

Appendix 2

Changing Views of Agency, Sentience, Cognition, and the Protection of Cetaceans

Lori Marino



July 2021

Changing Views of Agency, Sentience, Cognition, and the Protection of Cetaceans

Lori Marino

Introduction

In this report I document some of the most important and consequential ways cetaceans (dolphins, whales, and porpoises) have been represented, and, thus, treated by humans. I concentrate, though not exclusively, on the issue of captivity and odontocetes (toothed whales, dolphins, and porpoises). The issues facing free-ranging cetaceans, e.g., whaling, bycatch, environmental degradation, are ongoing global problems that often interface with issues underlying captivity and exploitation.

Historical Narratives

Cetacean as Gods. Cetaceans have been central to human mythology since ancient times. In Greco-Roman times, dolphins were closely linked with the gods. Delphinus was a favorite messenger of Poseidon, who repaid him for his loyalty by placing an image of a dolphin in the stars. The Greek poet Oppian of Silica declared around 200 CE that ‘Diviner than the Dolphin is nothing yet created.’ Aristotle was the first to recognize that dolphins are mammals. Indeed, the root of the word dolphin, delphis, means womb, and underscores the long-standing belief in an intimate (even chimeric) connection between dolphins and humans. In ancient Rome and Mesopotamia, dolphins adorned frescoes, artwork, jewelry, and coins, and in ancient Greece the killing of a dolphin was punishable by death. The Minoan palace of Knossos on Crete, dated to 1900—1300 BC, contains one of the earliest and best-known ornamentations depicting dolphins in a fresco on the wall of the queen’s bathroom. In Greek mythology, Taras,

son of Poseidon was said to have been rescued from a shipwreck by a dolphin sent by his father, hence the iconic image of the boy on a dolphin depicted on historical coinage. And cetacean mythology is not limited to Western cultures, i.e., most coastal indigenous cultures have longstanding myths about dolphins and whales ([What I Wish I Could Ask a Whale” - YouTube](#)) which continue to this day ([KUOW - Lolita the orca was taken from Puget Sound. The Lummi want her back.](#))

Dolphins as Mystics. Cetaceans are burdened with a mythological characterization arguably unique in the animal world. These ancient views of cetaceans as mythical god-like figures are reflected in modern times through representations of dolphins as creatures with special powers and motivations to heal. The ancient Celts attributed special healing powers to dolphins, as did the Norse. Throughout time, people as far apart as Brazil and Fiji have traded in dolphin and whale body parts for medicinal and totemic purposes.

These misconceptions contributed to the status of dolphins as the ultimate symbol of New Age mysticism in the 1960s and were given a boost by the late neuroscientist John C Lilly. Lilly pioneered research with captive bottlenose dolphins in the 1960s. His early work on dolphin brains and behaviour was groundbreaking, bringing to light important knowledge about the large, complex brains and intelligence of cetaceans. Lilly also provided evidence for sophisticated dolphin communication, reporting that dolphins could mimic the rhythm of human speech patterns (Lilly, 1961). Lilly (1975) called dolphins the “humans of the sea,” describing their complex brains and suggested that dolphins have their own language. Lilly (1978) took his writing further with speculation that dolphins communicate by telepathy, have a high level of awareness, and have stories and a culture of their own. Lilly’s claims are a

mixture of fact and supposition but, at the time, were made without empirical support (Forestell, 2018). In popular literature, the theme of dolphins as spiritual intelligences, agents of a higher power, spiritual guides was disseminated by others (Wyllie, 1992; Wyllie, 2001; Robbins, 1997; Nollman, 1985).

Dolphins as Aliens. Convinced that dolphins had a sophisticated language of their own, Lilly suggested that the species might provide the key to unlocking humanity's potential to commune with extraterrestrials. He became part of the initial SETI (Search for Extraterrestrial Intelligence) group of radio astronomy pioneers, who were so impressed with his tales of dolphin intelligence that they voted to call themselves 'The Order of the Dolphin' ([The Order of the Dolphin and the birth of SETI - Space Legal Issues](#)). The interest of the SETI community in cetaceans has led to support for ongoing research on possible parallels between decoding dolphin signals and SETI signals, which has engendered to an [innovative line of research](#) that continues to this day. These mainly artificial intelligence/machine-learning based approaches to studying cetacean communication have become part of a larger ethic to use interspecies communication as a way to promote respect for nature. Two examples are [CETI](#) and the [Earth Species Project](#).

Lilly and his followers eventually began mixing their own quasi-spiritual beliefs with their scientific work. They also began engaging in scientifically questionable and unequivocally unethical research, including giving captive dolphins doses of LSD, often with fatal consequences. Based on his conviction that dolphins were superior to humans, he attempted to set up a formal but overly expansive program of interspecies communication and co-operation between humans and dolphins called the Cetacean Nation, which never came to fruition.

Beyond Lilly. There were many cetaceans held in captivity for their entertainment value well before Lilly, In the 1860s and 70s, beluga whales and dolphins were being captured and shipped to aquariums throughout the United States and Europe. P.T. Barnum was the first to exhibit two belugas he paid to have captured from the wild. They were first exhibited in Boston and then in New York City (dying two days after their transfer). Marineland of Florida, previously Marine Studios, opened in 1938 and was home to the first captive born bottlenose dolphin in 1947. Between 1970 and 1971, ten orcas were captured from the Puget Sound off the coast of Washington state. Half of the animals were sent to SeaWorld, one (Lolita) was sent to Miami Seaquarium, and the other four were dispersed internationally ([How the Beluga Business Began | The Whale Sanctuary Project | Back to Nature](#)).

