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PARTICIPATORY SCIENCE COMMUNICATION FOR TRANSFORMATION

Turning the tide: crafting a collective narrative of the ocean through participatory media

Gianna Savoie

Abstract

Participatory media has the ability to engage people in stories of science in ways that are personal, profound and culturally relevant. This essay launches from my experience as a scientist-turned-filmmaker and my establishment of the Ocean Media Institute, a global media collective that serves as a participatory platform for the communication of ocean science. Through collaboration and innovation, we as science storytellers have the ability to shape narratives that are factual, evidence-based and embrace greater inclusivity. Only when we invite diverse perspectives that draw from all ways of knowing, will we be able to provoke deeper dialogue and ignite change.

Keywords Informal learning; Science and media; Visual communication

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Introduction: surrendering the story

Shifting my focus from the lens of a microscope to the lens of a camera, I have enjoyed a two-decade stint as a science and natural history filmmaker, writing and producing for broadcasters such as PBS/NATURE, National Geographic, BBC, and Discovery. For the better part of my career, I spent the bulk of my days crafting stories about "others" — other people, animals, environments. I won awards for my work — even an Emmy nomination. I thought I was pretty good at my job. Little did I know I was doing it all wrong.

Science Historian Helen Rozwadowski argues that we can only come to know something when we share a history of it. If something is beyond history, it is in fact beyond understanding [Rozwadowski, 2009, p. 220]. My line of work was all about translating other's histories through visual storytelling. But as I would come to discover, when telling the stories of others, something elemental to personal experience becomes lost in translation.

About 10 years ago, I was working in New York City on a production for National Geographic when I received a call by a New Zealand film director offering me a job

as writer and story producer on a feature-length documentary. The film was about a group of South Pacific Islanders from a dozen different island nations who, for the first time in history, would be sailing a fleet of seven traditional hand-hewn double-hulled voyaging canoes called *wakas* across the Pacific. Mapping their way by celestial navigation, their mission, referred to as *Te Mana o te Moana* (The Spirit of the Ocean), was threefold: to reignite interest in their voyaging heritage and the art of traditional wayfinding, to observe the health of the ocean, and to assert and illuminate their role as people of the Pacific in ocean stewardship.

The project would be a four-year commitment including nearly a year of research and development, followed by two years of production, during which I would be traveling with the crew and Voyagers, and a year of writing and post-production. The sail plan would take the fleet over forty-thousand nautical miles, from Aotearoa (New Zealand) to the Marquesas and Tahiti, north across the equator to Hawaii, east to San Francisco, down the west coasts of the United States, Mexico and Costa Rica, west to the Galapagos Islands and after nearly two years, the journey would come to an end in the Solomon Islands before the fleet would part ways and return to their home islands.

As writer and story producer, my responsibilities lay in crafting the story, gathering interviews to "develop" the characters, and spinning the content into a compelling film. I was excited about the opportunity to learn about something completely new and to explore a novel angle in communicating ocean science, steeped in a story of culture.

In filmmaking, we frequently use the term "narrative ownership" in defining creative control over a story. Narrative ownership describes a relationship between speakers and listeners and between narrative and events; it is "territory shared by both addresser and addressee" [Vološinov, 1973, p. 86]. For most of my career as a filmmaker, I subscribed to notion that it is the writer, producer or director who bears that ownership and "claims" the narrative that is constructed. I was soon to learn that claiming ownership of a story points beyond the stories themselves to issues of status, dignity, power, and moral and ethical relations between tellers and listeners [Shuman, 2015, p. 51].

When I began work on the project, I knew nothing about traditional wayfinding and very little about the diversity of Pacific cultures, so I did what all good story producers do, I dove into the research. I read everything I possibly could, conducted pre-interviews with the Voyagers and wrote a film treatment that brought together science, culture and high-stakes adventure. Wayfinding in the Pacific without use of GPS requires acute navigational ability and a breadth of scientific knowledge. It is a practice that pulls together astronomy, meteorology, ecology, biology, and oceanography. Pacific navigators must be able to read the waves, swells and wind and understand how their patterns shift when approaching land. They need to interpret cloud formations and what they signify. They must recognize species of land-nesting birds and be able to estimate the distances they fly from their homes. They must have knowledge of the migration patterns of whales and dolphins and know what species of fish are endemic to an area. If that wasn't enough, they must also memorize the position of every known island in relation to every other one. And they must rely on something else; something innate that pulls them towards the island. Call it instinct or intuition,

but it is a knowing that is fundamental to their practice. The narrative I would craft was to be a story as ancient as it is modern, as sacred as it is scientific.

