

7-22-2019

Teach Men How to Fish and They'll Know How to Fish; Teach Them How to Learn and We Just Might Save the Ocean

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Recommended Citation

Freeman, Steven F., "Teach Men How to Fish and They'll Know How to Fish; Teach Them How to Learn and We Just Might Save the Ocean" (2019). School of Continuing and Professional Studies Faculty Papers. Paper 2. <https://jdc.jefferson.edu/jscpsfp/2>

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Teach Men How to Fish and they'll Know How to Fish; Teach them How to Learn and We just might Save the Ocean¹

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By far the most valuable thing I've ever learned was **how to learn**. Unfortunately, this is rarely on educational curricula before a PhD program, and not always even then. Still, it's what education ought to be.

Learning how to learn is the high-value-added meta-skill that provides a perpetually replenishing well not only of education, but of innovation, insight and intelligence. It's like the wish you would make from the proverbial genie in a bottle if not for the fabled rule's "ixnay on the wish for more wishes" provision.² If you know how to learn, you're not limited to three

¹ This is tentatively the first chapter in a textbook I'm writing, [A Systems Approach to Applied Research Methods](#), based on the courses in Applied Research Methods that I teach in the Jefferson [Complex systems/strategic leadership](#) Phd/DMgmt program and designed for Executive PhD, DBA and MBA courses. Any suggestions, however, about alternative venues would be most appreciated. One issue as things now stand is that this piece is orientated more toward the teacher, whereas the rest of the book is oriented to the student.

The title is a play on the famous quotation, "Give a man a fish, and he'll eat for a day. Teach a man to fish, and you feed him for a lifetime." I didn't give a source because its sourcing is complicated; for the contested attribution, see <https://quoteinvestigator.com/2015/08/28/fish/>). What's not in doubt is widespread resonance: 29,000,000 google search results 19-07-12). On "Men": I considered changing "Men" to "People" but then we lose the resonance to the original quote.

² From [Aladdin \(1992\)](#):

Genie: That's right... Genie of the Lamp! Right here [as Ed Sullivan] direct from the lamp, right here for your very much wish fulfilment

Aladdin: Whoa. Wish fulfilment?

Genie: Three wishes, to be exact. [And ixnay on the wish for more wishes](#). That's it. ...

Aladdin: You're gonna grant me any three wishes I want, right?

Genie: Ah, almost. [as William F. Buckley] There are a few provisos, a couple of quid pro quos.

Aladdin: Like?

Genie: Ah, rule number one, I can't kill anybody. So don't ask. Rule number two. I can't make anybody fall in love with anybody else. You little ponem [Genie pinches Aladdin flirtingly ...]. Rule number three. [as Peter Lorre] I can't bring people back from the dead. It's not a pretty picture. I don't like doing it. Other than that, you got it. ...

learnings; you keep learning continuously as long as you live.

Now you may think you already know how to learn – you are, after all, reading this. You can understand what I’ve written here and get the gist of it. I’ll assume, for example, that if you’ve gone to law school, you are able to critically review documents and look up statutes as needed. Such straightforward learning tasks are part and parcel of knowledge work. Although a disturbingly large percentage of so-called knowledge workers seem unable even to learn as such, we’ll treat this as a minimal expectation.

We’re setting our sights higher, aspiring to an apt insight, new applied knowledge. What you learned in law school enables you to earn contract rates of \$25 an hour, depressingly destitute wages given what you shelled out for law school and the *millions* your colleagues at top law firms rake in annually. But that’s probably all the tasks you’re doing are worth. After all, I could also look up statutes myself. I’m only employing you or some other generic lawyer, let’s call her Glenda³, because my time is worth a hell of a lot more than \$25 an hour.

What would make Glenda’s time also worth more? In short, an ability to learn. *Learn what?* you ask. Well, at that level, almost anything! A typical task for which Glendas are employed is document review. Let’s say she’s reviewing bankruptcy filing documents.

