



Animal Welfare Institute

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Review of VOSD Roundtable Naomi A. Rose, Ph.D.

Introduction

The following is an attempt to respond further to some of the points made by SeaWorld's Dr. Todd Robeck and Kristi Burtis during the Voice of San Diego Roundtable discussion on 5 June 2014. This is not an attempt to raise all of the points that I could have raised during the discussion – it is a post hoc effort to address points that *were* raised but were not adequately discussed or addressed due to time constraints.

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009:17	Todd Robeck (TR)	<p>Scott Lewis (SL) asks about published data on the effectiveness of using captive wildlife as “ambassadors for their species.” TR refers to 18-20 peer-reviewed papers supporting this claim. None of these are specific to captive orcas, although some are specific to marine mammals. These are general surveys and polls (some published in journals, some not) regarding the effectiveness of zoo animals for inspiring people to pursue conservation efforts or as teaching tools. First, these studies tended to measure <i>intention</i> rather than action and second, most of the effects were temporary – for example, one study showed that school children initially recall information learned when exposed to live marine mammals in more detail than children who learned the same facts in a classroom. However, after several weeks, their ability to recall this information becomes similar.</p> <p>As I noted on stage, based on what is happening out in the ocean, places like SeaWorld are <i>not</i> being as effective as claimed at reaching people with conservation messaging. SeaWorld alone influences 24 million people a year and many more are influenced by other zoos and aquariums, and yet the ocean continues to degrade (and several populations of cetaceans – and a few species – are going extinct right now). I think conservation and animal protection groups must also bear responsibility for this, but our reach <i>combined</i> is a fraction of SeaWorld's. I believe that the cetacean “spectacular” as an effective teaching tool has been debunked – and may even be counter-productive in today's attention-span challenged society. We need a new paradigm for wildlife display and conservation outreach. A cornerstone of this paradigm should</p>

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		be that if an animal cannot be displayed in ecological context, it should not be displayed (this goes beyond welfare – if we cannot provide for a species’ general welfare, of course it should not be displayed, but the negative impact of people viewing wildlife out of context and in circus-like “spectaculars” should not be underestimated).
010:12	Kristi Burtis (KB)	KB says that seeing an animal in a zoo or aquarium allows people to see what that animal is “really all about.” That is precisely the problem with captive orcas – they are very different from wild orcas and are displayed out of context, and therefore people are not actually being exposed to what this species is “really all about.”
016:00	TR	TR takes my comment that the dorsal fin collapses in captivity due to gravity rather than illness, injury or depression and spins it into “She’s right – it’s not a health issue whatsoever.” In fact, while the <i>cause</i> of the collapse is not ill health, the <i>effects</i> may have health impacts. Remaining 80% of the time at the surface rather than 80% of the time underwater generally for cetaceans may lead to long-term health concerns, given that this is profoundly unnatural for them. There are no published data on what if any health impacts this behavioral difference may have on the animals or what health impacts the fin deformity may have on adult males – the lack of research on this phenomenon is SeaWorld’s failure, since this should have long since been investigated. Calling the collapse merely an “aesthetic” issue is profoundly inappropriate given this lack of evaluation.
017:01		He concedes the truth of the statement that “less than 1% of adult males in the wild have collapsed dorsal fins.” The public should be on the alert as to whether, with this concession, SeaWorld corrects the information offered by staff in response to this question or on the company website.
017:25		He says that the dorsal fin is made of cartilage, which is incorrect, although he denies he said this only moments later. This is a very strange mistake for a marine mammal veterinarian to make.
020:00	KB	KB indicates that it is “only recently” that people have started to question what goes on at SeaWorld. To a certain extent this is true – I have been doing this for over 20 years and the discussion has never been at this level before. But she is implying that it was a documentary (notice that she used air

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		quotes around that word when she first used it – an unacknowledged but clear dig at <i>Blackfish</i>) that raised the profile of this issue, when in fact it was the death of a trainer at SeaWorld Orlando. Her disingenuous disregard for that tragic incident as the catalyst for the increased scrutiny SeaWorld is facing struck me as very disrespectful of Dawn Brancheau and Alexis Martinez, the two trainers who were killed in Feb 2010 and Dec 2009 respectively.
020:33	KB	KB emphasizes first how her work inspires people to “get a job caring for [captive] animals,” and then only second points out that it might inspire people to work to protect wild animals. Her priorities are corporate- rather than conservation-based.
020:42	Lisa Halverstadt (LH)	LH asks a very good question – is this about all animals or just killer whales? In fact, while many other large, wide-ranging species do not belong in captivity, this particular discussion is about cetaceans and specifically orcas. It is helpful to SeaWorld to blur these lines of distinction – to imply that those who oppose keeping orcas (or cetaceans in general) in captivity are against keeping any wildlife captive. However, there <i>are</i> species such as orcas whose welfare is particularly compromised in captivity and who do need to be addressed separately (and more urgently).
021:12	KB	She states that the animals have the choice to participate in a show or not. This is actually true – and indeed the animals often do <i>not</i> participate in shows (and virtually every dangerous incident with these whales, of which there have been hundreds in the various facilities that display this species, were because the whales chose to do something other than what they were asked to do). (It would be an interesting study to determine if bottlenose dolphins go “off behavior” during shows as frequently as orcas do.) But they do not have choice or control over most other aspects of their lives – when they eat, what they eat, when they are in which part of the enclosure complex, when they are in said part of the complex with this whale or that whale, when they rest, when they are trained, when they are bred (!) – this last is a huge aspect of choice and control that has been removed from their lives with artificial insemination techniques. One of the main reasons the welfare of these animals does suffer in captivity is because they are intelligent and social and they <i>choose</i> to do what they do in the wild, where they have control and autonomy over their lives. In captivity, they do not.