One indication of the centrality of dolphins to popular culture was the movie and television show Flipper – a modern take on the “boy and a dolphin” mythology from ancient Greece and Rome. The dolphin character Flipper lived in a cove and was portrayed as a helper and rescuer to the boy and his friends. The premise reinforced the notion that dolphins are here to be our guides and protectors.

During the early to mid-1970s, after witnessing the violence of the captures of free-ranging orcas in the Pacific Northwest for captive display, the public turned against live capture. Legislation was created to protect cetaceans. Scientist Roger Payne’s work with humpback whale songs also sparked a global “Save the Whales” movement and ultimately contributed to the passing of the [Marine Mammal Protection Act](#) (MMPA) in 1972, which marked the end of large-scale whaling and saved several whale populations from extinction. There were other efforts underway to limit or end large-scale industrial whaling around the world. While an

important step, the MMPA allowed importing and breeding of captive cetaceans for the purposes of education and conservation, creating a major loophole for the captivity industry to continue their exploitation of dolphins and other cetaceans. In 1976 Washington became the first state to ban the capture of orcas in 1976.

The International Whaling Commission (IWC), formed in 1946, was originally composed of 15 member nations tasked with regulating whaling around the world. In a landmark event in 1982 the IWC, then consisting of many more nations, set a moratorium on all commercial whaling. This effort was one of the most successful international efforts to end the killing of whales. This success is thought to be due to both the decreasing demand for whale products and the increased public awareness of the impacts of whaling on the viability of populations as well as the suffering of individuals. Before it went into effect, tens of thousands of whales were being killed annually by whaling nations, reaching a peak of as many as 72,000 whales a year in the 1960s. By 1986, when the moratorium went into effect, four of the remaining whaling nations had stopped whaling, and the Soviet Union stopping commercial whaling at the end of the 1986/1987 Antarctic whaling season. However, Norway, Iceland, and Japan have persisted, continuing to hunt hundreds of whales a year for commercial gain in defiance of the moratorium and despite the widely held belief that commercial whaling is no longer necessary or acceptable. These nations, particularly Japan, exploit a loophole in the regulations that allow for “scientific whaling” when, in fact, little to no science is done and would not be ethically acceptable either.

The IWC has never paid much attention to the hunting of small cetaceans (small whales, dolphins, and porpoises, leaving them open to global exploitation that continues to this day.

They are killed for human consumption, fisheries bait, and to reduce the perceived competition for fish or damage to fishing nets. Some are also captured alive to supply the aquarium industry, with frequent overlap between those involved in the killing and the live capture (see below for more detail on this practice and the connection between small cetacean hunting and the marine park industry). While the largest slaughter of small cetaceans in the world is conducted in Japan, they are also hunted in the Faroe Islands, Solomon Islands, Greenland, Russia, Indonesia, Peru, and elsewhere. Most of these hunts can be distinguished, at least from the conservation perspective but perhaps not the welfare perspective, from small subsistence whaling by indigenous communities in remote areas.

Greenwashing. Early in the days when cetaceans were being displayed by marine parks there was little pretense that the goal was anything other than entertainment. Seeing these animals up close satisfied the curiosity of visitors and this seemed sufficient as a justification. But as the public became more aware of cetacean wellbeing both in captivity and in the open oceans – through public campaigns like Save The Whales - they began to question the practice of keeping these animals in tanks for entertainment alone. Marine parks responded by rebranding themselves as centers of education, research, and conservation, in some cases changing their names to reinforce this issue. Through skillful marketing and public relations, they claimed to be modern Noah’s Arks engaged in urgent conservation efforts. In reality, the marine park industry simply changed its patina, but did not make an authentic and substantive shift away from entertainment towards serious conservation and education. Relatively few marine parks engage in research that has a conservation value (Jamieson, 1986; Marino, in press). Marine parks (as well as zoos) are continually navigating the difficult tension between

generating revenue through animal entertainment and retaining public approval. Today this industry is forced into making grotesque claims about their value as education and conservation centers in the face of essentially no substantive evidence to support this notion (Marino, in press; Marino, Bradshaw, Malamud, 2009).

The 80's and 90's. Through the 1980's and early 1990's marine parks continued to take dolphins and whales from the ocean but drew increasing public ire for doing so. In 1989 the NMFS called for a voluntary moratorium on the capture of bottlenose dolphins (*Tursiops truncatus*) in the Gulf of Mexico and along the Atlantic coast primarily due to the uncertainty about how captures would affect wild populations (Rose, Parsons and Farinato, 2009). The last capture of a cetacean from U.S. waters was in 1993, when the Shedd Aquarium took three Pacific white-sided dolphins from the coast of California for display. The public outcry put an end to this activity in the U.S. once and for all.

Internationally, orcas and other whales are still captured from the wild and sold into captivity. And, up until 1989, SeaWorld continued to take wild-caught dolphins and other cetaceans through other countries, primarily through the infamous annual drive hunts in Taiji, Japan. The Convention on International Trade in Endangered Species ([CITES](#)) regulates the trade of orca whales and dolphins; however, since cetaceans are not classified across the board as "endangered," their trade does not need to be controlled. CITES also only has a limited ability to regulate the trade of cetaceans across country borders, meaning if individual countries approve permits to import animals, they can be traded at will.

The Current Situation.

