Under Review: *Hau*
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We've Never Seen Anything Like It: Witnessing Coral Death and Resurrection

The last "global coral bleaching event" lasted three years (2014-2017), solidifying the plight of the world's coral reefs as a defining problem of the Anthropocene. The catastrophe inspired countless media stories, becoming common knowledge in parts of the world far from any coastline. Despite the urgency of this latest discovery of coral mass mortality, it is likely that coral decline would never have become the widely recognized crisis that it is today without the visual witnessing technologies that made bleaching so sensationally obvious. And now some proposed solutions to the problem of coral decline, such as large-scale, privately funded coral reef restoration projects, have become reliant on such witnessing tools to mediate public relations and engage many forms of social support. This paper presents examples from coral visualizations and materializations in The Bahamas and Indonesia in order to explore the highly uneven politics of witnessing coral life and death.

Introduction: witnessing coral

The Australian man with the mustache was nothing if not persistent. I could see him deep in conversation with a group of people a few tables away from me in the convention center cafeteria. He was gesticulating with definitive motions, and his audience was attentive, if a bit distracted by the plate of lunch in front of them. But then he touched the screen to activate the tablet he seemed to have with him at all times, holding it out for his table guests to get a good view. I could hear some of their reactions. "My goodness!", one brand strategist exclaimed, "Is that really only after one year?" The comments continued in a flurry: "How beautiful", said a government minister; "I can see some table corals" announced a public relations officer; "Look at the fish"; "Where did you say this was again?" probed an NGO managing director. The Australian man smiled through his mustache and asked the diners his own question: "Have you ever seen anything like it?"

I couldn't see the tablet from my own table, but I knew what was on the screen. The same man had shown it to me and representatives from my university earlier that day. His name was Tony, and he worked for the philanthropic subsidiary of a large, multi-national corporation. He was attending the 2015 Coral Triangle Sustainable Development Conference in Nusa Dua, Bali, along with hundreds of representatives from conservation and development organizations and private industry around the region. While not presenting at the conference himself, he made good use of his tablet in-between sessions and at meal times to show off a short video that he claimed revealed the efficacy of his company's coral restoration efforts. The corporate subsidiary had designed its own restoration system that it touted as cost-effective, scalable, simple enough for community-based restoration, and most importantly, it could grow coral reefs by the acre in a matter of months.

The video itself was simple. It opened with a Go-Pro-like fish eye view shot by a nameless diver hovering over an underwater field of gray rubble. "This is how it used to look at our site because of all the bombs", Tony said as he held the tablet for a small audience around the coffee station. Then the video image switched to a field of hexagonal structures covering the seafloor with coral fragments growing from them. "This is what it looks like when you first install our system." After that, the image switched to what looked like the same coral, only much bigger and taller, appearing to cover the hexagonal

structures in some places. "This is after a few months." The scene shifted again to what looked to my North American eyes as a "classic" coral reef: filtered sunlight shimmering over pink, mauve, yellow, and purple corals that spiked and spread as far as the eye could see under tiny silver fish schooling in drifting cloud formations. The anchoring structures could no longer be seen. "This is what it looks like after one year." Finally, the screen switched to the same colorful reef, only somehow more full and verdant, with a few larger fish making their own way through the sea-scape. "This is as far as we've got. This is nearly two years worth of growth over three hectares at our first test site. You can see the fish have come back, and the corals are really happy."

This video, presented on Tony's tablet at that conference, was my introduction to the world of coral reef restoration as corporate social responsibility. In the years that followed, I became entangled in Tony's coral restoration project in Indonesia while at the same time following surprising connections between that project and events in The Bahamas. I am a sociocultural anthropologist, but I am also a member of an interdisciplinary ocean department at my university. My research documents the interstices of academic, applied, and private coastal conservation projects. As a member of such a department in a science college, I am frequently exposed to project plans in the making, once they have passed the point of inception but before they become mainstream. After my initial exposure to this corporate coral restoration system and its visual narration, I started to see versions of this before-and-after restoration progress video, what I now think of as an aspirational witnessing tool, all over the world and around the web. My research energies have subsequently evolved in order to speak back to this form of univocal witnessing. I want to complicate and challenge the smooth, technologically confident, normative progress narrative presented in tools like this by offering alternative interpretations of events in the rapidly expanding world of coral restoration. This article is one small step towards that goal.

While preparing for this piece I found a screen grab of another witnessing tool on my laptop. I had taken it in 2019 from the same multi-national corporation's website. It is a still before-and-after image of the same coral restoration site in Indonesia. On the left hand side of the image-- the before side-- is gray coral rubble under an empty ocean void. On the right hand side-- the after side-- is an image of a resurrected reef, full of pointy stag horn corals and spreading table coral, accompanied by glimmering small fish. The right hand image is awash in pinks and aquas, heightened by cheerful shafts of sunlight through the sea water. I now realize that this image is used across multiple platforms, electronically and in print, to readily demonstrate what the company is up to at a glance. The image is powerful because it appears to speak for itself about both the efficacy and necessity of coral restoration.