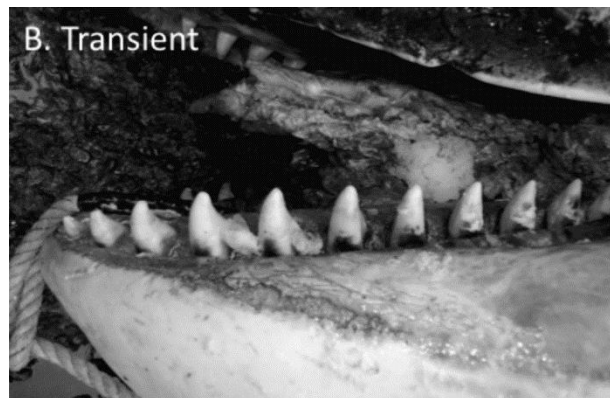
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021:57	TR	He implies that the shows and the training for the shows are essential to the animals' welfare in captivity, because they provide exercise and engagement. This is no doubt true, but there is no need for the shows to be the (uneducating) spectacles that they are.
022:23		He responds to LH's reasonable and clear question with condescension and deflection – she was not asking about the cause of either of these conditions (sores and shaved down teeth), she was using them as examples when asking “What are people who see photos of these things missing? What do those photos not tell them that they should know about the care that SeaWorld's killer whales are receiving?” In the end, he does not answer this question.
022:48		TR says orca teeth are “very soft.” This is a strange claim. The teeth of delphinids are not soft – these are predators and they grasp fish and, in the case of marine mammal-eating orcas, rip and tear at large prey. Their teeth are not covered with enamel as human teeth are, but this does not make them “soft.”
022:58		<p>He claims that “many” ecotypes have shaved (ground) down teeth. To date, we know of only one – the offshore ecotype. These whales eat sharks and gradually (not in a few months or suddenly due to breakage) their teeth are worn down to the gums, with the pulp exposed. Other ecotypes, including the North Atlantic Type 1s TR mentioned, have worn teeth, but (as I noted on stage) not to the gums and not with the pulp exposed.</p> <p>Here is a fish-eating resident orca's teeth – no wear – from the Pacific Northwest, from the paper TR mentioned by Dr. John Ford and colleagues (these animals were dead and photographed after beaching, hence the condition of their skin):</p>



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Here is a mammal-eating transient's teeth (slightly worn in comparison):



Here is the same photo TR showed on stage, of a Type 1 orca from the North Atlantic (from a paper by Dr. Andrew Foote and colleagues):



Note that the teeth, while heavily worn, do not have the pulp exposed. Here is another example of a Type 1 from the same paper (note that TR chose the most dramatic, bloody photo):



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Again, the pulp is not exposed in these teeth. According to Foote et al., the teeth of Type 1 whales are “progressively worn,” not worn quickly or broken. The cause is suction-feeding – the fish, which of course have scales, scrape by the whale’s teeth as they are drawn into the whale’s mouth when the tongue is pulled back, which gradually wears the teeth.

Here are photos of captive whales’ teeth (attribution in order: Google; Heather Murphy; Estel Moore Forn):



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You can see that several of the teeth in these photos are hollowed out (drilled) after breakage (first and third photo) and wear (second photo). All three of these animals also have sores on their chins. These teeth and chins are not the result of chewing on ropes or toys.

023:22

TR

TR says that the ground down teeth described in Ford et al. are “very common.” They are only common in the offshore ecotype. This is the photo TR showed on stage, from Ford et al.:



Note that the teeth are worn completely down to the gums and most have the pulp exposed, unlike the teeth of the Type 1 whale whose photo he subsequently showed (but very similar to the teeth of the second captive whale above). This wear occurs over a lifetime of eating sharks.