I travelled to New Zealand to conduct pre-interviews with the Voyagers to select our “talent” and met Tua Pittman, a traditional celestial navigator from the Cook Islands and the Master Navigator for the entire fleet. Though I didn’t realize it at the time, this man would have an indelible impact on the shape of my own narrative as a science communicator.

One night, early in production, I found myself standing on the deck of the Cook Islands waka, *Marumaru Atua* with Tua, doing my best to dazzle him with the factoids I had learned about Pacific voyaging from my research on the subject. As I rattled on and quizzed myself on the constellations I had recently familiarized myself with, Tua remained silent, his eyes trained on his thumb and forefinger, extended to the sky. In the billions of twinkling lights above, he was reading the direction across the highway of ocean that rolled out infinitely in front of us. As I watched him, I felt something catch me off balance — and it wasn’t the pitch of the waka. This was so far outside my experience, so far outside my way of knowing and my way of understanding of the world. And that’s when it hit me; this was not my history to translate. This was not *my* story to tell.

That realization would not only impact the film, but serve to define the rest of my career.

Some of the most successful documentaries in terms of impact are those that illuminate the human experience. “Films can bring audiences inside stories and communities that they might not otherwise be familiar with, provoke dialogue and inspire people to take action” [Inspirit Foundation, 2014, p. 6]. Yet, there is perhaps no greater blind spot in science storytelling than the overwhelming disregard of the Indigenous perspective. In terms of communicating ocean science, this notion has been evidenced in the omission of Pacific voices. All too often, Pacific stories are reduced to their instrumental shock value and transformed into something sensational for its appeal to complacent industrialized nations [Dreher and Voyer, 2015]. Historical experiences of colonialism and marginalization have resulted in the creation of metaphorical soundproof walls between Pacific Islanders and Western audiences [Ritchie, 2020]. This has led to an oversaturation of inappropriate framings of Pacific stories in Western media [Shea, Painter and Osaka, 2020] and created additional challenges for Pacific-led communication reaching large international audiences [Burch, 2020]. I began to think about the way I had been telling stories, the way I had been doing my research, the way I had been claiming narrative ownership. And what I discovered is that there is a fine line between "ownership" and "appropriation."

The concept of story ownership has implications for how tellers and listeners position themselves in a narrative [Bamberg, 2006]. Indeed, I could handily write a script about these people and their quest, but it would be colored by my own lens and lack the nuance, richness, texture and depth that only they could bring to it if it were in fact told by them. Then and there my role shifted. I wasn’t there to “tell” the story or “craft” the story, but rather to listen, learn, experience and most importantly, *relinquish* the story. I made the decision to scrap the script. The Voyagers themselves would dictate how the narrative would unfold.

Surrendering the story is a difficult thing for a writer and producer to do. In this case, it was frustrating, even heartbreaking, as I wanted that experience — that history — to be mine. But to honor the truth of the science and the narrative, it could not be told through my filter. It had to come from the people to whom the experience belonged. Rozwadowski's thesis came back to me. This is what she meant about history and knowing. You cannot assume a history; you must live it. The Voyagers' perspective was not just an important addition to the story, it was what *defined* the story. When I came to terms with letting it go, it wasn't just okay; the story was richer; the science was richer, the experience was richer. My work as a communicator became richer. It also forced me to acknowledge certain biases I held as a Western scientist-turned-storyteller.