There are about 3,000 cetaceans held in aquariums and marine parks around the world ([Creating sanctuaries for whales and dolphins - Whale & Dolphin Conservation USA](#)). In North America there are approximately 480 captive bottlenose dolphins, 80 beluga whales, 22 orcas, and others ([Cetabase.org](#)). Today only the orca “Lolita” and two others taken before the moratorium on live captures live in the United States. One wild-caught orca, Kiska, continues to live at Marineland Canada. All the other orcas in North America are captive-born. Twenty countries outside of North America continue to capture live cetaceans for entertainment and other purposes. Marine parks continue to be popular. In North America alone more than 150 million people visit zoos and aquariums each year (Sickler et al., 2006).

Most public display facilities keep whales and dolphins in barren, chemically treated concrete tanks a tiny fraction of their normal habitat size. Artificial environmental enrichment, in the form of toys and objects, e.g., balls, hoops, are inadequate replacements for the stimulation of living in the ocean (Clegg, Van Elk, Delfour, 2017). Often there is over-crowding or, on the other hand, inadequate species-specific company or even solitude.

Dolphins and whales in entertainment facilities are trained to perform for food, often executing several shows a day, several days a week. Examples of typical behaviors carried out in shows are pectoral waving, splashing the audience with tail flukes, sliding out onto ramps, coordinated leaps, and pushing trainers through the water. These performances are often accompanied by videos, loud music and, in some cases, fireworks. And while there are differences in the content of the performances across display facilities, all of them present dolphin and whale behavior in an unnatural human-controlled setting (Rose & Parsons, 2019).

The degree to which Lilly and his followers influenced popular media by promoting the longstanding narrative of dolphins as gods, mystics, and aliens, i.e., the dolphin mystique, has not been directly assessed but may be inferred from the ways certain dolphin representations and activities have proliferated since his popularity. Arguably, the dolphin mystique has had a negative influence on dolphins and other cetaceans because it promotes thinking about them as something they are not. Moreover, it encourages dubious practices that involve direct interactions with captive (and free-swimming) cetaceans which have gained purchase over the years.

In the 1980's, for example, the lucrative industry of human-dolphin interaction programs proliferated in entertainment parks globally (Stewart and Marino, 2009). In these set-ups the public can pay to pet, feed, be towed around, or swim with dolphins or whales. A notable worldwide popular form of human-dolphin interaction is Dolphin Assisted Therapy (DAT) in which visitors with various conditions (e.g., autism, cerebral palsy, etc.) interact, touch, or swim with captive dolphins under the guise that the dolphin has therapeutic value. There is no evidence that DAT is a valid and effective treatment for any physical or psychological disorders (Marino & Lilienfeld, 1998, 2007, 2021). Yet this lucrative global industry without regulations or accreditation continues to flourish around the world.

DAT took off in earnest when Lilly's early explorations became better known through the efforts of the educational anthropologist Betsy Smith, then at Florida International University. In 1971, Smith set up DAT programs at two facilities in Florida and offered them free of charge for many years. But she later concluded that DAT was ineffective and exploitative of both the dolphins and the human patients, and in 2003 she publicly

denounced them, calling them 'cynical and deceptive' (Marino, 2013). This apparently had little to no impact on the popularity of DAT offering in the U.S. and around the world.

Dolphins are uniquely characterized in the popular media as fantastic animals ascribed attributes seldom accorded to terrestrial life. Bryld and Lykke (2000) investigated the complexity of these kinds of fantasy representations of dolphins and found some evidence for their roots in the 1960's with the claims of John Lilly as well as in the Navy's depictions of dolphins in the military.

Many people describe their in-water encounter with a dolphin in terms that correlate with the Dolphin as God and Mystic representation. They often claim that swimming with dolphins is one of the most exhilarating and transformative experiences they've ever had — even the highlight of their life, i.e., a peak experience. Others report feeling a sense of euphoria and intimate kinship with the dolphins, little doubting that this feeling is shared by the dolphins. DAT is a modern re-enactment of ancient mythological notions about cetaceans as healers and guardians.

At face value, having exaggerated yet benign views of cetaceans may appear to be harmless or even helpful to them, but the opposite has been the case. Paradoxically, these seemingly benign attitudes encourage human-animal interactions that are often profoundly injurious to dolphins and other marine mammals, i.e., "Loving nature to death". Lavigne et al. (1999) studied North American attitudes toward marine mammals since the early 1960's by reviewing patterns of consumptive exploitation, tourism, media attention, legislation, scientific research and NGO's. They concluded that "North American attitudes toward marine mammals have shifted from a focus on their killing and material utilization to a more

aesthetic interest in observing these creatures in the wild, in captivity, and in various media forms. They concluded that this shift was a result of increased knowledge about them through research and media exposure. Barney et al. (2005) examined how knowledge, attitudes, and harassment behavior toward bottlenose dolphins are related. They found that misconceptions about cetaceans are related to more potentially disruptive and harmful uses and harassment behavior towards dolphins in captivity and in the wild.

In support of the notion that cetaceans are often victimized by the mystique associated with them, Forestell (2018) suggests that the public still mostly views cetaceans as commodities. The shift has been from a material utilization to an aesthetic interest, but the aesthetics have driven increased exploitation. Therefore, the motivational basis for “improvements” in our attitudes and behaviors toward cetaceans are still based highly on anthropocentrism. This astute observation is borne out by the fact that cetaceans have become overly- exploited as captive “ambassadors” and entertainers, healers, and objects of amusement.