One argument from SeaWorld against ever releasing any of its whales is the dental care they need once their teeth are drilled. Yet TR then shows this photo as proof that ground down teeth with exposed pulp are “very common” in the wild. If it is common, then why would worn teeth in captives be a barrier to release? (I offer this as an example of SeaWorld’s lack of internal logic – my personal opinion is that broken and worn teeth must be evaluated on a case-by-case basis when considering rehabilitation and release of captive whales. While worn teeth obviously do occur in wild whales, they may cause significant health problems, *just as they do in captive whales.*)

Broken teeth are not the same as gradually worn teeth and undoubtedly have health implications for captive whales (poor dental health is a significant health problem in all mammals, including humans). I noted on stage that the fully worn-down teeth in offshores, with the pulp exposed, may have health implications for this ecotype and may shorten the animals’ lives

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– we do not know enough about offshores (or Type 1s) yet to say. The main point I wish to make here, however, is that SeaWorld presents this information on worn teeth in wild whales as if it somehow justifies the broken and worn teeth of its captive animals and further to imply that these damaged teeth have no health consequences. Given the reasons for the broken teeth in captivity – chewing on concrete walls and metal gates, which TR took great pains to deny but which former trainers observed throughout their careers – this comparison is entirely invalid and once again ethically troubling. Rather than accept that whales in captivity exhibit stereotypies and break and wear their teeth as a consequence, SeaWorld tries to justify this phenomenon as a “natural” one.

I would also note that there are captive whales that do not have broken or worn teeth (Lolita at the Miami Seaquarium is a good example). So there are captive whales who eat mackerel and herring and play with toys without breaking or wearing down their teeth, suggesting strongly that these activities are not the cause of breakage or wear in captivity. In addition, the principle difference between captive whales with and captive whales without broken or worn teeth appears to be whether or not they show stereotyped chewing on concrete walls and metal gates. This is a simple observation; again, it is incumbent upon SeaWorld to examine this phenomenon and publish about it in the scientific literature. There are many papers in the zoo literature that discuss stereotypies and ways to mitigate them in captive wildlife, in order to enhance welfare. Rather than add to this important welfare literature, SeaWorld denies that a problem even exists.

023:45

TR

TR states that Type 1s feed only on mackerel and herring. This is incorrect; they also feed on seals, which could be a factor in the wear on their teeth. However, it is important to note that orcas in captivity rarely come in contact with the fish they eat – the fish go directly down their throats when they are fed handfuls or single fish by their trainers. Captive orcas occasionally pick up dead fish in the water, but whales who grasp their fish prey (such as Pacific residents) do not have worn teeth. Type 1s use suction-feeding (see above) and this causes the fish to scrape by the teeth as they are drawn into the mouth. Therefore, it is poor science to imply that the tooth breakage and wear seen in captives has the same origin (let alone the same consequences) as the progressive tooth wear seen in suction-feeding Type 1s or

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		shark-eating offshores. As with dorsal fin collapse, SeaWorld is systematically misleading the public about a captive phenomenon to suggest it is “natural.”
024:30	TR	He suggests that playing with ropes might wear down the whales’ teeth. There is no rational response to this. Again, SeaWorld needs to simply acknowledge that the whales chew on the concrete walls and metal gates, which can break and grind down their teeth. The efforts to which the company goes to avoid this admission are troubling, to say the least.
029:23		He is once again condescending to the moderators – he responds to a simple and clear question (“Are you contending that there are no health effects from living in captivity?”) with sarcasm – “What, do you mean are they going to live forever?” SL said nothing to deserve this type of response.
029:37		TR says that living in a zoo or aquarium is merely different, not worse, than living in the wild. This is good messaging on SeaWorld’s part, but of course it must be supported with data. And up to this point in the discussion, TR has not offered anything definitive to support this contention and has inadvertently provided evidence that refutes it.
030:00		To clarify, the discussion starting here <i>was</i> about longevity/life span, “disguised” as annual survivorship rate (ASR). ASR is the correct statistic to use, as longevity in captivity is not a valid statistical parameter (due to small sample sizes and skewed age structures – primarily, of course, the absence of geriatric whales). Lifespan values can be found online for captive whales, but we can only compare longevity descriptively (as I did in my white paper, <i>Killer Controversy</i>). To compare values statistically, we need to use ASRs. The first graph TR showed was of data from the US Marine Mammal Inventory Report, an analysis done by Mina Innes. These values were presented at a conference in December in New Zealand (which I attended and TR did not). My comment that the dataset Innes used was incomplete (she excluded some animals for various reasons, some of which were questionable) was what caused him to pull out the second graph, of only SeaWorld data (a smaller sample size than the first graph). As I noted, these values were similar to those my colleagues and I have calculated – we are preparing an ASR paper for submission to a journal – although we did not find a continued increase in ASRs over the last two decades. Our results showed that ASRs have leveled out since 1985. I believe