The prevalence of privately funded coral restoration projects and the highly visual forms of witnessing they seem to require, are one kind of response to the scientific and public recognition that tropical coral reef colonies are facing extinction. What has come to be known as the "third global coral bleaching event" ended in 2017, after three years of mass coral bleaching around the world, particularly in the Great Barrier Reef, which was hard hit by bleaching again in the hot Australian summer of 2020. Stark images of bone white coral skeletons and muddy dead coral beds are now frequently plastered in print and web media (Ortiz 2018, McGuirk 2020) and a film called *Chasing Coral* has become a sensation in coral conservation circles and a popular documentary among the general

EuroAmerican public (discussed below). Within the coral conservation networks of the Coral Triangle (the biodiverse marine areas of Indonesia, Malaysia, the Philippines, Papua New Guinea, the Solomon Islands, and Timor-Leste), where bleaching has been less severe and spectacular than in Australia or the Caribbean, stark images of coral rubble fields resulting from localized blast fishing circulate across media platforms, warning of impending coral collapse that could befall the region if action is not taken. As Joshua Schuster notes, "the death of coral is strikingly photogenic" (2019: 94).

It is immediately clear from reading scientific research papers from prominent marine biologists that coral reefs are indeed dying as a result of anthropogenic stressors like destructive fishing practices, sedimentation, dredging, and pollution, along with rising sea temperatures and ocean acidification stemming from global warming (Hughes et al. 2017). This science is not in dispute. What is in dispute is the current status of coral restoration as a valid solution to the crisis of mass coral extinction.

Tony's beguiling images and the expensive restoration efforts of the multi-national corporation appear to offer a solution: You can see the coral growth. There are fish in the images. It all happens so fast. But some scientists wonder if restored acres of coral reef rubble are truly viable coral reef ecosystems that can effectively withstand rising sea temperatures, storms, and all kinds of human interference (Hein et al 2020). And I wonder, why do these images appear to be more valued by the corporation than scientific evidence of restoration efficacy? To answer this question, we have to understand what these images make visible, what they simultaneously hide, and what material realities are enabled and disabled with such powerful witnessing tools.

Such work requires a creative conceptual framework. My thinking about the politics of witnessing coral life and death has been deeply influenced by the oceanic turn in cultural theory (Deloughrey 2017) and by recent cultural studies of contemporary lives with coral (Helmreich 2015, Claus 2017, Schuster 2019, Meyers Forthcoming), most especially by Irus Braverman's (2018) work with scientists that exposes the personal stakes of coral conservation for coral experts in the Anthropocene. This recent attention to coral representation is greatly extended for my purposes when brought into further conversation with select scholarship on narrative and visual technology.

I find Krista Thompson's (2006) examination of the visual processes through which space becomes reified in particular neocolonial economies of vision to be especially apt in this case. Thompson follows visualizations of the sea over time, showing how early 20th century photographic technologies designed to capture underwater imagery participated in the creation of a visual iconography of the Caribbean sea designed for tourist consumption. This technology and iconography had global consequences, including the domestication of the sea through a process of "pictorial assimilation" (p. 189), leading to the spread of resort aquariums and manicured hotel seascapes mimicking touristic expectations preset by the widely circulating images (see also Poole 1997 on "image worlds": 7). This theme has been more recently addressed by Paige West (2016), who argues that "there are deeply socially embedded rhetorics of representation that underlie all uneven development" (p. 1). West's work in Papua New Guinea reveals multiple ways in which representational narratives coming from conservation and development organizations are based in ever present colonial histories. These narratives have wide ranging material effects leading to "complex acts of dispossession and carefully crafted accumulation strategies" (p.24).

My focus on the rhetorics of representation and processes of assimilation found in the witnessing tools of privately funded coral restoration projects links the study of coral in the Anthropocene to the anthropology of corporate social responsibility. Catharine Dolan and Dinah Rajak (2018) claim that "it is now the global brand that serves as a guarantor of social welfare and environmental stewardship, uniting financial profit with social good in localities in which companies operate across the globe" (p. 1). This observation allows me to highlight the multi-national corporation as the prime mover in a coral restoration story to follow the ways in which the company skillfully leverages imagery to negotiate responsibility in an "era of emergent hybrid environmental governance marked on the one hand by spectacular gestures, and on the other hand by the less visible creep of corporate institutional cultures into sectors such as rural development and resource management" (Hardin 2018: 182).

In what follows, it should become apparent that widely circulating visual witnessing tools are an essential part of the creep of large, privately funded restoration projects into new marine territory, and that these witnessing tools have little to do with the biological efficacy of the practices themselves. This is yet another manifestation of the ambivalent tension of the Anthropocene, in which multispecies assemblages are adapted to navigate increasingly precarious planetary conditions, naturalizing certain relationships between humans and between humans and nonhumans in order to justify many emergent projects (Vaughn 2017, Tsing et al. 2017, Author 2018 & 2019, Besky & Blanchette 2019). I have therefore chosen to present this article as a non-linear, multi-sited ethnographic engagement with the circulating witnessing tools that are re-materializing two significant marine spaces in The Bahamas and Indonesia. These attempts at coral restoration are far more than mere corporate vanity projects, although they are that too. These coral restoration projects and their witnessing tools reconfigure relationships to coral along with the very stakes of coral existence, with real consequences for both coral and human lives.