Unlike the clients it serves, bankruptcy law is a thriving business. The most obvious learning that would profit Glenda would be an ability to obtain her own clients, increasing her earnings overnight by an order of magnitude. Unfortunately, establishing one’s own business is easier said than done. It requires knowledge in several vastly different domains (sales, law and business basics for starters) and knowledge is only one part of the formula.

Still, were Glenda a skilled learner, she’d not only have the inside track on attracting clients, but also in finding other ways to increase her value.

Insights about bankruptcy are of value to markets well beyond those on the precipice. A vast scavenging ecosystem is more-than-ready to profit on the misfortune, mistakes and vulnerability of others. “Vulture capitalists” consistently make more money more than most *venture* capitalists do. Knowledge about bankruptcy and specific bankruptcies can be uniquely valuable.⁴

Insights even more so. Consider Glenda’s classmate, Beverly⁵, who by virtue of being able to identify and understand trends in bankruptcy filings and processes, has become neither *generic* nor simply a *lawyer*, but rather a **bankruptcy expert** in an even stronger position to profit. Expertise in valuation potential bankruptcy assets, for example, is enormously valuable. When

³ Glenda for Generic Lawyer.

⁴ One way: When a company emerges from bankruptcy reorganization it issues new shares to two unhappy groups: creditors who gain back only a fraction of what they had lent and previous owners who get back almost nothing. Most of these unenthusiastic owners dump shares quickly, resulting in excess supply of shares regardless of underlying fundamentals. Moreover, these new shares enter the market without fanfare (no road show, IPO, pumping, etc.), which results in no added premium to the share price. This scenario creates value for those who pick up the cheap shares and hold them until they increase in value.” See “Taking Advantage Of Corporate Decline <https://www.investopedia.com/articles/stocks/06/bankruptcy.asp/>

⁵ Beverly for Bankruptcy Expert.

Lehman Brothers Holdings filed for bankruptcy in 2008 it had assets of nearly \$700 *billion*. At the time, there was little concrete knowledge on what these assets would be worth post-bankruptcy. Ability to estimate such value with any degree of accuracy could itself be worth billions. The multi-billion-dollar meta-skill required? *Learning how to learn*.

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Meanwhile, our unfortunate generic man whom we so charitably educated to become a generic fisherman, let's call him Gruff⁶, could only *wish* he was earning Glenda's \$25/hour.

As fish stocks have plummeted in once-rich-banks throughout the world, formerly thriving fishing villages are devastated. Gruff is lucky if he's able to catch his dinner, let alone use this skill to provide shelter and other basics. The best fisherman in the world can't catch anything if there's nothing left to catch.⁷

If *all* Gruff knows is how to fish, he'd have been better off with the one-time meals his educators so conscientiously denied him. Alas, fishing *is* all most fishermen know. When regulators try to save fish populations by limiting hauls and preventing overfishing, the fisherman's reply is almost always to fight. "Stop interfering with our livelihood."⁸ Having learnt only this one thing – how to fish – actually *prevents* a solution until it's too late.

Perhaps, though, Gruff is not impervious to knowledge. Even a limited learner may see the future once it has already arrived. And so, the second possibility for those with modest learning capacity and capital is to do something different. If Gruff lived scrimped, saved diversified,

⁶ GruFF for Generic Fisherman. Not a real name, I know, but it fits the character. Another option would be Griff, short for Griffin. Please let me know if you have any opinion on the names/characters. Originally, I used initials, GF, GL, BE, etc.... but an early reader found that disconcerting.

