Sunk Tragedy

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My mother explained to me the importance of turning off the water while brushing my teeth at around the same time I got my ears pierced—the sixth grade—and ever since I have been hooked on both the habit and conservation idea. Although the legal aspects of oceanic contents and boundaries now interest me more than the actual water, water conservation initially baited my curiosity. Treaties and technical arbitration conventions on the topic wouldn't have appealed to me, but the negotiation side may have. I assumed in my early childhood that everyone partook in the ritual of turning off the faucet while brushing their teeth; the simple hand movement demanded such minimal that I couldn't imagine otherwise. During a late night that should have been spent watching Disney films and eating sugary junk food, though, my assumption was proven unwarranted.

My friend Katie considered turning off the tap inconvenient. *I* saw it as sacrilegious. Upon seeing her refuse to save a few ounces of water, I considered my options to fix it. However, I didn't just want her to turn off the faucet when I was with her; I wanted it to become a lifelong routine—just as second nature to her as brushing her teeth before bed every night. I considered my options. I could tattle on, negotiate with, or coerce her. I did not want to resort to the latter, as my small stature would probably not deliver a favorable outcome. Snitching by going to my mother was appealing; after all, my mother was the one who had first taught me to turn off the water, and she would likely share my views. However, Katie was our houseguest for the night. I knew from experience that this afforded her great leverage in the situation if my mother were to become involved; house rules clearly stated that if disputes were not resolved independently, both parties were bound by whichever decision my mother made. Since these decisions were often punitive for yours truly, a natural tendency to negotiate had been instilled in me since a

young age; this led me to undertake arbitration. After forfeiting my say in which games we would play that evening and delivering a detailed statement on water conversation, I successfully had Katie agree to turn off the tap while brushing her teeth. While she seemed to have forgotten of its inconvenience entirely, I considered it a victory for both myself and the world—and thus my mission to engender such viewpoints was born.

Walking past the CVS in Tenleytown, I delighted in the perfect temperature created by the end of summer: a warm sun accompanied by a cool breeze. My redheaded college roommate Jessica and I engaged in light small talk until a boxy, mustard yellow boat of a vehicle zoomed by us and provoked a comment that would soon turn our conversation sour.

"I can't wait until *I* get to have a Hummer when I'm older," Jessica wistfully sighed without taking her eyes off the car—not hard to keep an eye on since the thing nearly required multiple lanes of traffic.

"But Jess! Those things get eight miles to the gallon!" I both dutifully and patronizingly replied. *In case you've been living under a rock for the past few years*, I refrained from saying, *they're the energy equivalent to the devil*. Surely with this new knowledge she would see the error in her desires and adjust her future plans accordingly.

"So?" She sincerely asked, taking her eyes off the Hummer to look at me for a moment.

"So...if we *all* drove Hummers," I started in, sounding obnoxiously like my mother, "then we would use up all the gas and kill the environment. Our children and grandchildren would have no fuel!" I non-eloquently and non-scientifically explained.

"Well, I'm not going to be here," she indifferently responded. "They'll figure it out." Not sure how to counter this one, I kept my lips sealed.

According to recent studies at the Center for Research on Environmental Decisions (CRED), valuing future outcomes less than present ones—a phenomenon known as temporal discounting—seems to be a very natural mental tendency.¹ Our minds ordinarily assess current risks as more risky than future risks—regardless of how truly risky one thing or another may be. We may hear on the news that the entire neighborhood of Manhattan will be underwater by 2050 and millions of people thus displaced, but then an urgent phone call about where to go for dinner distracts us before we get a chance to act on it. Behavioral decision scientist Elke Weber's research on this "finite pool of worry" indicates that concentrating on a long-term crisis for enough time to do something about it presents a problem.²

Engineering a way to save water each time Katie turned on the faucet would be convenient, but likely ineffective; if the faucet dispensed less water, she'd merely keep it on longer and use just as much. Countering her attitude is necessary, and indeed discussions aimed at doing just that on a higher scale have been going on for decades. Negotiation practices have played a central role in maritime matters for a long time. Indeed, historic international arbitrations have called for much larger concessions than playtime preferences; the United Kingdom's attempt to step on Norway's toes—or, as it were, to fish in their sea—in an early case taken up with the International Court of Justice failed. This resulted in the loss of much time and money. In dealing with a finite world in which there's only so much water and so many fish to go around, there are inevitably winners and losers; this situation qualifies as an entirely different game.