Before I can proceed, I must quickly justify two unusual aspects of this article: 1) The only social actor I refer to by their real name in this article, Richard Vevers, is a public figure speaking openly about his coral witnessing. His company also has a loose affiliation with my university, and the documentary he was a part of, *Chasing Coral*, is very well known. All other actors and their organizations are either unnamed or given pseudonyms. This is because their accumulated actions are more important than their individual identities, and because I currently work closely with some of them as a social scientist attached to a coral restoration project ("Tony's" project) which is still ongoing. This article is not a part of that larger collaborative study, which has separate forthcoming publications. 2) This article about the visualization of coral life and death contains no pictures, only written descriptions of imagery. This is in part to protect the identity of the projects and people I am referring to, and in part to prevent the reader from being seduced by the overwhelming affective power of the images themselves (Raffles 2002). Not showing the images allows me to more readily reveal the stories they do not tell.

Witnessing Tools: increasing (brand) awareness

The witnessing tools that circulate in the networks of corporate coral conservation rely on advancements in underwater photographic technology combined with far reaching web-based media platforms. They also rely on carefully crafted narratives of death and

resurrection. The following examples are all witnessing tools tied to projects, places, or people I have worked with in some way over the last five years.

Documentary Film

Chasing Coral, was directed by Jeff Orlowski and released in 2017 on the global internet video streaming service, Netflix. It premiered to great fanfare in the marine conservation world. Several of my subsequent graduate students were quite taken with the film and organized their theses around the study of coral restoration; in The Bahamas, professional divers I know who worked on the film's in-country shoots were (and should be) quite proud to have their name attached to such a technically innovative production; Irus Braverman even has a poignant description of watching the film at the end of *Coral Whisperers* (2018). And yet I waited until June of 2020 to watch it, well after conceiving of and outlining this article. It is no understatement to say that the film turns the practice of witnessing coral death into an art form (see also Schuster 2019 for a discussion of the film's coral activism).

The film documents the emotional and technical struggle to capture mass coral death around the world on film in real time during the last global bleaching event. The main characters in the documentary are all white EuroAmerican professionals. They include Richard Vevers, a former advertising executive and current dive photographer, members of the production staff tasked with designing and deploying cameras to capture underwater extinction, and the scientists who interpret what the viewer is seeing, connecting the images to explanations of coral biology and processes of climate change. Living coral and coral reefs are presented as lusciously verdant, impossibly colorful, and teeming with life no matter where they are found (the film bounces around with the crew between Australia, The Bahamas, and Hawaii). Encounters with living coral thrill the characters in the film as they immerse themselves in unnamed reefs in unknown locations, view unnamed coral specimens from undisclosed research sites under microscopes, or fly over unnamed reefs while piloting high tech surveying cameras. These encounters and immersions inspire personal feelings of attachment and love for coral as a globally iconic species and ecosystem that is representative of healthy oceans. In contrast, bleaching events, for example an event captured at Lizard Island, Australia (they do name some of the locations they shoot, but not consistently), are presented as a surprise plague of sudden death. The camera operators are emotionally eviscerated by the task of witnessing living coral bleach to a skeletal white and then fade to an algae covered gray muck in a matter of weeks. The heroes of the film, those who document coral lives, are despondent that no one else cares about the mass death only they can see, but there is hope in the form of better advertising. The film ends with the promise of Vever's Ocean Agency, and the slogan: "We have one client: the ocean", as the solution with the capacity to produce never before seen images that will sound the alarm and get the global public, and more importantly, private industry, to care about the immediacy of mass coral death and the declining health of the world's seas.

E-zines

While print magazines may be struggling for subscriptions, electronic magazines, or e-zines, are proliferating. Several conservation organizations produce their own e-zines to share a combination of visual and text based content organized around themes that are important to their mission. Many for-profit businesses also produce their own e-zines to promote their products and increase their "brand awareness." There are even e-zines made by advertising agencies to promote businesses to other businesses, through what is known as "business-to-business" media, in a intensification of the co-constitution of production and consumption processes (Buscher & Igoe 2013). Coral conservation and coral restoration are currently promoted, in some cases, through such channels.

In 2019, a student sent me the link to what appeared to be a nature-focused magazine article about Tony's coral restoration project, a site we are both affiliated with as independent social scientists. It was an interview with the project's multi-national corporate sponsor, an American man who touted his company's recent investment in "the blue economy" as a means of securing the "sustainability of (the company's) value chain" and seafood "raw materials". The company was transitioning to renewable energy and sponsoring coral restoration initiatives. This project sponsor, who turns out to be Tony's boss, went on to describe the community-based Indonesian restoration project that had animated the tablet screen in the hallways of the conference four years prior. His words were accompanied by vibrant still images of restoration progress in which Indonesian men from coastal fishing communities adjacent to the restoration site worked to attach hard coral fragments to hexagonal reef anchoring structures (referred to in the article as "stars") and transported those structures to installation sites on power boats. Other images in the article showed coral growing on the structures underwater, including soft corals spreading over one structure's metal arms and "3.5 years" of hearty coral growth on a field of stars. The article quoted the sponsor as saying that their project in Indonesia was one of the largest restored coral reef ecosystems in the world, and that the main challenges so far had been "stopping destructive fishing practices" perpetrated by irresponsible local fishers, and getting local people and regulators to invest in restoration as a shared goal instead. As a "brand with a greater purpose", the sponsor proclaimed that the multi-national company was willing to provide advice to other interested businesses to help them start their own restoration projects and create sustainable goals. I had to look at the mast head to discover that this article was not from a magazine produced by an environmental NGO, but instead it was from an e-zine published by a "business-to-business" ocean media marketing company.