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		<p>this may be because SeaWorld excluded calves who died before one year of age, but we will attempt to determine the cause of the discrepancies with our analysis.</p> <p>TR's claim that SeaWorld's ASRs are statistically the same as the Alaska ASRs cannot be correct, as SeaWorld's sample size is too small to do statistically valid comparisons (he offered to show me the test his colleagues used, but as I noted it would not pass peer-review).</p> <p>I won't say more about this discussion, because I feel the discussion on stage was otherwise comprehensive.</p>
040:59	TR	<p>TR preemptively begins defending SeaWorld's research output at this point. His tactic is to suggest that good science takes a long time. However, good science takes as much time as it takes. This can be one year, three years, 10 years, or 20 years. SeaWorld has had 50 years. The simple truth is that the company should have produced far more published research on orcas in that time frame. I note later that a single orca researcher might produce three times as many papers in 40 years as SeaWorld has as an "orca research institution" in 50 years. I have produced 30 papers in 25 years and I am no longer an active researcher. Fifty papers in 50 years for an entity claiming to be an active research institution conducting essential work relevant to the conservation of orcas is, as I noted on stage, pathetic.</p>
041:54	LH	<p>She again asks a very simple question – "What big answers have you come up with in that time?" TR's response is, once again, sarcastic and a deflection – "What's big enough for ya?" He never answers the question.</p>
042:06	TR	<p>He implies that echolocation was discovered by SeaWorld researchers. This is incorrect. It was discovered by the US Navy before SeaWorld was founded.</p>
042:34		<p>While it is true that most of what we know about orca physiology has been learned in captivity, much of that was learned years ago. These are "one-off" discoveries or studies that are not repeated over and over and have not necessarily led to continued discoveries using captive animals as research subjects. Note that he does not offer specifics.</p>
043:40	TR	<p>TR's concession that studies looking at behavior in captivity are not directly applicable to the wild is actually more important</p>

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		that it may have appeared. There are several researchers whose careers have been built on studying captive cetaceans who claim that the behavior of captive cetaceans reflects that of wild counterparts and can be applied to wild populations. There are others (a larger number, in my experience) who agree with TR (I am one of them). This is again a point on which we should follow-up with SeaWorld, to ensure its materials and its staff responses are consistent with TR's statements.
046:40	TR	The claim that physiology research requires years of data points before it can be published is a gross generalization and still does not excuse or even explain the paucity of orca research produced by SeaWorld in the past 50 years.
049:35	LH	She asks a question about the orca shows at SeaWorld and the close contact with trainers. Please note that neither TR nor KB directly answer her question.
050:05	KB	KB generically refers to the research at SeaWorld helping animals in the wild, but offers no specifics. TR didn't either – he was unable to refer to much more than the discovery of echolocation (which was not SeaWorld's to begin with) and then referred to his own work on reproductive biology (artificial insemination), which he had the sense to refrain from saying was applicable to the wild.
050:23		She notes the 23,000 animals SeaWorld has rescued since its founding. To clarify, approximately 20,000 of these were penguins from a single oil spill event, with many of the rest sea turtles. These are certainly important rescues, but SeaWorld leaves people to assume that most of these are rescues of marine mammals and even of cetaceans. In fact only a very small proportion of these rescues are of marine mammals and an even smaller proportion (probably no more than 200 in 50 years) have been of cetaceans specifically. (I have recently heard a dolphinarium representative say SeaWorld rescues "hundreds" of marine mammals a year. It probably rescues 15-20 in a typical year, with this number rising to 100 or more – primarily pinnipeds – in years with epidemics.)
050:53		I was unable to follow up on KB's reference to JJ, the gray whale calf who was rescued and rehabilitated by SeaWorld. JJ was released at the age of about one year, with a tag, which she dislodged within three days. She was never seen again and her fate is <i>unknown</i> . SeaWorld continues to refer to her rescue as a

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		great success, yet considers Keiko, who survived for five years in his natural habitat, and was successfully tracked for over 1000km from Iceland to Norway, as an abject failure (and in fact claims that his rehabilitation and return to the wild was what killed him, when he survived to the age of 26, far older than most of SeaWorld's deceased male killer whales). This is remarkable hypocrisy on the company's part.
054:06	TR	To clarify TR's comment that I agree that the bond captive orcas have with their trainers is important, I have certainly said that. I have pointed out that these animals are profoundly social and for captive orcas, the trainers become substitute social partners. TR, however, omitted the context of my comments: I also said that the bond with trainers is a <i>poor</i> substitute for natural social bonds with family, but it is the best captivity can offer. I did concur that it decreases the animals' welfare to weaken or remove those bonds; however, I also said that waterwork, which strengthens those bonds, is dangerous for the trainers. I have repeatedly said that if the only way trainers can be properly protected in the workplace is to decrease the welfare of the whales (by ending waterwork), then the whales shouldn't be in captivity in the first place.
054:26	LH	She says that the real problem is the show. I disagree with this profoundly. The real problem is the whales' poor welfare in captivity and the lengths to which SeaWorld goes to deny this. KB's subsequent response (which was, to me, largely incoherent) never actually answers LH's question about why direct contact is so important to the show, so much so that SeaWorld's attorney is arguing in court specifically to maintain waterwork. As for KB's awkward moment suggesting that the public finds her job more glamorous than a journalist's, I found that indicative of the misguided notion many cetacean trainers have about the "special" nature – the grand importance – of their job. It is a specific type of arrogance that shines through clearly in KB's tone-deaf comment.
058:05	TR & KB	Both of them respond to SL's question as to whether ending waterwork has had a negative impact on orca health with a resounding "no," but this is a delicate matter for them. They cannot argue that waterwork is essential to good veterinary care, as this would be an admission that they were giving substandard care to the several whales who were already drywork-only animals at the time of Dawn Brancheau's death