¹ Gertner, Jon. "Why Isn't the Brain Green?." April 16, 2009.

http://www.nytimes.com/2009/04/19/magazine/19Science-t.html (accessed April 25, 2009).

² Ibid.

The lack of connection Jess felt to future generations illustrates a mindset held by others who control future resources: fishermen who are expected to abide by strict quotas. Without feeling any real obligation to generations down the line, it makes sense for them to act on their immediate desires and do what they know may not be healthiest for the planet—overfish the estuaries. Why should they hold back if they face neither legal nor substantive consequences? One fisherman—or potential Hummer owner—refraining from indulging themselves equals an unfulfilled desire for the immediate present and perhaps helping out unknown people in generations to come. For a fisherman, the latter part of this equation can easily be removed if a fellow competitor makes the more selfish choice and thus erases the attempted good deed. If fishermen are constantly at odds with competing crews, then there is hardly any room to *consider* future generations, let alone prepare for them.

Dr. Boris Worm of Dalhousie University in Nova Scotia predicts that fisheries worldwide will collapse by 2048 should practices continue as they presently do.³ Popular fish have been so overfished in some ecosystems that other animals connected to the fish in the food web as predators or prey are disappearing as well; since biological diversity is necessary for an ecosystem to remain in balance, the lack of one (or as in many cases, several) species compounds the problem so that the overall rate of fish loss increases. Dr. Worm himself noted that "the hair stood up on the back of [his] neck" when he first saw the results of his data analysis.⁴ Although

 ³ Worm, Boris. "Impacts of Biodiversity Loss on Ocean Ecosystem Services." *Science*, no. 314 (2006): 787-790.
 ⁴ Dean, Cornelia. "Study Sees 'Global Collapse' of Fish Species." November 3, 2006.

http://www.nytimes.com/2006/11/03/science/03fish.html?_r=1 (accessed April 27, 2009).

Dr. Worm foresees a crisis sans a dramatic change, he avers that "when humans get into trouble they are quick to change their ways."⁵ Such a change in ways has yet to happen.

When I think of Katie and how her issues with the tap entail more than a mechanical solution, I think of tic-tac-toe. Imagine a game. Whether you go first and pick the ever popular middle square or the semi-popular outer corner (or even a middle side), we know that as long as each of us understands the conventional rules of the game, it will end in a draw. This is because there is no technical way to win the game so long as your opponent is both aware of the rules and aiming to win. Certainly there are strategies to be employed outside the conventional understanding of the game that would increase your odds of winning; if I were sitting physically next to you, I could offer you something in exchange for you not making an advantageous corner move; or we could decide that a different pattern constituted winning. Or we could agree to take turns letting each other win. Or, perhaps, you could toss this thin paper in the recycling bin and walk away forever. These latter options don't represent technical solutions to the game of tic-tactoe; rather, they indicate a change in our fundamental understanding of the game—a redefining of it altogether.

Jess had no reason to think that her abstaining from owning a Hummer would directly affect her posterity; that is, the little carrot-topped children she'd surely birth someday probably wouldn't be the only kids on the block required to walk to school because of her former inefficient energy use while the other children whizzed by on gas-powered scooters. If this was the case and Jess was aware of it, she may decide against owning a Hummer; the notion of being personally and directly responsible for the fate of a specific person is much stronger than the idea

⁵ Gertner.

of being vaguely responsible for *some* people *some*time in the future. In our current society, this direct link between present actions and the fate of offspring does not often poignantly exist—but there are efforts to try and make it more readily felt.

Weber notes that oftentimes the wrong question is asked in environmental policy. Quite frequently we want to know a person's *true* preference—as if there is just one thing that someone really wants. A conversation, a bit of new knowledge, or even a comment from a good friend may influence us at any given moment; whether because it tweaked our notions of risk or because it helped elevate social goals above individual goals and led to better choices for the global commons...[doesn't mean it's] necessarily a distortion of our true preference. There is no such thing as true preference," Weber claims.⁶ Truthfully, we want it all.