⁷ ["The South China Sea Dispute Is Decimating Fish Stocks"](#) Rachael Bale, National Geographic, Aug 29, 2016: Tuna stocks in the South China Sea have plummeted in recent years because of overfishing., ... The South China Sea, through which tuna migrate, produces more fish than almost anywhere else, but it has been severely overfished and is nearing collapse. <https://news.nationalgeographic.com/2016/08/wildlife-south-china-sea-overfishing-threatens-collapse/>

[Ocean Fish Stocks on Verge of Collapse](#) Environmental Change and Security Program Woodrow Wilson International Center for Scholars, Feb 28, 2017 - The world's ocean fish stocks are "on the verge of collapse," according to a special report from IRIN. Already small fishers in poor countries. <https://www.newsecuritybeat.org/2017/02/ocean-fish-stocks-on-verge-collapse-irin-report/>

[Cod Fishing Catches Plummet in Waters off New England](#) U.S. News & World Report Mar 24, 2017: Maine's cod fishermen-have-worst-year-in-history: The National Oceanic and Atmospheric Administration released an assessment of the Gulf of Maine cod stock in 2014 that said the spawning population was at its lowest point in the history of the study of the fish. Scientists have cited years of overfishing and inhospitable environmental conditions as ...

[Rebuilding depleted fish stocks: the good, the bad, and, mostly, the ugly](#). S. A. Murawski, 2010. ICES Journal of Marine Science, 67: 1830–1840: 63% of fish stocks worldwide may need rebuilding, only 1% are currently classified as "rebuilding", and fewer yet have been "rebuilt"

⁸ One way in which fisherman are deluded (or justify hopes?): Boyes, Margaret (2008). "An interview with [Fisheries scientist] Daniel Pauly" (PDF). Fisherman Life:

There is always disagreement between fishermen and government scientists... Imagine an overfished area of the sea in the shape of a hockey field with nets at either end. The few fish left therein would gather around the goals because fish like structured habitats. Scientists would survey the entire field, make lots of unsuccessful hauls, and conclude that it contains few fish. The fishermen would make a beeline to the goals, catch the fish around them, and say the scientists do not know what they are talking about. The subjective impression the fishermen get is always that there's lots of fish - because they only go to places that still have them... fisheries scientists survey and compare entire areas, not only the productive fishing spots.

scrimped, saved and diversified and been fortunate to live in a picturesque New England fishing village, perhaps he could purchase for a song a mansion built before nature's bounty was no more, for a and convert it into a B&B.

Paradoxically, Gruff is in dire straits not only despite record demand for seafood but because of it. People eat more seafood than ever, and there are more people than ever to eat it. We're also paying more than ever! Problem is politics, commerce, science and technology have conspired to permit those with capital, connections and wherewithal to exploit resources as never before. The bounty Gruff once could reap, has already been reaped. Or raped.

Massive ocean trawlers have laid waste not only to vast swaths of ocean, but traditional fishing methods as well, and with it, any value Gruff's knowledge once possessed. It's not so much that people can't see all of this. Indeed, it's hard *NOT* to see a sea change. Especially when that sea is your livelihood. Rather it's that they have no idea what they can do.

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With basic learning skills, Gruff might have been among the exploiting few rather than the victimized many. Just as Glenda's classmate, Beverly transformed herself from generic lawyer into Bankruptcy Expert, Gruff's more astute village-mate Biff, just might transform himself into a Big Fish of the modern fishing industry.

Learning as exemplified by the Beverly vs Glenda and Biff vs Gruff, is a tool in a competitive zero-sum game. Actually, much worse than that. A very negative-sum-game. For every winner there are a multitude of losers: almost all of us, almost every living thing on the planet.

