine graphs,

charting information ranging from human population growth to such geophysical trends as methane build-up and sea-level change. There are also six key bullet points on the final page, briefly addressing such issues as energy, food, economy, and population. In his 1997 review of Schneider's book, Quammen asks,

Should we care whether [our scientists] can shape a book [or an essay] or produce an engaging blend of exposition and argument? Maybe not. In general, we should give them thanks, not cavils. But we can still hold them to standards of effective communication—especially so if they profess strong concern, as Mr. Schneider repeatedly has, for heightened public awareness and understanding. Readers have a right to expect enticement and persuasion from a book of popularized science, not just graceless instruction. (11)

Again, the authors of the 2020 warning may not have viewed their statement as a work of “popularized science,” given the publication venue, but they were clearly writing to an audience of non-specialist scientists and, ultimately, hoping to persuade “decision-makers and all of humanity” (Ripple et al. 12). In his critique of Schneider's book, Quammen (1997) states memorably, “It's a concise, sensible, even-tempered discussion that reflects both the subject's scientific and sociopolitical intricacy and, unfortunately, its tendency to seem heart-squashingly dull” (11).

It's this last phrase that has particularly stayed with me for more than two decades since I first read the review. How can science writing about urgent social and environmental issues avoid crushing readers' attention and potential action through sheer dullness? Unfortunately, I find that the “World Scientists' Warning” delivers a flood of convincing information about the direness of our climate predicament but does so in a way that smothers—that literally *drowns out*—the salience of the warning itself. In creative writing workshops, instructors often guide student writers to the “less is more” maxim, suggesting that too much detail, even in a story, can wash away the human poignancy that moves all readers, even those trained in the sciences.

In preparing this short response essay to the *World Scientists' Warning*, I have also read the 2017 “World Scientists' Warning to Humanity: A Second Notice” (published in *BioScience* as well) and the essay “Climate Tipping Points—Too Risky to Bet Against” (by Timothy M. Lenton et al., published in *Nature*, November 2019), both of which, though similarly brief, likewise violate the communication ethos and strategies typically emphasized by specialists in the humanities. All three of these brief warning statements, voiced by scientific experts, deluge readers with facts and then state, as if

expecting readers' heart-felt reaction, "This requires an emergency response" (Lenton et al. 2019, 592).

There are various reasons, many of them psychological and rhetorical/linguistic, for the deafening lack of response. Many of these explanations appear in the forty-two brief chapters of George Marshall's *Don't Even Think about It: Why Our Brains Are Wired to Ignore Climate Change* (2014). Particularly relevant to the challenges of communicating climate science to the public, which is the chief goal of the world scientists' efforts, are such topics as "If They Don't Understand the Theory, Talk About It Over and Over and Over Again: Why Climate Science Does Not Move People" and "The Power of One: How Climate Change Became Your Fault." Marshall (2014) writes:

Climate change is a complex and technical issue that emerges from the theories, data, and predictions of scientific specialists. The problem is not just that scientists emphasize uncertainty and use obscure abstractions, but that they also often excise the very images, stories, and metaphors that might engage our emotional brains and galvanize us into action. (121)

Social scientists working in the arena of humanitarian and environmental crisis, such as Tony Leiserowitz and Paul Slovic, have long recognized the need to combine rational analysis (what psychologists call System 1) and emotional thinking (System 2) in deliberating effectively about our individual lives and larger societal issues. Marshall (2014) quotes Leiserowitz's view that "without that feeling of emotion, you cannot make good decisions. Scientists are human beings too, not Spock" (121–22). The communication of climate science might be more effective, suggests Marshall, if experts could "present their findings and then take a step back and present their hopes, fears, and humanity. We do have a great deal in common after all" (126).

The gesture to humanize technical communication by acknowledging the personal responses of technical experts to the information they are sharing is also a way of overcoming readers' heart-squashing susceptibility to what psychologists refer to as "psychic numbing." As has been vividly demonstrated in recent studies, human beings are acutely sensitive to individual (small-scale) phenomena. We find stories of single lives (human and otherwise) gripping. We'll open our pocketbooks and donate money to save a single dog on a sinking ship or to pay for the education of one child in a distant country. We'll stop what we're doing and conduct internet searches for more information or send money to the Swedish Red Cross when we see the photo of a single boy, named Aylan Kurdi, tragically drowned on a Turkish beach while his family was seeking refuge from the civil war in Syria—even though many newspaper photos of

entire flotillas of refugees from the same war drew relatively scant attention. As Paul Slovic and Daniel Västfjäll (2015) write in “The More Who Die, the Less We Care: Psychic Numbing and Genocide:”

Our capacity to feel is limited. To the extent that valuation of lifesaving depends on feelings driven by attention or imagery, it might follow [that] the emotion or affective feeling is greatest at  $N=1$  but begins to fade at  $N=2$  and collapses at some higher value of  $N$  that becomes simply ‘a statistic.’ Whereas Robert Jay Lifton (1967) coined the term ‘psychic numbing’ to describe the ‘turning off’ of feeling that enabled rescue workers to function during the horrific aftermath of the Hiroshima bombing, [recent research] depicts a form of psychic numbing that is not beneficial. Rather, it leads to apathy and inaction, consistent with what is seen repeatedly in response to mass murder and genocide. (33–34)