Though the institutions, states, and organizations of the world may not be as easily won over as the Katie from my childhood, a shift in values and perhaps a new definition of "win" may lead us down a new path. The lack of this shift results in what has been dubbed "the tragedy of the commons"—a term coined by Garret Hardin in 1968. Hardin asserts that when something is viewed by a group of people as a common good, no technical quota or restriction on the limit of that good can make a dramatic difference on the fate of the whole.⁷ Indeed, a redefining of our comprehension of things is just what things without technical solutions like tic-tac-toe call for: a change in values.

In the case of fisheries, this is unfortunate; such a technical policy is currently in effect in most areas of the world. All but 3% of coastal states in the US attempt to manage their fisheries

⁶ Gertner.

⁷ Hardin, Garrett. "The Tragedy of the Commons." Annals of Internal Medicine, no. 72 (1970): 374.

by either placing a limit on the number of fish boats can harvest or by restricting the type of technology employed to catch fish (slower boats, less efficient nets, etc.).⁸ While this technical approach may seem to make sense, it leaves out a very significant part of the picture: implementation and human nature. What is at stake for fishermen is not a champion title in tictac-toe—it is their salary and livelihood. By catching just a bit more fish than they are legally allowed to, they can accrue much more money, as well as status among other fishermen. The extremely small cost to themselves for overfishing (fewer fish in the sea) is generally worth the immediate benefit of making more money and achieving higher standing in the fishing community. That is, the loss is spread among many people (likely strangers), but the gain is realized completely and directly. This incentivizes overfishing not only because of the personal gain, but also because of another key part of human nature in this economic model: if one fisherman doesn't, another will. If fisherman A decides to follow the rules, he will experience the slight lost felt by all but none of the gain; however, if fisherman B simultaneously decides to take advantage of extra fish, he will experience both gain and a bit of slight loss. This makes it *in fisherman A's interest* to break the law. If he doesn't, someone else will and he will be at a loss.

A system known as the individual fishing quota (IFQ) aims to establish a Jess-to-children bond —connecting the fisherman of the present to the fisherman of the future. By privatizing fisheries so that each fishing community is independently responsible for its own fishery, the IFQ structure removes the anonymity that many fishermen currently feel for future fishermen. In the IFQ system, each community is responsible for its own corner of the ocean. Instead of being allowed a certain number of fish during a certain time period, fishermen are allocated an area

⁸ Duke University. "Individual Transferable/Fishing Quotas." *Duke University Biology Department*. Available from http://www.biology.duke.edu/bio217/2002/fish/management.html. Internet; accessed 11 December 2008.

that they are free to fish as they please. This narrows their sphere of influence so that if they choose to fish at a sustainable level, then they and their progeny will enjoy the benefits; they don't have to worry that competitors will cancel out their altruism. However, if they choose to overfish their area, then they bear the consequences of overfished and eventually collapsed fisheries. This IFQ approach adds a degree of personal attachment to the fishing mentality, which makes providing for the future more desirable. After a decade of adopting IFQs, the Alaskan halibut fishery has been brought back from near collapse. The season used to last for a brutal 48 hours in which fishermen fought to the death for the fish; now it lasts for eight months—not to mention fishermen deaths are down 15%. Engendering a sense of ownership in the fishermen seems to have first changed their mindset, and subsequently their actions. The IFQ system does not let fisherman actually swap salmon for tuna. However, they can trade a portion of their rights to fish them. This adds an element of politeness to the generally cruel open seas in that if a particular fisherman wants to catch more fish, he can simply trade his rights with another fisherman who doesn't want as many fish in a particular year instead of starting a race to see who can outfish whom. Although this may seem to have the same end result, it does not. It in fact changes the age-old attitude of fishing races that have been going on for centuries. Due to the mysterious nature of the seas, fish patrolling is an extremely arduous duty; competitions will likely continue unless fishermen decide on their own that it's worth their while to stop competing with each other-the IFQ method does just that. By not only making each fisherman responsible for his own fishery but allowing him a way to trade his rights if he wants to, the excess fish that would be fished due to races are left swimming in their water where they can reproduce and replenish the sea.