In order to accurately appraise public perceptions and attitudes in the another study, Fraser et al (2006) surveyed popular cultural references to cetaceans in the areas of films, literature, and music since the 1950s and found four main themes emerged: 1) Dolphin as peer to humans, of equal intelligence or at least capable of communicating with humans or helping humans; 2) Dolphin as representative of peace, unconditional love, or an idealized freedom in harmony with the natural order; 3) Dolphin as naïve or innocent, in which they are subordinate and vulnerable; and 4) Dolphin as superior to humans, associated with a higher power or intelligence. These themes largely map onto some of Lilly’s claims and the historical mythology

about dolphins as superior beings or helpers of humans, as purveyors of peace and love, and benign, playful sprites of the ocean. While Fraser et al did not find a close relationship between how aquarium visitors view dolphins and these mythological ideas, there is a range within which people are comfortable with mystical or idealistic characterizations of dolphins. These varying comfort levels influence interaction with and learning from exhibit content. It is arguable that exaggerated mystical views of cetaceans do play a role in the proliferation of some of the more extreme versions of exploitation of captive dolphins, e.g., dolphin therapy, swim programs, dolphin birthing, and other dubious human-dolphin interactive activities.

The Blackfish Effect

In February 2010, Tilikum, a 12,000 lb. captive male orca, killed his trainer, Dawn Brancheau, at SeaWorld Florida during a show; this was the third human fatality with which this specific whale had been associated (Parsons, 2012). A cascade of very public events followed, including lawsuits, federal enforcement of changes in how trainers interact with captive orcas and, over the next 2-3 years, a plethora of media coverage, including books, and films. The US Occupational Safety and Health Administration (OSHA) cited SeaWorld for the Florida incident in August 2010 (see Parsons, 2012). But until the release of a documentary called *Blackfish* in 2013, the popularity of captive cetacean exhibits remained steady (Parsons and Rose, 2018).

Following Brancheau's death, two nonfiction books were published about SeaWorld's history with orcas and the human deaths and injuries noted above: *Death at SeaWorld: Shamu and the Dark Side of Killer Whales in Captivity* by David Kirby (2012) and *Beneath the Surface: Killer Whales, SeaWorld, and the Truth Beyond Blackfish* by John Hargrove and Howard Chua-Eoan (2015). Both gained considerable media attention. However, the film *Blackfish*, an

evidence-based “behind the scenes” documentary about SeaWorld’s captive orca industry, was the turning point for raising public awareness about captive orca welfare and changing attitudes about captive cetacean facilities. The film showed footage of captive orcas enduring suffering and abuse, and featured eyewitness testimony from former trainers at SeaWorld who worked with Tilikum and other captive cetaceans there.

Blackfish debuted at the Sundance Film Festival in January 2013. Its total gross revenue was more than \$2 million at the US box office for its distributor, Magnolia Pictures (The Numbers, 2013). And it was nominated for numerous awards (IMDb, 2016), including from the British Academy of Film and Television Arts. But the film was propelled into orbit by CNN, which premiered the film in October of 2013 and then aired it over 25 times over the following months. Scientists as well as cast members and the filmmakers were recruited to provide supporting information via Twitter, to participate in TV debates, and to write blogs. The Twitter hashtags #Blackfish and #Blackfishthemovie “trended” during the initial showing, with nearly 70,000 documentary-related Tweets seen by 7.3 million people (Rogers, 2013; Wright et al., 2015). In 2013, CNN reported that 21 million viewers watched the documentary (CNN, 2014). Subsequently Blackfish was acquired by Netflix and enjoyed enormous popularity there as well. This overall phenomenon engendered The Blackfish Effect (see e.g., Chattoo, 2016), one of the most dramatic global paradigm shifts in public attitudes towards cetacean captivity, over the next several years and into current times.

Economic effects. On the economic front, longtime corporate partners with SeaWorld ended, musical acts cancelled their appearances, park attendance, and, thus ticket sales, plummeted in 2014 (SeaWorld, 2015) and have not recovered to pre-Blackfish levels, and stock

prices dropped by 33% (Cohen, 2014). A class action suit was filed by the company's shareholders (Kosman, 2014). In 2014, the company's CEO Jim Atchinson resigned, commencing a period of instability with seven CEOs changing hands over five years ([7 CEOs in 5 years - Orlando Business Journal \(bizjournals.com\)](#)). In 2018, Atchison agreed to pay over \$5 million to settle federal charges that the company hid from investors the negative impact that *Blackfish* had on the business. In response to these issues SeaWorld went on an aggressive defensive and offensive campaign employing the usual greenwashing techniques by highlighting their role in conservation and education with a new website 'SeaWorld Cares' in 2015. They also announced a new orca show they claimed focused more on conservation.

Legislation and Regulation. OSHA once again stepped onto the scene in 2010 by citing SeaWorld for safety violations, one of them "willfull", and implemented new safety regulations that ended "water work" with orcas, i.e., trainers in the water with orcas during shows, and having a profound impact on their most lucrative attraction ([OSHA v. SeaWorld: the saga continues - MySafetySign Blog](#)). There were also several regulatory efforts that attempted to limit SeaWorld's use of orcas. These included the 'Blackfish Bill' in February 2014 put forth by Assembly Member Richard Bloom in the California Assembly Bill (AB) 2140 which would have made it illegal to 'hold in captivity, or use, a wild-caught or captive-bred orca for performance or entertainment purposes (S.4502(a)(1)), thus banning captive orca breeding programs and theatrical shows. Bloom cited *Blackfish* as one of his inspirations for the bill. Bloom reintroduced the amended bill as AB-2305 in March 2016 and the 'Orca Protection Act' was signed into law in September 2016: compared to the initial proposal, this new bill did not stipulate the removal of orcas currently in captivity to sea pens but specified that they could

only be used 'for educational presentations' (Hugo, 2016; AB-2305, 2016:S.4502(a)(1)(B)).

Similar bills were being introduced across the U.S.