YouTube

June 8th, 2020, was the United Nation's World Ocean Day. On that day, the news section of the multi-national company's public website was devoted to celebrating their Indonesian coral restoration efforts. The main facet of this web-based celebration was a video streaming through the website but hosted by YouTube, a widely popular video streaming site that hosts a broad range of video content, including videos about coral restoration.

This particular video opens with what is now a familiar underwater coral rubble-scape. Somber piano music plays over the empty sea bed. Text at the bottom of the screen reads, "90% of coral reefs are predicted to be lost by 2040." It is not clear exactly where this filming is occurring, but the website says these are scenes from the company's coral

restoration site. The images switch to above-water scenes from a rural island that most EuroAmerican viewers might identify as being somewhere in "the global south" (I know it as a small island in central Indonesia, because I am very familiar with the site). There are images of colorful wooden homes and running brown children, accompanied by livelier music. The screen reads, "Our business and the many communities we source raw materials from depend on the ocean and its reefs. So we've stepped up to help." The scene then shifts to show a small group of men and women making the "star" structures the corporate sponsor had described in the e-zine the year before. The local people are painting the hexagonal steel structures with resin and then dipping them in piles of coral sand to create the finished coating. The screen reads, "They are built by local communities using locally sourced products." We then see the freshly made reef structures being loaded onto motor boats and transported to a shallow area where smiling, nameless male "community members" stand in the sea and tie coral fragments to the stars resting on floating pontoon tables. This is followed by unidentifiable wet suited snorkelers placing the stars on the seafloor followed by equally unidentifiable divers in scuba gear attaching them to the seabed in a grid pattern. Suddenly, the screen shifts to the now familiar perfect reef filled with pointy stag horn and table corals of different colors and textures with schools of small fish. This transition comes with a rush of exultant music. The screen reads, "Within 20 months, reef stars provide 60% coral cover, rich in coral abundance and diversity." An unidentifiable diver hovers over the thriving reef, spreading their arms wide, as if to say, "look at all the abundance". The screen reads, "After three years, the impact of the reef stars is even more inspiring." The video shows close up images of different corals and their multifaceted polyps. The screen reads, "Supporting life both within and beyond the reefs." We then see images of a sea turtle, a larger grouper-like fish, and a reef shark. The last words on the screen are, "We know our business cannot thrive unless the planet and the people we rely on also thrive." We see a cuttlefish and then another sea turtle. Finally, the screen flashes the company logo and fades to black. This video can currently be found on both the company's website and on YouTube itself.

Tourism

Witnessing tools are also heavily used in the tourism industry, a sector that has long invested in coral reefs as a growing facet of nature-based travel to tropical and subtropical coastal destinations. Many travel businesses have expanded to include coral experiences as part of their consumer travel packages, and some businesses have subsequently developed forms of corporate social responsibility and corporate philanthropy that prioritize coral restoration. This area of philanthropy is gaining popularity in the cruise ship industry (Norwegian 2020).

I was recently made aware of an international cruise ship company with cruising routes between Miami and The Bahamas. A perusal of their website in early 2020 revealed that they have a corporate foundation for social responsibility initiatives, and one of their current projects was taking place at that very moment in The Bahamas. The website explained that the company was restoring reef areas around a private island the company had recently leased from The Bahamian government for the typical lease period of ninety-nine years. This island is home to "one of the most vulnerable sets of coral species on the planet" (unnamed), according to the foundation and their panel of "conservation experts"

(also unnamed). The website goes on to say that the region's coral reefs are in drastic decline ("only 16% of the region's coral reefs have survived") as a result of climate change and overfishing. The foundation states that their plan is to "pioneer the protection and restoration of the ecosystems and coral reefs in 64 square miles of marine reserve."

It will not come as a surprise that the same web page also hosts a short company-made video. This video documents their process of taking an "industrial island" (the island was formerly leased by the Bahamian government to an international sand mining company before it was leased to the cruise company) and turning it into an eco-friendly cruise destination and marine reserve. The video shows drone footage of a denuded small island that has become a massive construction site. Giant imported palm trees are being planted, back hoes are clearing boulders, and underwater divers are surveying struggling reef beds and monitoring transplanted corals. The video includes sound bites from scientists from large EuroAmerican research universities and representatives from large global environmental NGOs saying things like, "If we do this right we will have shown the rest of the world what can be done." An unnamed Bahamian NGO officer says, "I can't wait to see what its going to be in the future", and an unnamed employee of the cruise company says, "5,500 guests will have the time of their life"-- the only part of the video that acknowledges the company's actual business.

Materializations: the best way to predict the future is to create it

The corporate witnessing tools narrating ubiquitous coral death and subsequent resurrection at the hands of private funders exemplify the pictorial assimilations and rhetorics of representation that accompany many neoliberal conservation projects around the world (Thompson 2006, West 2016). As I will discuss in more depth in the final section, coral life and death is aestheticized in these stories: coral lives and dies in certain ways, the heroes are very specific kinds of people and brave and pioneering kinds of companies, and vaguely sketched ecosystems and economies can only stand to benefit from such "win-win" projects. Yet my experience with corporate coral initiatives reveals that these witnessing tools provide the visual and narrative foundation for sometimes subtle and sometimes profound reorganizations of resources and re-materializations of daily life in very specific ways. The following examples delineate some of the ways in which corporate forms of witnessing coral are directly tied to very powerful networks, social processes of legitimization and publicity, and emergent ecologies.