Beverly and her fellow vulture capitalists are widely depicted as predatory plunderers laying waste to vast swaths of industry. Such a depiction is at worst, figurative. On the other hand, Biff is literally a predatory plunderer laying waste to vast swaths of the planet. Ocean trawling is how Biff now feeds himself – and us:

Imagine ... if a band of hunters strung a mile of net between two immense all-terrain vehicles and dragged it at speed across the plains of Africa. This fantastical assemblage, like something from a Mad Max movie, would scoop up everything in its way: predators such as lions and cheetahs, lumbering endangered herbivores such as rhinos and elephants, herds of impala and wildebeest, family groups of warthogs and wild dogs. Pregnant females would be swept up and carried along, with only the smallest juveniles able to wriggle through the mesh. Picture how the net is constructed, with a huge metal roller attached to the leading edge. This rolling beam smashes and flattens obstructions, flushing creatures into the approaching filaments. The effect of dragging a huge iron bar across the savannah is to break off every outcrop and uproot every tree, bush, and flowering plant, stirring columns of birds into the air. Left behind is a strangely bedraggled landscape resembling a harrowed field. The industrial hunter gatherers now stop to examine the tangled mess of writhing or dead creatures behind them. ... This pile of corpses is dumped on the plain to be consumed by scavengers.

[Trawling] is practiced the world over every day, from the Barents Sea in the Arctic to the shores of Antarctica and from the tropical waters of the Indian Ocean and the central Pacific to the temperate

*waters off Cape Cod... We have an outdated image of fishermen as rugged, principled adventurers, not as overseers in a slaughterhouse for wild animals.*⁹

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In business schools, successful Beverlys and Biffs are celebrated as educational exemplars. In a narrow sense, this is true; they apparently do have better knowledge acquisition/application skills than their competitors. Even expert traditional fishermen are swept up in those nets along with all the other Gruffs to become human carrion for Beverly. In the end, Beverlys and Biff are the rats that win the rat race – the biggest, fattest, most ruthless rats of all.

We in [Systems Leadership](#) aspire to become something more than a rat. This lofty goal, however, requires an andragogy that teaches more than simple learning; but rather, broader, systemic *learning how to learn* – more rigorous, relevant, inclusive, innovative and honest than almost anything currently taught ... though we have demonstrated but eminently teachable.

Levels, directions and dimensions of learning

Educators identify many levels, directions and dimensions of learning. A seminal work in this area is Bloom, et al's (1956) taxonomy¹⁰ which begins with three broad domains:

- **Cognitive:** mental skills (*knowledge*)
- **Affective:** growth in feelings or emotional areas (*attitude or self*)
- **Psychomotor:** manual or physical skills (*skills*)

Beverly and Biff display some winning cognitive skills, but little evidence of *Affective Learning* and in Biff, an appalling atrophy of even a small child's sensibilities. Even on the cognitive side however, they fall far short of what we would aim for.

Anderson, et al (2001) identify six such levels of cognitive learning: Remembering, Understanding, Applying, Analyzing, Evaluating and Creating/ Synthesizing. Beverly and Biff do profitably apply knowledge, but they fall far short in creation or synthesis, the skills which, along with affective learning, enable a community to move beyond a world of all-against-all.

As noted earlier, it's hard *NOT* to see sea-change. We resist it or resign ourselves to unhappy consequences because we have no idea what we can do. Learning at these levels, however, provides options:

One option is sustainable fish farming or harvesting, *aquaculture*, or salt-water, *mariculture*.¹¹ When fish stocks first began to decline these were literally "blue ocean" opportunities¹²

9 Clover, Charles. The End of the Line: How Overfishing Is Changing the World and What We Eat (The New Press, Nov 13, 2006). Introduction.

10 See also: Clark, Don "Bloom's Taxonomy of Learning Domains" January 12, 2015.
<http://nwlink.com/~donclark/hrd/bloom.html>

11 Troell M, et al. Integrated mariculture: asking the right questions. *Aquaculture*. 2003 Oct 31;226(1-4):69-90.

Neori A, et al. Integrated aquaculture: rationale, evolution and state of the art emphasizing seaweed biofiltration in modern mariculture. *Aquaculture*. 2004 Mar 5;231(1-4):361-91.