With less than a third of fisheries even remotely stable worldwide, one would think that such a fix would be quickly picked up and put into action. Certainly fishery managements do not desire their income sources to collapse. Indeed, there are a number of such managing bodies interested in the ITQ system; envious of Alaska's success, many are keen to mimic the successful tactic. There is, however, a slight complication to this seemingly textbook solution: assigning who gets which corner of the sea. Several centuries ago when unused resources outnumbered communities of people, allocating coastline and fishing areas to coastal populations probably wouldn't have been a huge problem. With so many fishermen fighting for a piece of the market now, though, handpicking just a few poses a bit of a dilemma—how to choose enough fairly without making the areas so small that they're unfishable? Alaska's combination of vast waters and relatively small population provided a slightly less demanding challenge; the privatization process entailed fewer people and more fish—certainly a desirable ratio. New Zealand's IFQ success is also in part thanks to its geography, as its extensive island coastline of nutrient-rich ocean translates into a lot of ocean with a lot of fish. These two regions are the main IFQ success stories, and the fisheries of each have largely benefited since their IFQ implementation. Although they already have advantageous beginnings for allotting responsibility, they are not the only areas that can benefit from the system. Avoiding a system that has potential to resolve a situation currently in crisis because choosing beneficiaries is not easy is passing up a huge opportunity to at least begin to reverse the damage done to the world's fisheries-before it's too late.

In the short run, overfishing brings more money to less altruistic fishermen. Since we now find ourselves in the twenty-first century where much of the short-run ended quite some

time ago, we are experiencing the effects of the long run: vastly, vastly overfished fisheries. The Food and Agriculture Organization estimates that over 70% of fisheries worldwide are fished dangerously over capacity or depleted altogether. Many argue for more countries to ratify the United Nations Treaty on the Law of the Seas, which provides technical stipulations on how to save fisheries. Even if this treaty were universally endorsed, though, the heart of the issue would remain unaddressed—a shift in values. Simply attempting to implement specifications in the treaty would stay on the same path of failed policy efforts to numerically and technologically limit fishing. As in a game of tic-tac-toe, playing this age old game with the same rules seems to lead only to a gridlock. Incentives appealing not only to nations, but to individual communities to the very fishermen themselves—need to be presented so as to alter their motivation for fishing fisheries to the brink; a conversation like the one I had with Katie on the long-term effects of unsustainability and the role we each play in either promoting or combating it may be beneficial. Indeed, we are currently heading toward the tragedy that Hardin predicted a world of Katies with unshifted views would produce—a commons tragically taken advantage of.

Until a year ago, this was considered a theory that worked in particular areas but was not universally applicable. For one, the Alaskan halibut example is oft cited as the main success story; critics claim this case is overused and rather a fluke. People also claimed that IFQs in general were too deeply rooted in economic theory to be appropriate for real life fisheries. Christopher Costello and Steven Gaines changed that last September when they published their study of 11,135 fisheries from the last half century. Overall, they found that fisheries managed via IFQs were half as likely to collapse than those that did not—and some analyses even found that it reversed collapse altogether and turned once struggling fisheries into thriving ones.⁹ This study has sparked new discussion of IFQs in the fishery political arena. Certainly something needs to be done before all fisheries head toward collapse and the Jesses of the world refrain from getting in touch with their altruistic sides. IFQs address the main problem responsible for the disastrous state in which fisheries currently are—establishing a connection between the fisherman's present and the fisherman's future. Removing the ambiguity of ownership and replacing it with accountability for their own descendants is the sentiment that controls behavior. Perhaps if this same connection could be created for Jess in an IFQ system (individual fuel quota), she will develop a taste for SmartCars instead of Hummers so that her children won't be left wondering how to figure out an even bigger energy crisis on their own.