Private/Private Partnerships

Because I had not yet watched *Chasing Coral*, I did not recognize the man who walked into my office on a September morning in 2019. When I did finally watch the documentary many months later, I realized that Richard Vevers had exactly the same haircut and was wearing exactly the same shirt in 2019 as he had in the 2017 film. But he had not come to see me to talk about fashion. We were meeting to talk about coral decline and restoration.

Vevers had just returned from a visit to the multi-national company's large coral restoration site in Indonesia, a place I had just visited with students and colleagues earlier that year. We all met in my office to compare notes. Overall, he was supportive of the effort. He said, speaking for his own company, the Ocean Agency, "We've seen several

other restoration projects around the world and they have all seemed expensive, inefficient and unscalable. We feel this is a really positive success story that needs to be shared."

He believed his company had the capacity to help the multi-national corporation in two ways, both of which involved witnessing tools. First, the company could utilize a special underwater camera (built by XL Catlin, an Ocean Agency sponsor) that would better show coral decline and recovery over very large marine spaces. Such scientifically relevant cameras were expensive to produce and deploy, and it would take a lot of money to make this vision a reality. Second, they could distribute special glasses developed along with Google (another sponsor) for education and outreach. These glasses revealed "virtual" underwater images (an "underwater Street View") when used to view 3D pictures of coral reefs on smart phone screens, and they were relatively cheap to mass produce. The glasses could be given to schools and children in the restoration community so they could learn more about the restoration project in the waters around their home. Vevers was shopping these technologies to private companies, looking for corporate partners. He had long been convinced that the future of coral was in private hands as this is where the real money was to be found. His mix of advertising experience and interest in visual technologies was perfect for this, he said, because private companies need strong messaging if they are going to fund any kind if philanthropy, and his company's marketing strengths could provide that messaging. In his opinion, the Indonesian project was in need of better monitoring and promotion, and the combination of the cameras, virtual glasses, and subsequent marketing campaigns could go a long way to solidify the multi-national company's leadership in the corporate sponsorship of marine conservation.

What Vevers was hoping to materialize with his witnessing tools, both immediate (*Chasing Coral*, the virtual glasses) and in the future (the high tech cameras), were more private industry partners and their dollars focused on massively scaling-up coral restoration and coral science around the world. He believes it will take real "powerful players" to lead to this kind of action, and for Vevers, real power is materialized in partnerships between the world's richest companies, creative brand marketing agencies, large conservation organizations, scientific institutions, and high tech equipment engineering firms (The Ocean Agency 2020).

Industry Conferences

The logical necessity of networks of private industry as the only viable solution to the coral crisis did not surprise me when I heard it from Vevers. This was because the multi-national company responsible for the large coral restoration project had hosted an invitation-only conference for coral restoration practitioners and potential funders in Bali in the summer of 2018. And because I was already studying social aspects of the project with American and Indonesian academic colleagues and students, I was invited to attend.

The first night of the conference featured a dinner for all participants on the beach in Nusa Dua. Inexplicably, I was seated next to Tony's boss, the man who was overseeing the whole restoration operation and who would later be interviewed in the e-zine described above. Over our meal, he explained the rationale for the conference: the multi-national company was involved in the regional resource extraction of raw materials, but one of the biggest sectors of their business involved tuna because they process somewhere in the range of 60,000 metric tons of marine biomass and tuna bi-product for their goods.

If pelagic species like tuna spend a portion of their development in and around coral reefs before migrating in the open ocean, then coral reefs are therefore essential for the future of their business. Coral restoration, he said, "tends to involve coral fragments with toothbrushes everywhere else" (small brushes are commonly used to clean algae off coral fragments in coral nurseries), but his team had designed something more effective, and they were proud of it. The conference would show the system off to major international conservation players like the Nature Conservancy, and major sources of capital, like Vulcan. By hosting such a conference, the company could be seen as taking the lead in coral conservation via large scale restoration in the "most important coral country in the world", Indonesia.

The next morning, the professional meeting facilitator opened the conference with a statement, attributed to Abraham Lincoln: "The best way to predict the future is to create it." In the days that followed, I listened to many presentations about the value of coral restoration. A representative from Paul G. Allen Philanthropies stressed the need for a massive scale up of restoration efforts to the level of hectares, paid for by the companies that most benefit from coral ecosystem services. He asked the room, "how do we sell this" to those companies? A marine biologist from the UK stressed the commercial potential for large scale reef restoration and growing specialized corals. He believed that the company's project in Indonesia could be a showcase for this mode of coral conservation. One representative from an Australian reef research company argued that coral restoration has a "stewardship value" in that local people can participate in cleaning and building restored reef areas. He saw that as an "opportunity for community energy to be released", leading to the creation of a local support-base for conservation efforts.

The next afternoon there was a breakout session for real companies to pitch their interest in coral restoration along with their concerns, and restoration experts would attempt to answer their questions and determine if the company's restoration system could work for them. I was surprised to see representatives from an international cruise company that operates in The Bahamas stand up and take the floor in the meeting room (this was my first introduction to that particular cruise company, whose 2020 foundation website I describe above).