Knowledge through accompaniment

As Westerners, we tend to situate ourselves in our gaze upon the "other." As Robert Bogdan writes in *Human Zoos: The Invention of the Savage*, "The way we perceive individuals that do not resemble us hinges less on *their* physiological and ethnic identity than on *our* cultural identity" [Bogdan, 2012]. I will take this notion of "other" further to say that anything with which we cannot personally identify surely impacts what we perceive as reality. That which resides outside the sphere of our own cultural norms thus becomes in a sense, mythological.

Islands, for those of us who bear no cultural connection, have always resided in a matrix of space, place, and time. Temporally speaking, they reflect an idea of impermanence; lands that rise up and vanish over time. This has manifested in a mythologized construct that represents the "long ago and far away" — a construct that has extended to island people [Mack, 2011, pp. 163–168].

For the Pacific Islanders who participated in the *Te Mana o te Moana* journey, stepping off their canoe and onto mainland America brought with it the challenge of not only being viewed as other, but as "other, relegated to the past." They were constantly being asked by (American) people they met if they were characters in a movie, reenacting a scene. One afternoon, when we were filming from the beach in Monterey, California, a woman approached me to ask if we were filming a historical piece. I explained that this was a contemporary voyage and asked what made her think it was historical. She replied innocently that Tua looked like "an ancient chief" and the wakas looked like "something out of the past." There is an enormous difference between living in the past and using the lessons of the past. The Pacific Voyagers are by no means relics of some ancient culture, nor were they voyaging for reasons of nostalgia. Their aim was to introduce a new approach to stewardship that incorporated ancient wisdom into contemporary scientific methodology.

When we consider the process of scientific research in Western terms, we find a methodology based on hypothesis and gleaning answers to questions through observational empirical evidence. On the surface there seems nothing wrong with this approach, yet it is problematic in that it neglects history. The Scientific Revolution was built on an assumption of ignorance: that humans don't know the answers to many important questions. This contrasts with many pre-modern traditions of knowledge that ran on the assumption that we already had the answers to everything that was important to know. According to Yuval Harari, Israeli historian, philosopher, and professor at the Hebrew University of Jerusalem,

contemporary Western science is a unique tradition of knowledge as it openly admits collective ignorance regarding the most important questions. Instead of studying old traditions, emphasis is now placed on new observations and experiments. When present observation collides with past tradition, we give precedence to the observation [Harari, 2015, p. 254]. But it is important to note that observations, though they can inform knowledge, are not the *entirety* of knowledge. In order to understand the universe, we need to connect observations into comprehensive theories. Earlier traditions usually formulated their theories in terms of stories [Harari, 2015]. As a science communicator and filmmaker, this is something that I feel is necessary in terms of investing the public in science.

The time I spent with the Pacific Voyagers challenged me to question how we come to "know" the ocean and provided me with a different lens in which to view my own relationship with it. Over the course of my years working on the film, the story of the ocean changed for me as new "truths" were revealed, new lessons were learned, and new ways of experiencing it were discovered. I didn't assume my Pacific friends' identity or culture; I didn't replace my previous knowledge with theirs; I simply added other layers of knowing to my own historical foundation.

Since then, I have given a great deal of thought to my place in this ever emerging and expanding field of Science Communication which is at once interdisciplinary, transdisciplinary and even antidisciplinary. I have made a conscious effort to embrace a spirit of "accompaniment" in my work — to listen carefully and collaborate with those not only who share our ideas, but with those who may be coming from an entirely different — perhaps even competing — perspective.

> Accompaniment can thus be the basis of a powerful counterculture inside science as well as an important bridge to all the creative, critical, and contemplative thinking that goes on outside it. It can guide us in our efforts as reviewers, editors, and teachers to support work that is contributive rather than competitive [Tomlinson and Lipsitz, 2013].

This appears a simple concept, but to create true accompaniment poses a difficult task because it also requires paying attention to the silences and absences in the dialogue. It demands a broadened vision great enough to seek out and invite the voices that have been neglected, removed or absorbed by others [Smith, 2017, p. 392]. I argue that accompaniment without the inclusion of other ways of knowing is at best, marginal; it creates an incomplete narrative.