Weber ponders the implications of a lack of true preferences. If what we seem to want is haphazardly determined, why not attempt to "try new methods…to elicit preferences aligned with our long-term interest? That has to be better…than having people blunder unconsciously into an environmental catastrophe."¹⁰ That is, if we struggle with following through on what we know is better for ourselves and the world due to the limited amount of worrying we can exert on long-term problems, we are likely better off trying to induce a sustainable future rather than assume that our shortsighted, supposed preferences are the better alternative.

I imagine Katie, Jess, and myself in a few short decades planning to meet up and tackling another age old dilemma: what to do for dinner. We talk on high-tech voice activated phones that don't require dialing and enjoy the liberty hands-free technology provides. Our children play

⁹ Costello, Christopher. "Can Catch Shares Prevent Fisheries Collapse?." *Science*, no. 321 (2008): 1678-1681. ¹⁰ Gertner.

indoors because of the health hazards of the smog outside, and we busy ourselves with cleaning the face masks required for walking from the back door to the car.

"How about Field of Greens?" Jess suggests.

"Fresh produce? Absolutely not." Katie replies. "That's way too expensive."

"Maybe Cosi?" I chime in, although I know it's a long shot.

"I'm not driving all the way out to your neck of the woods so that you can walk!" Jess quickly responds. "I've already used up my fuel quota through 2060."

"All right. Let's just go by Tammy's so we each use about the same amount," I say. "Go wash your hands, Lilly, so Mom doesn't have to spend a fortune at dinner," I whispers to my daughter.

"I'm so sick of Tammy's," Katie says. "Mmmm, sushi. That's what I really want."

"Sue *she*?" a little voice asks in the background. "You mean sue *her*, Mom. Why do you want to sue Tammy?"

"No, dear, the cuisine. It was a lovely blend of raw fish and rice wrapped in seaweed. Don't make that face—you would have liked it. Now go wash your hands before we go, please. I'm not paying an arm and a leg for you to do it there. And make sure you do it in less than ten seconds! You cost me a fortune last time."

"Ugh. I hate counting. It's so inconvenient."

"Takes after her mother, doesn't she?" Jess jibes at Katie.

"At least she doesn't have to leave half an hour early to walk to school because *someone* overused her IFQ a couple years ago," Katie retorts.

A loud beep interrupts their bickering, and we all look at our screens to see the latest headline. It is as I feared: *Dr. Worm's 2048 Failed Fishery Prediction: Fact, Not Fantasy.*

I also imagine a very different dinner arrangement for Katie, Jess, and myself. We're all sitting in my living room with the windows open so that fresh air breezes in. Katie and Jess joke with each other about their former conservation resistances. No longer a point of contention, it is a mind frame of the past that many used to hold and they find it humorous. Instead of our children not understanding words like sushi, they've never heard of Hummers. Instead of looking for ways to avoid conserving and beat the system, they're looking for ways to work with it and improve it. Despite all the dinner places nearby, we opt to eat in. We know it will save fuel, and water is still free so it cuts down our costs. Plus, we just bought some fresh salmon and want to celebrate the news we heard this morning: 2048 and fisheries are in the pink—Dr. Worm's career as a fish forecaster is sunk.

Works Cited

- Costello, Christopher. "Can Catch Shares Prevent Fisheries Collapse?." *Science*, no. 321 (2008): 1678-1681.
- Dean, Cornelia. "Study Sees 'Global Collapse' of Fish Species." November 3, 2006. http://www.nytimes.com/2006/11/03/science/03fish.html?_r=1 (accessed April 27, 2009).
- Duke University. "Individual Transferable/Fishing Quotas." *Duke University Biology Department*. Available from http://www.biology.duke.edu/bio217/2002/fish/management.
 html (accessed 11 December 2008).
- Gertner, Jon. "Why Isn't the Brain Green?" April 16, 2009. http://www.nytimes.com/2009/04/ 19/magazine/19Science-t.html (accessed April 25, 2009).
- Hardin, Garrett. "The Tragedy of the Commons." *Annals of Internal Medicine*, no. 72 (1970): 374.
- Worm, Boris. "Impacts of Biodiversity Loss on Ocean Ecosystem Services." *Science*, no. 314 (2006): 787-790.