requiring little in the way of capital or connections – but *demanding* higher level learning. With new, undeveloped processes and industries, one cannot simply enroll in courses or get a degree. Rather, one needed more creative, innovative systematic learning how to learn, essentially the ability to do applied research. Today, as demand for fish continues to grow and wild fish is increasingly imperiled, aquaculture is a major industry with yields exceeding traditional fishing. Correspondingly, its barriers to entry are comparable to other major industries, especially akin to industrial agriculture and posing similarly serious ecological, health, and ethical concerns.¹³

Aquaculture might have developed differently. Still might. And in these possibilities, blue, especially blue-green, niches remain.¹⁴ *Veta La Palma* in Andalucía, Spain, takes a “total ecosystem approach” in raising bass and mullet. In the process, the farm has become a haven for birds and other wildlife, which in turn helps the health of the entire ecosystem.¹⁵

A generally bluer green opportunity derives from the massive waste that is a by-product of modern trawling, processing, marketing, and consumption patterns. Ten million tons – 10-40% of overall fish hauls - of dead or damaged fish are annually dumped back in the sea.¹⁶ One reason, as Angel Leon, proprietor of the Andalusian restaurant *Aponiente*, relates, is that “we eat like there are only twenty types of fish.”¹⁷ Many of the countless and often nameless

12 Kim, W.C.; Mauborgne, R. (2005). *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston: Harvard Business School Press. ISBN 978-1591396192.

Kim, W. Chan, and Renee A. Mauborgne. *Blue ocean strategy, expanded edition: How to create uncontested market space and make the competition irrelevant*. Harvard business review Press, 2015. Expanded edition.

Based on a study of 150 strategic moves spanning more than a hundred years and thirty industries, Kim & Mauborgne argue that entrepreneurs can succeed by creating “blue oceans” of uncontested market space, as opposed to “red oceans” where competitors fight for dominance (the analogy being that an ocean full of vicious competition turns red with blood).

13 Farmed fish are commonly raised in conditions of extreme overcrowding with unnatural feeding. Rather than traditional diets, they’re commonly fed corn, grown and paid for with government subsidies. These conditions lead to stress and disease requiring massive use of antibiotics pesticides and other medicines. Resulting problems include massive pollution, new diseases such as Sea Lice and seafood of questionable nutritional value (Omega-6 rather than Omega-3 and possible toxicity (e.g. PCBs, POPs). See, e.g.:

O’Conner, Anahad. “Ask Well: Wild Fish vs. Farmed Fish.” *The New York Times*. 18 December 2014.

Food and Water Watch. “What’s Wrong with Factory Fish Farming?” 1 February 2013.

Stier, Ken. “Fish Farming’s Growing Dangers.” *Time*. 19 September 2007.

Kresser, Chris. *Revolution Health Radio: Dr. Chris Shade on Mercury Toxicity*. 12 November 2015.

Roach, John. “Sea Lice from Fish Farms May Wipe Out Wild Salmon.” *National Geographic Magazine*. 13 December 2007.

14 Blue-green niches meaning uncontested opportunities that are ecologically sound (“Blue” for Blue Ocean Strategy and “Green” for environmental). See MRAG (2010) for an overview of these blue-green niches in aquaculture (such as they were in 2010).

15 Barber, Dan. *The third plate: field notes on the future of food*. Penguin, 2015.

16 Other reasons include fishing practices that damage fish (making them unmarketable), throwing back fish that are too small or out of season, or because only part of the fish needs to be harvested (e.g. Alaska pollock roe). In some cases, fishers caught species they weren’t targeting (called bycatch), or they continue to catch fish even though they’ve caught enough, which they do in hopes of scooping up bigger fish (called high-grading). See for example:

Zeller, Dirk, Tim Cashion, Maria Palomares, and Daniel Pauly. “Global marine fisheries discards: A synthesis of reconstructed data.” *Fish and Fisheries* 19, no. 1 (2018): 30-39. <https://onlinelibrary.wiley.com/doi/full/10.1111/faf.12233>