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		(including and especially Tilikum, but also for example Kasatka and Orkid). Yet they very much want to suggest that waterwork allows them to “read” the animals better and note nascent health issues before they become critical (this was an argument SeaWorld made in court during the OSHA hearing). So they are caught between a rock and a hard place – denying that the whales even <i>they</i> consider dangerous are receiving substandard veterinary care, while pushing to return to waterwork not because it’s part of their “brand” (that crass and corporate concept does not mesh well with their message of conservation and caring) but because it allows them to care for the whales better.
058:22	TR	He says waterwork is what the whales <i>want</i> . This is another example of hypocrisy – SeaWorld accuses animal activists of thinking they know what the whales want, but in fact it is SeaWorld staff who think they know what the whales want.
058:40	SL & TR	SL asks TR to explain who Keiko is <i>for the audience</i> – the moderators several times asked the speakers to explain their inside-baseball references. TR, for whatever reason, responds quite testily to this particular request. I think it was because he didn’t want to get too far into the weeds with Keiko’s story (which he would know only third-hand from people like Mark Simmons), knowing that I had first-hand experience with Keiko. But that’s just a guess – he may also have very strong negative beliefs about the Keiko Project (several industry representatives of course believe that The Humane Society of the United States and I killed Keiko with our actions – TR may be one of them).
061:05	KB	She inserts her own family into the discussion. I found this both telling and inappropriate. Again, SeaWorld has consistently accused anti-captivity activists of playing the “emotion” card and appealing to the public’s emotions, rather than using science-based arguments. Yet in this public discussion, it was the SeaWorld representatives who, multiple times, made the discussion personal and emotional, while both Susan Davis (SD) and I did our best to stick to the facts, whether the topic was orca welfare, SeaWorld science, or public views.
063:10	TR	He describes his personal experience to explain how the connection paradigm works. There is no doubt that individuals (many of whom are friends and colleagues of mine) have been inspired to pursue careers in marine biology because of a visit (or visits) to SeaWorld, zoos, and aquariums. However, there

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		<p>are also many who became inspired by other experiences (myself included) – TR’s story was anecdote, not data. It would be an interesting study, which SeaWorld would be the obvious entity to undertake, to determine how many active marine biologists, particularly marine mammal biologists, were inspired to pursue their careers because of exposure to live captive animals versus live wild ones or television or museums or whatever. Regardless, SeaWorld’s reliance on anecdote to support its arguments is ironic (and again, hypocritical) given its accusations against the animal protection community of not using science-based arguments.</p> <p>The United Kingdom closed its last dolphinarium 20 years ago. Nevertheless, in that timeframe it has produced some of the most respected cetacean biologists in the world. Clearly access to captive cetaceans is not essential for inspiring young people to become marine biologists.</p>
065:50	TR	<p>He says we all have strong feelings and we also have differing <i>opinions</i>. I believe this was a subtle effort to paint anyone who opposes orca captivity as simply having a feeling or an opinion, which is not based on fact or science.</p>
066:06		<p>He claims SeaWorld is not trying to direct audience feelings one way or the other, which is of course untrue. SeaWorld works very hard to translate audience feeling into support of the corporate brand – that’s what SD’s book was about.</p>
070:33		<p>TR claims the fireworks do not affect the cetaceans because of the air/water interface. It is probably true that not much noise in air enters the water (think about how sounds are muffled to you when you are at the bottom of a swimming pool), but the whole point is that captive cetaceans spend an unnatural amount of time at the surface. They are in fact underwater only about 20% of the time in captivity (in the wild, they are underwater about 80% of the time). In air, their hearing is very good and they can hear the fireworks perfectly well when they are at the surface – they can hear the loud music and the clapping and cheering as well (SeaWorld in fact encourages the audience to clap, telling them that the animals respond to the audience “energy” – KB even said this earlier in the discussion – so this is once again an example of SeaWorld’s lack of internal logic [either the animals can hear the audience and respond to that “energy” or the whales cannot hear most of the noises in the park and thus noise is not a welfare concern]). TR was being</p>