Crafting deeper stories

All the while we were busy writing our own Western history with the ocean and making scientific discoveries that added to the breadth of its story, others were shaping, and living, a very different history with it. My work with the Pacific Voyagers has reinforced the notion that there is far more to the narrative of the ocean than the Western perspective.

There has long been a general distinction between Western science and traditional systems of knowledge, formally referred to as Indigenous Knowledge (IK), Traditional Knowledge (TK) and Traditional Ecological Knowledge (TEK). Western science is considered to be hierarchical, reductionist and focuses on the component

parts, whereas Traditional Knowledge is based on collectively learned experiences developed over countless generations and presents information about the world in a holistic way [Agrawal, 1995; Nicholas, 2018]. Yet, as ways of knowing, Western and Traditional Knowledge also share plenty of common ground: both are substantiated through repetition and verification, inference and prediction, empirical observations and recognition of pattern events [Nicholas, 2018]. Still, in most instances, Traditional Knowledge is only included in scientific applications when it is in service to, or meets the prescribed criteria of, Western science. As such, it is relegated to a different kind of knowledge and a challenge to scientific "truths" [Nicholas, 2018]. I argue that this is an outmoded approach when it comes to putting science and its communication into practice. The environmental issues of today are multi-faceted and have cultural and social implications which require different points of entry. There is no "one size fits all" or isolated system of knowledge. Crafting solutions that draw on perspectives other than and in addition to Western science would therefore be beneficial.

To that end, I have honed my work into the establishment of the non-profit organization, Ocean Media Institute (OMI).[1] Flowing from the confluence of science, storytelling and the human experience, OMI is designed to be a hub for collaborative work among scientists, communities and media makers with a mission to enrich and expand the public's understanding of and engagement in ocean science through the collective creation, exhibition, and open-distribution of innovative, *inclusive* media. Through this organization, I seek to create a connective tissue that brings together a diverse array of voices and perspectives in ocean science storytelling.

People come to value the ocean for disparate reasons. Often, these stakeholders are kept in their separate camps and the media created with or about them and their views are not shared with those of differing views. Drawing upon multiple types of knowledge (e.g., indigenous knowledge, local knowledge, science-based knowledge) strengthens the evidence-base for policy advice, decision making, and environmental management [Alexander et al., 2019]. Creating collaborative opportunities for those who value the ocean for an array of reasons, be it to discover new species, to explore renewable energies, or to put food on their plate, serves to expand the dialogue and foster a better understanding of the issues, the science, the policies, and most importantly, a culture of stewardship.

Combining the quest for new knowledge that is embedded in modern science and pairing it with the personal story of those who have direct and historical knowledge of a place or system has fueled the inception of Ocean Media Institute's signature series, *"I Am Ocean"*, a widespread global campaign that builds on the idea of accompaniment and serves to cast a spotlight on the health of the world's oceans through short films of and by people we seldom hear from, yet whose lives are deeply impacted by each ebb and flow. This flagship project serves as a cross-cultural bridge through the powerful platform of participatory science media.

Through filmmaking and other media-training workshops with underrepresented communities and engaging participants in both field- and post-production, the creation of these video postcards draws on the power of individual voices to provide a glimpse into life in their ocean region and their personal connection to

[1] Ocean Media Institute (OMI): http://oceanmediainstitute.org/.

the sea through their own lens, as only they can. Whether a Bajao fisherman in the Philippines, a cultural leader in Hawaii, or a seabird specialist in the Arctic, participants range widely in experience, education, race, culture, political and religious affiliation and socio-economic background.

The role of empathy is too often disregarded in the sciences, yet it is one of the most potent tools researchers can use in terms of igniting the public's understanding and engagement in science and creating a collective narrative of its story. Characters play an essential role in creating empathy and resonating with an audience's experiences [Dessart and Pitardi, 2019]; the point of view through which an audience enters a story dictates how their relationship with the subject will evolve.