Two cruise representatives explained their company was in the process of designing a new $400 million destination that they hoped would leave consumers "with some idea about the environment." Their site was the industrially degraded private island I introduced above. They knew they wanted to enhance the coral reefs that had survived around the island, and they knew they wanted this coral to be accessible to the cruise passengers, primarily for snorkelers and beginning divers. They pointed out that their clientele were not avid divers or even avid swimmers. Initial attempts at relocating some of the island's remaining corals to make way for dredging the cruise ship dock had failed when Hurricane Irma destroyed the transplants, so they knew they needed real expert advice and more resources to make their vision a reality. The representatives were curious about how they might devise their own corporate social responsibility strategy to get most of the restoration work done with other private funders. Their questions for the meeting attendees were specific: What would investors get out of participating in restoring coral around their private island? Could other companies put their name on the restored reef? Could the whole process be posted to social media? Would those companies get tax write offs? What is the return on investment for coral restoration? The representatives felt that

other companies would want some kind of financial percentage, not just bragging rights. One of the representatives explained that when she worked for the same company in Haiti she "would get a bonus for not having labor disputes and riots" among the employees. But what, she wondered aloud, was the measure of success for developing a green destination?

This conference was clearly more than a simple exchange of knowledge and best-practices about coral restoration. It was an attempt to strengthen the breadth and depth of the multi-national company's professional and business networks while at the same time developing more robust rationales for corporate sponsored coral restoration initiatives. I now see it as one part of the long process of inventing an industry with business-to-business relationships in order to capitalize on private money that many companies hope to invest in projects that benefit their brand image and bottom line.

Marketing Campaigns

Consumer brands have been attempting to green their image for many years (West 2010). During the 2018 conference described above, I was told by Tony's boss that the multi-national company is subdivided into a number of very well-known consumer brands that sell many different kinds of products. Each of these brands has a separate management structure, and they do not have to divert resources towards the subsidiary's philanthropic ends if their brand leaders don't think it is a good idea. This means that in order to keep internal funding for the restoration project flowing, the subsidiary needs to get "brand buy in". One way to get such buy in is to host conferences like the one held in Bali to highlight the company's central role in ameliorating a global crisis. If restoration experts support the system, and if the company can show they are a large part of a successful conservation project and process, then the company's brands may be more inclined to get involved. But their involvement is not limited to providing cash.

In 2019, I visited Tony's home in a large Indonesian port city to talk about the status of the restoration project over beer. At the time, he was quite preoccupied with planning a scheme that had been cooked up between the subsidiary and one of the company brands that was especially dependent on seafood raw materials. The brand would pay to continue the expansion of the restoration site, but in return, the subsidiary would utilize their restoration system to build and deploy hundreds of reef stars underwater to spell out a word that the brand and the subsidiary had decided was inspirational. I didn't understand what Tony was talking about, so he showed me a diagram of the word he had drawn on sheets of grid paper. Each letter was shaped by dozens of little squares, and each little square represented a reef star that would first have living coral fragments attached to it by members of the local community and then each would be anchored to the sea floor to form the letters. "So you are writing words under water with coral?", I asked. "Yes", he said, annoyed by the plan, which he saw as distracting from the project's real purpose. "And the brand wants the word to be big enough to be seen by satellite, which is just ridiculous-- it would take too much time and space to build something that big-- so we compromised on photographing it with a drone." Tony felt that the brand didn't really know what it was talking about and just wanted an inspirational image to put on some of its products, but he agreed that getting their support for restoration was a big deal. He hoped the brand would help pay for more actual restoration sites in the area, and perhaps even fund some initiatives for the local community. "Has anyone in the community ever heard of this brand

and do they know what this word means? Do they even know that their reef is now spelling a word in English"? I asked, somewhat stunned. Tony laughed, highly aware of the irony. "No," he said, "they just think its a part of the restoration project in a new location, but they get paid to make the reef stars so there is no conflict. It's all been worked out."

Tourism

The absence of any line between conservation and consumption is a defining feature of corporate coral restoration. This is especially evident in tourism destinations, where tropical corals are used as opportunities to develop "consumer experiences", even if those coral are far along the path towards extinction. The multi-national company heartily promotes the use of their system in the development of tourist experiences.

This is exemplified by other events at the 2018 conference in Bali. For instance, an Indonesian Government Minister spoke in a key note speech about the fact that corals were in "poor condition" around Bali, as they are in many high density areas of the country. But these areas provide a lot of infrastructure for tourists and depend on tourist income, so tourists can't all go to remote marine protected areas to dive. One solution he supported was restoring reefs in developed areas. "We will build a coral nursery right here in Nusa Dua" (a high end resort hotel destination in Bali) he said. "We want to install 1,000 hectares with 75% of Indonesia's coral species right here" using the company's restoration system.

On an excursion that was part of that same conference, participants were treated to a presentation by a regional tourism company representative on their expansive pontoon platform in the middle of the sea. The tourism company had their own large vessel that shipped tourists from Bali out to their pontoon for day trips. From the pontoon, tourists could snorkel and dive in a reef area that was piloting the multi-national company's coral restoration system. The representative said starkly that "without the reef, our business model is jeopardized. The restoration secures our reef." At that time, their site hosted around two hundred stars, although they hoped to one day have seven hundred. Instead of assembling the stars with local labor, the tourism company allowed their tourist consumers to tie coral fragments onto the stars as part of their interactive experience ("the kids love it"). He explained that "the reef (for his company) is more valuable than New York real estate" and that his company supported five hundred employees and their families. He though that the restoration system was incredibly worthwhile because it could turn underwater rubble into "quite a nice reef". As part of the piloting process, a marine protected area was expanded to include the pontoon site to prevent local people from disturbing the restored reef.