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		disingenuous and deflective by focusing on the air/water interface and his response was inconsistent with SeaWorld's show scripts.
073:04	NR	I say "I did not come prepared – where is my binder?" Someone thought I was seriously expressing dismay at my lack of preparation, rather than making a joke about TR's bringing crib notes to the event. I considered this something the moderators should have controlled. Bringing the binders, with visual aids and quotes, could have given the SeaWorld team an unfair advantage (although I would say in the end it failed in its objective). The quote TR read from a white paper on which I am a co-author – <i>The Case Against Marine Mammals in Captivity</i> – was primarily about the US Navy sea pen complex in San Diego Harbor, which is why I responded as I did. I imagine the Navy is not very pleased with SeaWorld's messaging on sea pens.
073:29	TR	He says that independence in orcas is when a calf is no longer nursing and no longer requires its mother for its health and well-being. This is actually true, but the age at which SeaWorld considers the calves to no longer require their mothers is the crux of the problem. The determination that independence occurs at approximately two years of age – for a species that in the wild is dependent on the mother <i>even in ecotypes that do disperse</i> until the age of approximately ten years – is simply wrong, biologically, ecologically, and psychologically.
076:16		He claims that SeaWorld is a different habitat, which is of course true. However, captive orcas have not "adapted" to tanks in the evolutionary sense – they are not domesticated or bred to suit captivity, they are wild animals that have been tamed, are bred randomly (not selectively), and are still in every way adapted to natural habitat. This is precisely why being in captivity is a problem for them. Removing an orca calf <i>of any ecotype</i> that is less than 10 years of age from its mother will lead to problems with its behavioral development. Separating an orca calf who is descended from North Atlantic Type 1 orcas from its mother at any age is probably as traumatic as it would be for North Pacific residents because the former appear to have the same social structure as the latter. TR is misusing scientific data to justify a common husbandry practice that is in fact counter-indicated by science.

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079:41	NR	I should have had this datum memorized, since I brought it up – Skyla was two years and four days old when she was sent to Loro Parque. TR should have known this too – these are <i>SeaWorld's</i> whales! He is in charge of their breeding program. He should have known how old Skyla was when she was moved.
080:12	TR	TR says, in response to LH's statement that six of SeaWorld San Diego's orcas were separated from their mothers and most were between the ages of two and four years: "I don't believe what you said, but I can't dispute it." LH is an investigative journalist; she did her research and that was what she found. It is correct. It is shocking that TR would suggest that she either lied or did such poor research that she would be completely wrong. This is not information that TR should find surprising – it is a fact that most of the calves that are moved among SeaWorld parks are younger than five years of age – most are indeed between the ages of two and four years. TR, the head of the breeding program, should <i>know</i> this and not dance around it. Again, if SeaWorld would simply acknowledge the facts and move forward from there, rather than lie about them or deflect from them, the public discussion about their practices would no doubt be less acrimonious.
080:33		TR draws a conclusion about why orcas remain with their mothers in the North Pacific residents – because of foraging behavior. Group foraging occurs in numerous species of mammals, terrestrial and marine, and they do so without exhibiting this social structure. Group foraging does <i>not</i> require remaining in extended family groups, as resident orcas do. We do not in fact know why this social structure evolved – I was very interested in this question when conducting my dissertation research and frankly there was no way to address this question by collecting field data. It's a question that can only be answered with informed speculation based on current knowledge and an understanding of behavioral evolution. Therefore I looked at the consequences of this unique social structure instead. TR is talking about something he does <i>not</i> understand.
080:38		He actually suggests that in winter, when residents are rarely observed, they might disperse from their matrilineal groups. This is ludicrous (and I very much wish I had said so on stage). In fact, residents have been sighted on rare occasions outside the summer season and they are always in their matrilineal groups.

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		<p>This is not a flexible social structure that changes through the year – it is a permanent and inflexible family structure that exists for complex reasons we do not yet fully understand.</p> <p>My dissertation research examined some of the advantages of this social structure, which include sons alloparenting – babysitting – siblings, which benefits the mother, and sons gaining access to unrelated females for mating through their mothers’ broader associations within the northern resident population, which benefits the sons. These mutual benefits allow this unusual social structure to remain stable.</p> <p>Their foraging techniques are <i>one</i> reason for their group living, but foraging does not explain the fact that neither sons nor daughters disperse from their natal group. Unfortunately I was never given the opportunity to explain any of this when TR suggested the idea that the matrilineal group structure dissolves in winter, an uninformed speculation that is not supported by anything found in the scientific literature.</p>
081:55	TR	<p>TR admits he was not involved in the decision-making process to send animals to Loro Parque. I actually believe him and I suspect there were several park employees who objected to sending these four very young animals to a facility with inexperienced trainers and no adult orcas to stabilize the social group. I also want to correct something I said – Kohana was not six years of age when she was sent to Loro Parque; rather, she was not quite four years of age (three years and 9 months). She was not quite seven – probably about six years and 10 or 11 months – when she was bred successfully for the first time (Adan was born when she was 8 years and 5 months of age).</p>
083:29	NR	<p>I need to correct another statement – I should have said that the Monterey Bay Aquarium has no captive cetaceans, rather than no marine mammals. They do have rescued sea otters.</p>
085:12	TR	<p>TR states that breeding is a “natural” behavior that is important to preserve for welfare reasons. Yet SeaWorld alters the whales’ natural behavior in so many ways – it separates calves from their mothers before they would naturally in the wild; the space it provides does not allow the whales to move vertically or horizontally in a natural way; it does not even preserve natural mating behavior (as most of the pregnancies are now the result of artificial insemination). The preservation of this <i>one</i> natural behavior – giving birth – has the additional benefit of serving a</p>