Seeing the “writing on the wall” and facing mounting pressures, SeaWorld made the decision to engage with The Humane Society of the United States (HSUS) in a series of discussions, which began in 2015 and culminated, in March 2016, with the “sudden” announcement that SeaWorld would “voluntarily” end its orca breeding program (Allen, 2016).

Global Effects. It is fair to say that there is a growing international movement to end the display of captive cetaceans. Public opinion around the world is driving legislation globally to bring an end to keeping whales and dolphins in entertainment parks. In May 2017, the Vancouver Park Board voted in favor of preventing any new whales, dolphins and porpoises from being kept on display at the Vancouver Aquarium in Canada. In June 2019 the Canadian Senate passed sweeping legislation to ban the breeding, display and import of cetaceans in Canada. (The law grandfathered in existing captives at Vancouver Aquarium and Marineland). Across the world in April 2019 the Russian government made the decision to release 97 captive orcas and beluga whales to the ocean (these whales were only in sea pens for about a year) and invited the Whale Sanctuary Project to manage that effort. It was the largest release of captive cetaceans in history. Just last year, in 2020, Belgium and France announced the end to keeping captive cetaceans on display and Merlin Entertainment, a global theme park company, announced its decision to end the display of captive cetaceans in its parks.

At the same time a new global movement has emerged. As the ending of the display of cetaceans at marine parks becomes a more popular decision there must be an alternative for those individual cetaceans who are currently still in tanks. Most, if not all, have been in

captivity for decades or were captive-born, and, thus, are not able to survive in the open ocean. The clear alternative – permanent seaside sanctuaries – has entered our culture as a reality in an unprecedented way. Merlin Entertainment created an Icelandic sanctuary for two formerly captive beluga whales from Asia. The National Aquarium in Baltimore is creating a seaside sanctuary for bottlenose dolphins in Puerto Rico. And the Whale Sanctuary Project is creating a permanent sanctuary for captive orcas and belugas in Nova Scotia. These projects are joined by many other efforts throughout Europe and elsewhere.

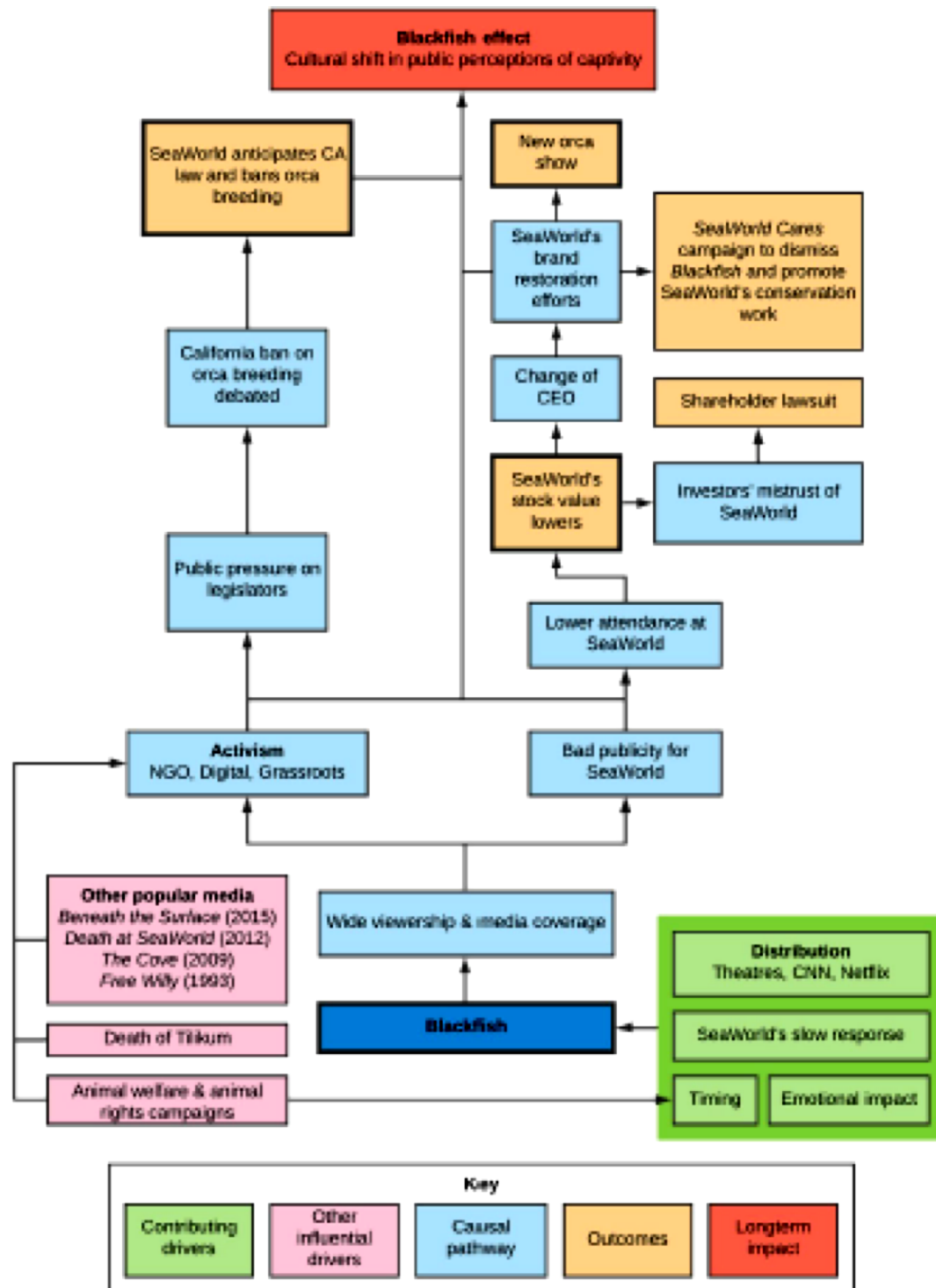
Mapping the Blackfish Effect. The impact of *Blackfish* is widely touted not only in grey literature but also in several academic articles and reports (Fernández-Bellon & Kane, 2019; Waller & Iluzada, 2020). Yet only very recently has there been a systematic assessment of whether the Effect has driven the changes attributed to it. The focus of the claims about the film's impact has been output indicators, e.g., number of viewers, social media engagement or press coverage. These indicators, while strong evidence of wide reach, are not direct evidence of causal relations among the various components. For this, an impact evaluation needs to be carried out. Boissat, Thomas-Walters, Verissimo (2021) employed a methodologically rigorous qualitative evaluation method to the various changes attributed to *Blackfish* in order to better understand and test the cause-and-effect relationship between the film and its outcomes while ruling out alternative explanations. In doing so they created an overall theory of change regarding the *Blackfish Effect*.