Dvorsky, George A *Staggering Amount of Fish Is Wasted Each Year* (updated), <https://gizmodo.com/a-staggering-amount-of-fish-is-wasted-each-year-1796449922> 6/27/17 11:20am

17 Barber, Dan. *The third plate: field notes on the future of food*. Penguin, 2015 p 227. Among the novel ways Angel Leon is attempting to utilize the underutilized products of the sea includes experimenting with even its most basic culinary elements,

creatures thrown back in are more salutary and savory than the pop-20. These pop standards, mostly those at the top of the food chain, are probably among the *least* salutary; carcinogens and other non-bio-degradables concentrate at each food-chain-level (that's the problem with these substances: they build up in the system to unhealthy or even toxic levels because neither fish nor man is evolutionarily equipped to process them). Overfishing top level predators that keep other rapidly-reproducing populations in check is also especially destructive to ecosystems. And because they've been overfished, they're also more likely to be farmed, with all the attendant accompanying toxins and additional ecological strains.

Worse yet in terms of waste, we usually eat only select parts (filets) of these select fish, even though other parts, e.g., head and eyes, may be more nutritious. Discards, bycatch and unwanted parts can be obtained very inexpensively, often for free; the challenge is learning how to prepare them, convincing markets to sell them and restaurants to put them on the menu, and persuading people to try them. All this takes more than even the most perceptive and skilled learners could undertake alone.

Social learning

Higher level learning includes an essential social component. It's one thing to learn as Beverly and Biff have, tacit knowledge for private advantage. It's much more to ascertain truth and understanding with rigor, communicate it so as to persuade others, provide insight to decision-makers and help build a community understanding.

Ability to develop and disseminate insights to advise on early detection, preparedness and alternatives requires a whole new dimension of learning, but correspondingly adds a whole new dimension of *capability* and value. With social learning skills, a bankruptcy expert could help firms *stave off bankruptcy* or avoid altogether the conditions that precipitate it – surely a far greater potential value proposition than picking up pieces once they're ripped apart.

But even if Beverly were so enabled and inclined, she could only be successful had she clients with learning capabilities too. It would take the two of them together – and additional help as well -- to:

1. Understand changing conditions in the failing firm's environment and what these portend.
2. Identify and assess the failing firm's options

Each of these require a world of learning; for now, let's simply note that it takes a team to learn and apply most anything of significance in the modern world. Contemporary knowledge production is increasingly and overwhelmingly dominated by teams.¹⁸ It's no coincidence that

such as replacing the standard serving of bread with phytoplankton.

¹⁸ Wuchty, Stefan, Benjamin F. Jones, and Brian Uzzi. "The increasing dominance of teams in production of knowledge." *Science* 316.5827 (2007): 1036-1039: Analysis of "19.9 million papers over 5 decades and 2.1 million patents demonstrate that teams increasingly dominate solo authors in the production of knowledge. Research is increasingly done in teams across nearly all fields. Teams typically produce more frequently cited research than individuals do, and this advantage has been increasing over time. Teams now also produce the exceptionally high impact research, even where that distinction was once the domain of solo authors. These results are detailed for sciences and engineering, social sciences, arts and humanities, and patents,

the two examples above are co-located in southern Andalucía. They learn from each other and work together. *Aponiente* serves the mullet, which despite a delicate flavor, salutary benefits, and economical price, *Veta La Palma* nevertheless struggles to sell.

Social learning is required in spades for contemporary new ventures. The days of a lone inventor profitably commercializing resultant creations are long passed (if indeed they ever existed).¹⁹ In assessing whether to *invest* in new ventures, the top criteria for screening and investment all involve the management *team*; with idea and all other considerations distinctly secondary.²⁰

Systems (Community-wide) Learning

The learning necessary to expand an enterprise, start a new venture, move in a new direction, or simply form a successful association requires team and group capabilities. But beyond group and team learning that allows mutual success (or perhaps just survival), there's a community-wide third dimension of learning. You can prep for the apocalypse with two dimensions of learning, or for that matter, help bring it on. But for the world as we know it to survive into the next century, we'll need widespread three-dimensional learning.