The same effect—psychic numbing that leads to apathy and inaction—occurs prominently in the context of efforts to communicate information about global climate change, such as the various warnings issued by the world’s scientists. Even the organization 350.org, one of leading voices in the movement to mitigate climate change, basically advertises in its own name, which highlights the number 350 (350 parts per million of  $\text{CO}_2$  in the Earth’s atmosphere), a datapoint that will likely mystify and numb even ardent environmental activists. Another aspect of this is the “identifiable victim” bias in psychology, which “prevents us from addressing existential risks [due to] our inability to scale up the concern we feel for one human to hundreds of millions or billions of people... In fact, we feel even more empathy for the suffering of one person than we do for a group of people, even though, logically, we should care about the plight of multiple people more than the plight of one person” (Quist 2019). We human beings respond powerfully to the number one, our compassion and engagement begin to fade at two, and by the time we’re struggling to contemplate a number like 350 our attention has faded to numbness. This is why writers like David Quammen, who seek to present quantitative and technical information by way of series of interwoven narratives and accessible, lively explanations, are more likely to stir interest and concern than brief statements of data-heavy warning by even the loftiest teams of experts.

To add to the challenges of a heart-squashingly informative, quantitative, and jargon-filled warning, there’s the fact that the “World Scientists’ Warning” advertises itself, even in its name, as a *warning*. Who really wants to read a warning, let alone heed one? Yet the warning, or jeremiad, is a tried and true rhetorical mode in environmental

writing. Its actual efficacy as a means of persuasion is explored in recent empirical ecocritical projects by scholars such as Matthew Schneider-Mayerson, including “Disaster Movies and the ‘Peak Oil’ Movement: Does Popular Culture Encourage Eco-Apocalyptic Beliefs in the United States” (2013) and “The Influence of Climate Fiction: An Empirical Survey of Readers” (2018), the latter of which asks whether and how climate fiction enables readers to understand the gravity and urgency of climate change through narrative discourse and frequently through warning, or apocalyptic, stories.

Rhetoricians M. Jimmie Killingsworth and Jacqueline S. Palmer (1996) have argued in “Millennial Ecology: The Apocalyptic Narrative from *Silent Spring* to *Global Warming*” that

[E]loquence—the ability to *move* an audience, to change its political or intellectual orientation by means of effective uses of language—is historically determined. The rhetorical tradition has always realized the importance of situation and rhetorical context. What is not always so clear—what the history of environmental rhetoric amply illustrates—is just how hard it is to predict the effect of a particular discourse on an audience at any given time. Rachel Carson’s apocalyptic narrative may have succeeded beyond any design she may have had, but Stephen Schneider’s quite similar narrative [in *Global Warming: Are We Entering the Greenhouse Century?* (1989)] seems to have fallen flat—not only because of a difference in creative talent or apocalyptic intensity, but because of a difference in the historical period in which each of these texts appeared. (41–42)

It may well be that two decades into the twenty-first century and nearly sixty years following Rachel Carson’s “A Fable for Tomorrow” (the warning narrative that opened *Silent Spring* in 1962), readers have developed apocalypse calluses, making them less sensitive to words of warning, even when voiced by eminent authorities. But I believe there has always been a problem with warnings that advertise themselves as warnings. When I conducted a taxonomy of American environmental writing for the same volume in which Killingsworth and Palmer published their article, I argued that rhapsodic, exploratory language, used in tandem with more jeremiadic and overtly political discourse, is more likely to be effective in guiding readers toward new ways of thinking (Slovic 1996). Jeremiad grabs public attention, but it’s less likely than a few memorable details and individualized stories to really draw readers into a piece of writing and make them care enough to act.



Titling the World Scientists' recent essays "warnings" and beginning and ending them with finger-wagging cautionary assertions may have captured the attention of certain readers, especially those already pre-disposed to care about climate change, but there is otherwise little in these documents to "entice" readers to dwell on the current climate-related data offered here. The most salient, moving elements of "Climate Tipping Points," aside from the opening caption raising the alarm that "the growing threat of abrupt and irreversible climate changes must compel political and economic action on emissions" (Lenton et al. 2019, 592), are the haunting photographs of a single small airplane gliding across an obviously melting glacier in Alaska's Wrangell St. Elias National Park and a solitary diver reaching to examine a bleached coral near the island of Moorea in the South Pacific. In both of these images, which could also have been described verbally in this article or in the scientists' warning statements, there is an implied narrative of a poignant human experience: an individual human seeking to witness the demise of the planet, "our only home" (Ripple et al. 2020, 12), as the scientists conclude their 2020 warning.

As human beings, we resonate to the human dimension of information we receive, even if that information concerns challenges on a global scale. This need to humanize data, to make it somehow salient by breaking it down in various ways to suit our minds' need for singularity, may end up being our Achilles' heel as a species. Paul Ehrlich and Robert Ornstein (1989) pointed out in *New World, New Mind: Toward a Conscious Evolution* that we have, through technology, created a host of humanitarian and ecological problems that we are poorly adapted to fathom and respond to. In order to survive, we may well need to intentionally reshape or compensate for our innate cognitive processes, including our need for poignancy, for "enticement and persuasion," as Quammen (1997) puts it, "not just graceless instruction" (11). Until this "conscious evolution" occurs, though, we require our learned authorities, if they wish to alter our fate and that of the planet, to calibrate their warning words to the all-too-human sensitivities (and insensitivities) of their human readers.

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