Boissat et al. (2021) chose three outcome measures associated with the *Blackfish Effect*: (1) SeaWorld's decision to end its orca breeding program (2) SeaWorld's new design of its orca show (3) SeaWorld's market value change. They combined surveys of 26 stakeholders about the

outcome measures and used General Elimination Methodology, a qualitative impact evaluation methodology to build an understanding of the impact of *Blackfish*. This methodology does not test cause and effect in the way an experimental procedure would but does allow for the identification of likely influences among factors. Overall, the authors concluded that *Blackfish* had an influence, sometimes indirectly, on the three outcomes of interest—SeaWorld's orca breeding policy, its new orca show and its market value.

They wrote: “Cumulative evidence shows that Blackfish played a critical role in SeaWorld's financial difficulties, its new orca show and the cessation of its breeding program, acting as a catalyst for the already existing anti-captivity activism. Rather than directly causing all these changes, Blackfish benefitted from a perfect storm, which had been building up to create an appropriate cultural climate for its release in 2013. A confluence of factors, fueled by animal welfare and rights activism and aided by its distributional strategies, enabled the documentary to resonate with a wide public. Blackfish acts as a potent reminder of the capacity of nature documentaries to spark activism. The resulting ‘Blackfish Effect’ reinforces the notion that documentaries should be considered as one point in a continuum... From its initial anti-captivity focus, the documentary created a spill-over ‘Blackfish Effect’ which now rallies crowds campaigning on both welfare and conservation issues” (p. 11).

The authors view the lack of transparency around orca killings highlighted by *Blackfish*, and the delayed and inadequate reaction by SeaWorld as significant contributors to the documentary's impact on the public. The figure below is a replication of their Theory of Change Model for the Blackfish Effect. The thick outlines denote the original intervention (*Blackfish*) and outcomes of interest in the study and the thinner lines are less direct influences.



Conclusion

Despite the increasingly positive changes that have occurred recently in North America and many Western nations, there are still egregious abuses of cetaceans throughout the world. For instance, in the Faroe Islands over 800 pilot whales are driven onto land and slaughtered for their meat annually ([Faroe Islands Has Cruelly Slaughtered 131 Whales In Past 24 Hours \(ladbible.com\)](#)). In the infamous annual drive hunts in Taiji, Japan hundreds of small whales, dolphins and porpoises are drive into killing coves while staff from mostly Asian marine parks pay to take the young healthy ones back to their entertainment parks ([Dolphin drive hunts in Taiji, Japan - Whale & Dolphin Conservation USA \(whales.org\)](#)). Despite the popularity of the film [The Cove](#), a well-received documentary about the Taiji drive hunts and the link to marine parks, little has changed on that front. Moreover, wild captures and captive entertainment are skyrocketing in China and Russia. China has close to 80 marine theme parks with orcas, belugas, bottlenose dolphins and others who have been captured. Therefore, while the capture and confining of cetaceans for entertainment parks is waning in the Western hemisphere it is trending upwards in China. This trend is thought to be due to the fact that the Chinese public now has the ability to be entertained in ways that they previously did not and now want the kinds of amusements that have been available in the United States and in Europe for so long. China is simply following the lead of the United States. And there are other areas in the world where dolphins are slaughtered and used for trade and monetary purposes.

Ironically, while attitudes about cetaceans have become more sophisticated in North America and there is an active movement to end the exploitation of cetaceans in the form of captive entertainment, there are ways that free-ranging cetaceans – both large and small – are

being subjected to worsening situations. Commercial whaling continues in many parts of the world, bycatch of dolphins by fisheries is increasing, the environment is becoming more degraded from anthropogenic activities (Fossi et al, 2018; Viers, Viers & Wood, 2016). Many cetacean species have become extinct or are highly endangered ([Small Cetacean Hunts \(awionline.org\)](http://SmallCetaceanHunts.awionline.org)). All of these trends fly in the face of improvements in attitudes about confining cetaceans in parks for entertainment and shows that our relationship with cetaceans continues to be very complicated and heterogeneous.

Despite some major positive shifts towards views about captivity our relationship with cetaceans remains largely anthropocentric, as it has always been. As Forestell (2018) notes: “The one constant element in human perspectives on marine mammals ... is recognition of their economic significance. We have never stopped making money from them. They are still a resource.” It may be said that these other forms of cetacean abuse are depending upon shifts in perspectives awaiting their *Blackfish* moment.