And the two representatives from the cruise company with the private island in The Bahamas emphasized the importance of coral for their tourism plan during their presentation in the meeting room. They wanted to use the restoration system to build "an industrial scale snorkel park" for their cruise guests. It was obvious that their company had more resources than the Bahamian government to put towards coral management, but no matter what, the representatives said, "we are in the business of tourism and any experience we offer has to be simple and fun. Americans want to have fun." The company had worked with local regulators to ban commercial fishing around the island, and they hoped to open in 2020 and work up to hosting 750,000 day guests per year.

In the summer of 2020, I explored the same cruise company's booking website and found that the exclusive private island destination had indeed opened to cruise passengers in late 2019. The site slogan is, "Nature made it beautiful, we made it unique" (there is no mention of the former sand mine). The website shows a computer enhanced image of the island with verdant greenery, a lighthouse, sail boats that dot the sea around the island, and of course a giant many-decked cruise ship docked in the foreground. The site sells excursions to the island on four cruise ships that leave from Miami, with each ship capable of hosting between 2,500 and 5,000 passengers. Cruise passengers can book additional excursion packages as part of their day trip to the island, including a "snorkel safari" tour in the island's "marine reserve". There was not much more information available, but the site did mention that the destination "will become a base" for coral restoration research.

Of course, in 2020, COVID-19 related travel bans suspended all cruise trips from the United States to The Bahamas. The cruise company will not have further trips to their private island until at least September, 2020. When I last looked, the booking site did not have images of any travelers having yet undertaken the "snorkel safari", and so it remains to be seen if the cruise company did indeed invest in the restoration system and if that system will prove to be a success half a world away from Indonesia.

These last examples show that it is not only relationships, logics, and finances that might be reformulated within the expanding networks of corporate sponsored coral restoration. Actual coral ecologies are remade as well, whether for restoration demonstration projects or marketing campaigns and consumer experiences. In these growing assemblages, visual witnessing tools are aligned with increasingly fungible ventures that actively transform real material places and living organisms.

Conclusion: we've never seen anything like it

While there has been some recent anthropological attention to processes of re-wilding and geoengineering in the Anthropocene (Storer 2015, Graef 2016), the linked visualization, privatization, and materialization of such efforts has been underexplored. The examples I provide in this article, presented as I experienced them, are one step towards revealing a comprehensive picture of the development of an emergent private coral restoration industry. These examples are not exhaustive, but they are significant because of the publicity, power, and iterative capacity associated with the companies and actors involved. There are many conservation practitioners and coral activists who might whole-heartedly approve of such events as the only way forward in a time of pending extinction, but those people may not understand what the fabulous visualizing tools they are repeatedly exposed to are failing to witness.

Most obvious, the witnessing tools that justify the funding and public support for these initiatives support the colonial EuroAmerican fantasy of an elite, mostly white, highly educated, professional class of globally mobile "leaders" as the saviors of the coral crisis and heroes of the restoration movement, a group I have elsewhere referred to as "Anthropocene subjects" (Author 2019). These elite subjects are now bolstered by the rise of the "Anthropocene company", a wealthy corporate entity (or recipient of corporate capital) "with a greater purpose" that is "pioneering" nature-saving ventures. In almost all cases, while it may be acknowledged that coral decline adversely effects coastal communities and economies, circulating witnessing tools fail to articulate how mass coral

death is experienced everyday by the millions of people who live in these communities. The non-western history of the relationships of life and death between humans and corals (as might be revealed in local life histories, personal and communal stories, generational coastal practices, etc.-- for example see Lowe 2006) is irrelevant when it comes to the corporate witnessing of the coral crisis. At the same time, non-EuroAmerican coral scientists, conservationists, or activists are included in a tokenized and unnamed fashion if they are included at all in witnessing tools. "Local communities" are often part of the circulating narratives if restoration, but they are clearly the background and visual context of resource-using-brown-people, often children or fishers, who populate the imagery to fill the requisite "savage slot" (Truillot 2003).

Perhaps less obvious is the way in which Anthropocene companies are narrated as the saviors of the coral crisis while simultaneously being decentered as having had a substantive hand in the cause of coral death in the first place. The image of an empty underwater void, marked only by a gray, flat sea floor of reef rubble is essentially a *tabula rasa* image that used to point fingers, lay blame, or shift responsibility. When these images are used by corporations that source marine resources at industrial scales as evidence of local degradation caused by irresponsible fishers ("bombers"), what is decidedly not witnessed is the corporate role in driving international export markets for marine products that have long been harvested at unsustainable rates. And when images of acres of bleached and skeletal reefs are touted as the result of rampant climate change, what is not witnessed are the many decades of industrial pollution stemming from the production processes and supply chains of the same companies who are now amassing large philanthropic budgets from their extensive profits. In both cases, the companies that are expected to participate in funding coral restoration as a form of corporate social responsibility are exactly those companies who would rather be seen as solving rather than causing the coral crisis.