I Am Ocean connects people across the globe in the story of the ocean by offering an interactive platform for people from all sectors to candidly share their views about their ocean environment; what they love, what they fear, what they value and dream about protecting. These pieces are never scripted; participants are invited to simply "tell us a story" via an interview or video/audio diary and share their perspective on the issues that are personally affecting them. The first-person perspective draws the audience into the story in an immediate way and connects on a personal level. Personal stories that convey emotion have been shown to advance the conversation and unite people on polarizing issues because "people 'take sides' on an *issue*, but it's much harder to 'take sides' on a *story*" [Zak, 2015]. Studies have also found a correlation between emotional stories and oxytocin release, which is associated with empathy for story characters [Zak, 2015]. Further, stories that connect an audience to a character on a personal level are more likely to lead to public investment. Involvement with characters leads to heightened transportation and emotion, which in turn produce changes in viewers' knowledge, attitudes and behaviors [Murphy et al., 2011]. Perhaps the most critical element in participatory media is the establishment of trust. As a matter of course, we treat every *I Am Ocean* piece as a co-production partnership where participants are encouraged to offer creative input and direction at every phase of the project, including filming locations, visual style, story-flow, music and final approval of the edit. It is their story, after all.

My motivating factor for initiating *I Am Ocean* is to create a collective narrative of these ocean regions by exploring the ways in which each ocean region is unique, yet interconnected. We do this through the myriad personal connections to each location that hopefully transcend the place itself. One future plan for the project is to create an interactive map so that viewers can learn about different ocean regions through these personal stories in a way that is not preachy, nor pedantic, but intimate and relatable. As each tale unfolds, we come to see reflections of ourselves in each storyteller and through them, gain new clarity as to just how intricately woven *all* of our lives are with the ocean, no matter where we live. At its heart, *I Am Ocean* taps into our humanity by providing a unique entry into each other's lives, asking us to look and listen deeply, and reinforcing those connections that run deeper than we think.

In that spirit, I have recently launched the *Moana Media Lab*, a participatory hub for science communication researchers and practitioners throughout the Pacific to explore ocean science storytelling through the lens of culture. By disrupting the territoriality embedded in narrative ownership, we enable the fostering of a collective approach.

Fostering a collective identity

Collective identity is by no means a new concept; sociologists have been studying the phenomenon for decades. At its most basic definition, it is the shared sense of belonging to a group. Sociologists Francesca Polleta and James Jasper define it as an individual's cognitive, moral, and emotional connection with a broader community, category, practice, or institution [Polletta and Jasper, 2001]. The collective identity of a community has proven to wield enough power to generate and sustain cohesion and commitment among participants. This perception of a shared status or relation often leads to solidaristic behavior that transcends the virtual. "As the individual becomes conscious of the likeness to the community, the individual also becomes conscious of those traits that preserve individuality" [Polletta and Jasper, 2001]. In this sphere, the strength of each individual emerges and bolsters the community at large.

In the end, our own work is validated when we are challenged, questioned, and pushed by each other to step outside the "established" perimeters of our study. Only from that vantage are we permitted the freedom to think deeply, and perhaps differently, about how our methods affect our work and thus, our legacy. Accompaniment will guide us in shaping that legacy and broadening the foundation of understanding and knowledge. Once that forum for exchange is established, the potential to affect policy and make real change becomes possible. Media makers, scientists and the public all share a role in that.

It is our narrative responsibility to bring in perspectives of those who are an essential part of the story, not by way of ownership or appropriation, but of collaborative partnership. As science storytellers, we must rethink the concept of narrative ownership and move towards a more collective approach that remains true to factual and evidence-based scientific information while embracing inclusivity and allowing the subjects of the story not only to participate in the narrative, but have agency over it. After all, we will only come to understand the true workings of science when we draw from all ways of seeing, knowing and collectively sharing.

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Author

Dr. Gianna Savoie is a Senior Lecturer and the Director of Filmmaking in the Centre for Science Communication at the University of Otago. As an Emmy-nominated documentary producer and writer, her work has been featured on PBS, National Geographic, Discovery, BBC and in feature documentaries. In her quest to pay it forward, she founded and directs the Ocean Media Institute, a non-profit organization that serves to expand the public's engagement in ocean science and conservation through innovative and inclusive media.
E-mail: gianna.savoie@otago.ac.nz.

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