References

- Allen, G. (2016, March 17). SeaWorld agrees to end captive breeding of killer whales. NPR WAMU. Retrieved from <http://www.npr.org/sections/thetwo-way/2016/03/17/470720804/seaworld-agrees-to-end-captive-breeding-of-killer-whales>.
- Barney EC, Mintzes JJ, Yen CF (2005) Assessing knowledge, attitudes, and behavior toward charismatic megafauna: The case of dolphins. *The Journal of Environmental Education*, 36(2), 41-55.
- Boissat L, Thomas-Walters L, Veríssimo D (2021) Nature documentaries as catalysts for change: Mapping out the 'Blackfish Effect'. *People and Nature*, 1–14.
- Bryld M, Lykke N (2000) *Cosmodolphins: Feminist cultural studies of technology, animals and the sacred*. London: Zed Books.
- Chattoo, C. B. (2016, March 3). Anatomy of the "Blackfish Effect." Huffington Post. Retrieved from http://www.huffingtonpost.com/caty-borum-chattoo/anatomy-of-the-blackfish-_b_9511932.html
- Clegg ILK, van Elk CE, Delfour F (2017). Applying welfare science to bottlenose dolphins (*Tursiops truncatus*). *Animal Welfare*, 26, 165-176.
- CNN. (2014). CNN moves past MSNBC to finish 2013 as #2 rated cable news network. Retrieved from <http://cnnpressroom.blogs.cnn.com/2014/01/02/cnn-movespast-msnbc-to-finish-2013-as-2-rated-cable-newsnetwork/>
- Cohen, L. (2014). SeaWorld shares hit as negative publicity from films hurts revenue. Financial Times. <https://www.ft.com/content/da6c5648-2307-11e4-a424-00144feabdc0?siteedition=uk#axzz3ALZR4kcK> Cowperthwaite, G
- Fernández-Bellon D, Kane A (May 2019) Natural history films raise species awareness - A big data approach. *Conservation Letters*, 1-9.
- Forestell PH (2018) Popular culture and literature. In B. Würsig, JGM Thewissen, K Kovacs (eds) *Encyclopedia of Marine Mammals*, pp 753-63. Academic Press.
- Fossi MC, Bains M, Panti C, Baulch S, (2018) Impacts of marine litter on cetaceans: focus on plastic pollution. In MC Fossi, C Panti (eds) *Marine mammal ecotoxicology*. Academic Press, London, pp 147-184.

Fraser J, Reiss D, Boyle P, Lemcke Km Sickler J et al (2006) Dolphins in popular literature and media. *Society & Animals*, 14(4), 321-349.

Hargrove J, Chua-Eoan H (2015) *Beneath the surface: Killer whales, SeaWorld, and the truth beyond Blackfish*. New York, NY: St. Martin's Press.

Hugo, K. (2016). Orca shows and breeding banned in California. National Geographic. <https://www.nationalgeographic.com/news/2016/09/california-bans-SeaWorld-orca-breeding-entertainment/>

Internet Movie Database. (2016b). Blackfish (2013) awards. Retrieved from http://www.imdb.com/title/tt2545118/awards?ref_=tt_awd

Jamieson D (1986) Against zoos. *Environmental Ethics: Readings in Theory and Application*, 5, 97-103.

Kirby D (2012) *Death at SeaWorld: Shamu and the dark side of killer whales in captivity*. New York, NY: St Martin's Press.

Kosman, J. (2014). SeaWorld shares hit as negative publicity from films hurts revenue. New York Post. <https://nypost.com/2014/09/10/seaworld-sued-by-shareholders-over-blackfish-scandal/>

Lavigne DM, Scheffer VB, Kellert SR (1999) The evolution of North American attitudes toward marine mammals. *Conservation and Management of Marine Mammals*, pp.10-47.

Lilly JC (1961) *Man and dolphin*. Garden City, NY: Doubleday

Lilly JC (1975) *Lilly on dolphins: Humans of the sea*. Garden City, NY: Anchor Press.

Lilly JC (1978) *Communication between man and dolphin: the possibilities of talking with other species*. New York: Crown Publishers

Marino L (in press) Sanctuaries offer a new future for captive cetaceans. In B Würsig and G Notarbartolo di Sciara (eds) *Ethology and Biology of Marine Mammals: The Evolving Human Factor*". Springer

Marino L (2013) Dolphins are not healers. *AEON Magazine*. <http://www.aeonmagazine.com/nature-and-cosmos/lori-marino-dolphins-are-not-healers/>

Marino L, Bradshaw G, Malamud R (2009) The Captivity Industry: The Reality of Zoos and Aquariums. *Best Friends Animal Society Magazine*, March/April, 24-27.

Marino L, Lilienfeld S (2021) Third Time's the Charm or Three Strikes You're Out? An Updated Review of the Efficacy of Dolphin-Assisted Therapy for Autism and Developmental Disabilities. *Journal of Clinical Psychology*, 1-15.

Marino L, Lilienfeld S (2007) Dolphin assisted therapy: More flawed data, more flawed conclusions. *Anthrozoos*. 20, 239 – 249.

Marino L, Lilienfeld (1998) Dolphin-assisted therapy: Flawed data, flawed conclusions. *Anthrozoös*, 11(4),194-200.

Nollman J (1985) *Dolphin dreamtime: talking to the animals*. London: Anthony Blond

Parsons ECM (2012) Killer whale killers. *Tourism in Marine Environments*, 8(3), 153–160.

Parsons ECM, Rose NA (2018) The *Blackfish* effect: Corporate and policy change in the fact of shifting public opinion on captive cetaceans. *Tourism in Marine Environments*, 13(2-3), 73-83.