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		corporate purpose (maintaining the captive “collection” of animals). So preserving it seems to have more to do with the company’s welfare than the animals’ welfare.
085:49	TR	This claim – that the information that comes out of SeaWorld’s breeding program helps animals in the wild – has only one example to support it. In the 1980s, SeaWorld determined the gestation period of orcas (17-18 months), which helped with determining natural rates of reproduction and maximum net productivity of populations. But that is the only example of information from SeaWorld’s breeding program of which I am aware that had any value to wild populations and it was determined decades ago. The continued maintenance of captive whales and a breeding program has no significant value for current conservation work being done in the wild.
086:18		He implies that measuring hormone levels in orca feces (work being done on the Puget Sound whales) can benefit from having captive whales accessible to “ground-truth” the values with blood tests. This is actually true, but as audience members noted, this work is not being done. TR hints that it <i>is</i> being done in his response to the audience heckling, but I know the researcher who has pioneered the work with the southern residents and she is unaware of any similar work being done with captive orcas.
086:52		Note that TR says that having this captive population “may prove to be essential” to saving wild populations; he does not say that it <i>has</i> proved essential. He was fairly careful with his wording on stage when making claims about the value of SeaWorld’s research – he basically used conditional verb tenses throughout – which suggests to me that he was coached to avoid making false claims.
089:58	KB	She implies that the reason three trainers and one member of the public have been killed by captive orcas is an inherent risk of working with large animals. To a certain extent, this is true – the most obvious parallel is elephants. However, the Association of Zoos and Aquariums (AZA) now requires protected contact only with elephants, a move that took a fair number of handler injuries and deaths before being adopted. Again, SeaWorld’s reluctance to adopt these measures <i>before</i> two trainers were killed under its original protocols is a tragedy and its continued reluctance to change more than it has by ending waterwork is dismaying. However, KB’s (and SeaWorld’s) effort to equate

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large animal = generic risk (simply as a function of size) is not appropriate, because unlike elephants and other large dangerous captive species (such as big cats or even domesticated horses), there are no records of orcas killing or seriously injuring people in the wild. The proximity between trainers and orcas in captivity leads to injuries and deaths that *do not* happen in nature because in nature, humans and orcas do not generally come into contact and when they do, orcas are intelligent enough to keep some distance between themselves and the unfamiliar (in this case, human beings).

090:14

KB

The reference to millions of safe incidents is, as I have said several times elsewhere, the wrong metric to measure. Here is what I wrote for my FB page on this improper reasoning:

“I was reading the March 31 issue of TIME Magazine and saw the article by Rana Foroohar on the GM recall of 3.1 million vehicles, after 31 crashes and 12 fatalities in the past decade that can be tied to a faulty ignition switch in these cars.

“...doing the quick math, the annual rate of fatalities based on this faulty engineering is 0.00000039. How does this compare to the annual rate of fatalities in killer whale training? The fatality rate should be calculated not by taking the number of *interactions* (as SeaWorld does), but by taking the number of whales held in captivity in the past 50 years (note the statistic cited in the GM recall article was not the number of miles all those cars were driven but the number of cars) – approximately 215 (and this is being conservative, because this includes stillbirths, which are obviously animals that could never have harmed anyone). So it’s four deaths in 50 years out of 215 whales. That’s an annual fatality rate of 0.00037. Almost the same value, except [it is] three orders of magnitude higher.

“Three orders of magnitude higher than the annual fatality rate that resulted in a massive vehicle recall. There’s no law that requires GM to conduct this recall – the company did it because the cost of not doing it – in customer good will, lawsuits, Congressional hearings, and so on – would be far higher than the cost of doing it. How bad a fatality rate has to be – for cars, factory machines, baby seats or wildlife in captivity – before there’s a reaction is for society to decide. It’s a values-driven judgment. Obviously for certain sports we consider certain injury and fatality rates to be acceptable (but even there, we finally reach our limit and start debating whether allowing

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		<p>junior league football to cause permanent brain damage in some proportion of young athletes is acceptable or not). But for cars, our tolerance is much lower. This is no doubt because the majority of Americans have cars and so self-interest is involved.</p> <p>“Nevertheless, when it comes to captive orcas the majority of our society is reaching the point where the current fatality rate is too much, especially when we think about how horrific the death must be and when the animal in question is one we are encouraged to see as bonding with his/her trainers in a loving way.”</p>
090:41	TR	<p>As with the car example, comparing what happens with trainers and orcas with what happens with people and horses is an invalid comparison. There are millions of horses in the U.S. – there have been many millions more in the past 50 years, whereas at SeaWorld in that time frame, there have been about 60 orcas. Obviously the opportunities for incidents with horses will be far more numerous than with orcas. Even if the <i>rate</i> was higher with horses, most of the equine incidents are with owners and their own animals, not of employees with their employers’ animals. As far as the law is concerned, that’s a profound difference.</p>
095:54		<p>I was generally amused by TR’s humor – I suspect that if we were not on opposite sides of this issue, we might have gotten along as colleagues. He seems like a genial enough person. However, I felt that some of his humor arose from nerves and tension and the comment he made at this point (as well as his aggressive and sarcastic responses to some of the moderators’ questions), about not being an auto mechanic, was an example of such. To respond to the anecdote I had just recounted about a recall of GM vehicles with that response was, to be kind, insensitive. That vehicle recall represented 12 deaths. The entire discussion we were having at that point was about four deaths. These “deaths” were <i>people</i>, not statistics. SeaWorld and its staff – and its public supporters – really do seem to view the people who have been killed by captive orcas as statistics. Dawn Brancheau may be the only one they truly feel sad or bad about, because she was one of their own. Keltie Byrne, Daniel Dukes, and Alexis Martinez are just numbers to them.</p>
096:33		<p>He says “And obviously the one death...” Again, this is a shockingly insensitive way to refer to Dawn Brancheau and he of course ignores Alexis Martinez altogether. Alexis was not a</p>