Marine science is often complicit in the restoration initiatives and lacunae I describe. Scientists and their statements are peppered around coral restoration witnessing tools to legitimize corporate efforts. In many cases the companies fund scientific research projects involving restoration, or researchers are able to apply for grant funding to study private restoration interventions. Many scientific projects, including my own collaborative social project (Author's Doctoral Student Forthcoming), are currently ongoing in large-scale restoration sites. My concern is not that science is ignored, but that it is coopted to promote what the nascent corporate coral restoration industry wants to promote while any actual scientific conclusions about the efficacy of restoration methodologies are still very much pending.

In terms of the restoration projects I describe here, the multi-national company has publically touted its system as successful, viable, and worthy of export to other locations, but the scientific monitoring of the initial restoration sites is only a few years old. While certain components of these restoration sites look promising for long-term viability, we won't actually know if that can be achieved without more years of intensive study. It is initially clear that the company's restoration system is susceptible to disease, temperature increases, storm damage, damselfish infestations, social unrest, damage from boat anchorage, and more, just like or perhaps more so than any existing reef ecosystem, and yet these challenges continue to be under-witnessed. It goes without saying that the scientists who allow themselves to be utilized in the marketing of these restoration systems are

leaving themselves open to accusations of putting the cart well before the horse. Unsurprisingly, that last point is immaterial for many companies whose business models are based on short-term gains and narrow windows of opportunity, where success is measured in quarterly shareholder reports or annual sales. The time scales of peer-reviewed research and corporate philanthropic trends are more readily aligned performatively than pragmatically.

And then there is, of course, the living coral that is being gathered, farmed, recruited, and constantly represented as a result of these expanding networks of corporate social responsibility under the sea. As Thompson (2006) reminds us, the underwater world of the tropics, including the "classic reef" many EuroAmericans imagine when they think of coral, is an invention of photographic technology and colonial desire. These same performative reefs with bright colors, variegated textures, photogenic hard corals, and schooling fish that are supposed to signify pristine, healthy reefs without people (save for intrepid scuba divers) are also the intentional end product of corporate coral restoration efforts. We don't yet know what these manufactured ecologies do from an ecosystemic, biological, or resilience standpoint, but we do know that these restoration products (both the images and the restored reefs themselves) have intense consumption value (Sheller 2003). This value lies in the fact that the sites and images signify key forms of recruitment: the return of marine species (a kind of symbolic "restocking" of the sea for extractive industries) and the arrival of marine tourists who bring foreign exchange dollars and conservation-as-development with them (West 2006).

Further, the multi-national company's reef restoration system has the potential to make certain kinds of coral reefs modular and convenient. They can be "installed" where they are wanted (disturbed areas, tourism destinations), while inconvenient reefs can be removed or transplanted where they are unwanted (when coral heads are in the way of cruise terminals, for example). And it appears that this particular combination of technology, desire, and corporate wealth may very well direct coral down the familiar path towards the creation of safe, sanitized, highly normative, re-territorialized spaces and economies that emerged from the eras of enclosure, colonialism, conservation, and segregation (Cronon 1996, R. Nixon 2013, A. Nixon 2017). This might mean that restoration areas could become "Anthropocene Parks" (Author 2015), sites for elite appreciation and salvation, maintained to uphold and expand systemic inequity, exclusion, and dispossession while the rest of the world burns (Li 2014, West 2016).

Back in 2019, when he was in my office, Richard Vevers told me that he had taken some virtual Google glasses to the multi-national company's restoration site in Indonesia to give to members of the local community who had been assembling reef stars. After filming coral growing on the stars underwater, he transferred some of the footage to his smart phone and let a few of the builders look at the images with the 3D glasses. "They loved it", he said. "They hadn't seen the restoration site from that perspective before, and were amazed by how much the coral had grown since they had tied the fragments on to the stars." Vevers took this to mean that if more local people could see how well the restoration project was working, they would develop pride in their coral conservation efforts. But I see it differently. I fear that the very local communities that live next to and provide labor for the building of restoration sites-- the people who are supposed to benefit the most from all the recruited fish and tourists and community-based restoration wages-- are not actually participating in the visual economy of circulating witnessing tools.

Americans living in central Texas have seen *Chasing Coral*, countless conservationists around the world have seen images of restoration projects, millions of dive tourists watch high resolution reef videos across myriad web platforms, but most of the people in the community adjacent to what is supposedly the largest restoration project in the world have never seen these images. That is because restoration communities are not really supposed to be the consumers of this imagery. They are part of the imagery and ecologies that are supposed to be consumed.

This article has been a somewhat disjointed exploration of the uneven politics of witnessing emerging from private coral restoration initiatives. I am certain that the examples I have presented here are manifestations of a particular future in the making, and it should be clear by now that I believe this potential future to be as dissatisfying and dangerous as a world without coral. At this point I am left with more questions I hope will guide me into the next phase of my engagement with coral materialities: How do we face the growing reality of coral death when the most publicized solutions appear to follow the same colonial pathways of extraction, consumption, dispossession, and alienation that lead to the mass extinction crisis in the first place (Parreñas 2018)? What other kinds of witnessing tools can spread other kinds of stories about coral, and what other kinds of material relations do we want to foster (Harway 2016)? What would it mean to engage more capacious, intersectional networks, rationales, and practices designed to demand corporate social accountability for ocean degradation instead of pandering to the logics and narratives of corporate social responsibility? There is still so much more to see.[1]

[1] This article is one part of a multi-part series on the politics of coral restoration. Future publications (in preparation) address the lived experience of restoration initiatives by affected populations and the decolonial possibility of alternative coral communities.

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