Robbins D (1997) *The call goes out: Messages from the earth's cetaceans: interspecies communication*. Livermore, CA: Inner Eye Books.

Rogers, S. (2013). The #Blackfish phenomenon: A whale of a tale takes over Twitter. Retrieved from <https://blog.twitter.com/2013/the-blackfish-phenomenon-a-whaleof-a-tale-takes-over-twitter>

Rose N, C Parsons (2019) *The Case Against marine mammal captivity*. Animal Welfare Institute, Wash DC.

Rose N, C Parsons, R Farinato (2009) *The Case against marine mammal captivity HSUS: Wash DC*.

SeaWorld Entertainment Inc. (2015). Reports fourth quarter and full year 2014 results. [https://doi.org/10.1016/s1351-4210\(15\)30076-](https://doi.org/10.1016/s1351-4210(15)30076-)

Sickler J, Fraser J, Gruber S, Boyle P, Webler T, Reiss D (2006) *Thinking about dolphins thinking*. Wildlife Conservation Society.

Stewart KL, Marino L (2009) Dolphin-human interaction programs: Policies, problems, and practical alternatives. Policy paper for *Animals and Society Institute*.

The Numbers. (2013). *Blackfish* (2013). Retrieved from [http:// www.the-numbers.com/movie/Blackfish#tab=summary](http://www.the-numbers.com/movie/Blackfish#tab=summary)

Veirs S, Veirs V, Wood JD (2016) Ship noise extends to frequencies used for echolocation by endangered killer whales. PeerJ DOI 10.7717/peerj.1657

Waller RL, Iluzada CL (2020) Blackfish and SeaWorld: A case study in the framing of a crisis. *International Journal of Business Communication*, 57(2), 227–243.

Wright A, Veríssimo D, Pilfold K, Parsons ECM et al (2015) Competitive outreach in the 21st century: Why we need conservation marketing. *Ocean & Coastal Management*, 115, 41–48.

Wyllie T (1992) *Dolphins, ETs & angels: adventures among spiritual intelligences*. Santa Fe, NM: Bear & Co. Publishers.

Wyllie T (2001) *Adventures among spiritual intelligences: angels, aliens, dolphins & shamans*. Novato, CA: Wisdom Editions

Timeline of Cultural Milestones

Date	Event	Notes
1961	Man and Dolphin (book) John Lilly	Lilly's first book about his experiments with captive dolphins; important book that brought the complex brain and intelligence of dolphins to the attention of scientists and public alike
1963	Flipper (film)	Dolphin who lives in a cove befriends a boy and becomes his protector; remade in 1996
1964-67	Flipper (TV series)	Enormously popular series based on the film
1973	Day of the Dolphin (sci fi film)	Scientist (modeled after JC Lilly) trains two dolphins to speak and they get involved in a military operation; depicted the prodigious intelligence and communicative abilities of dolphins
1977	Orca (thriller film)	Portrayed an orca as demonic killer; essentially a JAWS for orcas
1967	Communication Between Man and Dolphin	One of a series of books by John Lilly spurring perceptions of dolphins as New Age icons
1983	Startide Rising (sci fi novel) David Brin	Wildly popular book in a series featuring ultra-intelligent "uplifted" dolphins; won several awards
1986	Star Trek: The Voyage Home	Star Trek movie in which crew travels back in time to find that a space probe is communicating with humpback whales; conservation message
1993	Free Willy (film)	Story of captive orca and boy who frees him. Spurred the public campaign and multimillion dollar project to free the real whale Keiko who was eventually released in Iceland, his home waters; several sequels
1997	Frontline TV: A Whale of a Business	PBS program about the treatment of captive dolphins by SeaWorld
2000	Behind the Dolphin Smile (book) O'Barry	Ric O'Barry recounts his journey from dolphin capturer, trainer for Flipper, and then conversion to dolphin rescuer and best known anti-captivity activist in the world
2001	Mirror Self-Recognition in the Bottlenose Dolphin - Reiss and Marino	Worldwide coverage and public response including mentions on late night talk shows and newspaper cartoons; became part of the cultural mainstream
2008	Saved by Dolphins (documentary)	Film about real life people who were rescued from sharks by dolphins
2009	The Cove (documentary)	Expose' of dolphin drive hunts in Taiji Japan and connection to marine park industry
2011	A Fall From Freedom (documentary)	A comprehensive expose' of sordid practices by the dolphin captivity industry
2011	Dolphin Tale	Another boy and a dolphin tale starring Winter, a captive dolphin with a prosthetic tale who currently lives in Clearwater Marine Aquarium; several sequels
2012	Death at SeaWorld (book) David Kirby	Based on 2011 killing of trainer Dawn Brancheau by orca Tilikum/picked up as TV series documentary for 2022
2013	Blackfish (documentary film)	Expose' of SeaWorld treatment of captive orcas and business practices spurred by 2011 killing
2015	Beneath the Surface (book) John Hargrove	Based on 2011 killing of trainer Dawn Brancheau by orca Tilikum
2015	Of Orcas and Men (book) David Neiwert	Documentation of the intelligence and benign nature of orcas set against their endangerment by the captivity industry
2015	Voices in the Ocean (book) Susan Casey	Well-known author of several books about the sea explores the complex history of dolphins and humans and her own personal spiritual experiences with spinner dolphins
2019	Long Gone Wild (documentary film)	Picking up where Blackfish left off, about the plight of captive orcas
2021	Seaspiracy (documentary)	Film about global exploitation of the oceans with a highly negative expose' of the "dolphin safe" campaigns of ngo's regarding the tuna-dolphin issue