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		SeaWorld employee, but the incidents at Loro Parque are included in SeaWorld's incident log and are evaluated by the company in the same way as SeaWorld incidents. Alexis' death is included in the SeaWorld incident log. So TR did in fact simply ignore him.
097:02	TR	And at some point in SeaWorld's corporate life it has to assume responsibility for the risks to which it exposes its employees. This is precisely the argument made by the Occupational Safety and Health Administration in court and so far the courts have agreed.
099:10	SL	It's unfortunate that SL said, at this point, "Let's be real – if they didn't participate in the show, they wouldn't eat." Captive cetaceans may be "encouraged" to perform by reducing their food intake before a show (giving them an "edge" so they will perform more readily), but they are ultimately fed their full daily ration whether they participate in the show or not. Food is used as positive reinforcement, but withholding it is no longer used as negative reinforcement, as it once was historically. Animal advocates should avoid using this argument, as it is simply too easy for SeaWorld to shoot down.
099:56	KB	While it is generally true that food is one of several positive reinforcers, it is overstating the case to claim that trainers do not need food at all to get the whales to perform. The proof of this is simple – they rarely or never conduct shows using only non-food reinforcement. Especially during the times of year when there are only two shows a day in Shamu Stadium, if food was not such a strong and reliable positive reinforcer, one would imagine that the shows would often be conducted without food. This would confirm this assertion (a positive PR move) and allow the daily base to be provided to the animals in a more random (and thus more natural) way (rather than twice a day at the same time every day).
100:03		She says that food has low reinforcing properties. There is no rational response to this. Food has high reinforcing properties for every animal species living – humans, whales, birds, insects. It is the best reinforcer when training dogs or cats or any domesticated animal that is trained – or children, for that matter! Other positive reinforcers exist, certainly, but to say that food has low reinforcing properties is carrying the PR messaging too far.

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100:32	SL	SL's comment here, about how, as a lay person, it's hard to interpret the situation as TR and KB describe, given that one sees whales getting fed during shows in response to correct behaviors, is precisely the point. He was wrong about the whales not getting fed at all if they don't perform, but he is correct that performing correctly does lead to getting fed at that moment. The Least Reinforcing Scenario is not just 3 seconds of non-response. It is also not being fed at that moment. The whales do indeed figure out quickly that if they want food <i>now</i> , they must perform correctly <i>now</i> . When they deliberately go "off behavior," this does show that food is not the most important reinforcer to them at times; at times, they seek gratification in some other way, which may prove dangerous for trainers.
104:03	TR	He says that just because / disagree ethically doesn't mean society needs to change. He seems unaware that society has already changed. Tactically SeaWorld is still trying to characterize this debate as one between society at large and a few (extreme) animal rights activists. Yet he is on a stage with me because the debate has shifted considerably. Fifteen years ago, when it really <i>was</i> a debate between the mainstream and a minority view, there would have been no VOSD discussion in San Diego. SeaWorld would never have agreed to such a discussion and with good reason – its views were the majority's and it had no need to defend itself. Now the anti-captivity view <i>is</i> the mainstream and the company <i>does</i> need to defend itself. Yet it continues to deny this reality.
109:12	KB	I found KB's story of the foster child profoundly inappropriate on two levels. One, it was once again hypocritical to make her wrap-up comments emotional and personal, when making emotional appeals is something SeaWorld accuses animal activists of all the time. Two, KB has no idea if this child really has become well-adjusted (she is not qualified to make this diagnosis). Even if she was correct, to attribute this transformation to the child's visits to SeaWorld – rather than to any therapy or other influences in her life – is corporate messaging at its most exploitative.
110:52	TR	I think one of the major factors in TR's tearful wrap-up was the release of the tension he had clearly been feeling the entire time he was on stage. I have no other comments on the final few minutes of the event.

Conclusion

There were moments during the discussion when I probably could have and perhaps should have said more. The main reason I did not was tactical. For example, I kept my closing comments short purposefully – I did not want to grand-stand. In my opinion, the SeaWorld team, particularly TR, did itself a disservice by bringing binders and charts on stage and by interrupting the moderators, being sarcastic to them, hogging the mike – these are tactics used by insecure debaters. I can only hope that the “undecided” saw a clear contrast between us and were persuaded by facts rather than emotion.