Beverly's potential value proposition goes well beyond working with Gruff and the like to avert personal catastrophe. Bankruptcy has a critical role in a market-economy, but with it comes extensive collateral damage for employees, clients, suppliers, communities and other stakeholders. Intellectual capital disintegrates as teams disperse. It takes years to properly redeploy people.²¹ And it also generally leads to greater industrial consolidation: as larger, deeper, better-connected entities exploit opportunities to wipe out smaller competitors when they are vulnerable, or even strategically create these conditions of vulnerability so as to consolidate.²²

The third dimension of learning for Beverly is to develop and disseminate insights to advise not only individuals and individual firms, but also communities and associations, maybe even states and nations, on early detection and preparedness, perhaps even insights and persuasive

suggesting that the process of knowledge creation has fundamentally changed."

Even in cases of the increasingly rare successful, single author/patent-holder, others are almost inevitably centrally involved in creation and development.

19 See for example, two books that compare the experience of television's inventor, Philo T. Farnsworth, who unable and unwilling to work with powerful partners died poor depressed and defeated, with the RCA team led by David Sarnoff, hiring an army of top scientists and business people that was able to realize its immense potential.

"The Last Lone Inventor," by Evan I. Schwartz (HarperCollins),

"The Boy Genius and the Mogul," by Daniel Stashower (Broadway).

20 Sudek, Richard. "Angel investment criteria." *Journal of Small Business Strategy* 17.2 (2006): 89.

21 Hamel, G., and L. Välikangas. "The quest for resilience." *Harvard business review* 81.9 (2003): 52-63.

Freeman, Steve, Larry Hirschhorn and Marc Maltz "Moral purpose and organizational resilience: Sandler O'Neill & Partners in the aftermath of September 11, 2001" with In D. Nagao (Ed.) *AoM BEST PAPERS 2003*, Omnipress: Madison, WI, (September 2003)

22 Meanwhile, larger, deeper, better-connected firms are bailed out when they themselves push too far or otherwise get in trouble.

arguments that would help legislate greater equity and efficiency into bankruptcy law and practice.

Diagram: Increasing Value with Each Step on the Learning How to Learn Ladder:

0. Standard Education (Glenda, Gruff): No Learning how to learn – catastrophically insufficient under changing conditions.
 1. Individual Knowledge and Insight (Beverly, Biff): OK for the learner, but usually zero-sum game or worse.
 2. Team Learning: Beverly working with clients open to new learning, knowledge and insight. Win-win possibilities.
 3. Systems (Community-wide) Learning: Published insights to advise not only individuals and individual firms, but also communities and associations, maybe even states and nations. Possibility of development at a much higher level.
-

Whereas 2nd dimension learning requires a team, 3rd dimension learning requires a community able to listen, observe, think, apply, and reflect. The 3rd dimension option for Gruff in the face of overfished stocks is to directly address the problem, namely *overfishing*.

Overfishing is a systemic problem. In particular, it's what ecologist Garrett Hardin (1968) labeled the "tragedy of the commons," a structural situation in which a shared-resource is depleted or destroyed because individual incentives are to take as much as they can from it and no effective means is in place to stop them.²³

²³ The tragedy of the commons describes a shared-resource in which individuals acting independently in their own self-interest behave contrary to the common good by depleting or spoiling that resource through their collective action. The phrase was popularized by ecologist Garrett Hardin (1968) explained it:

"Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.

As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility *to me* of adding one more animal to my herd?"

1) The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1.

2) The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decision-making herdsman is only a fraction of -1.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit--in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.

Hardin used "commons" metaphorically to mean any shared and unregulated resource such as atmosphere, oceans, rivers, or even an office refrigerator. It is one of the archetypes systems thinkers (e.g. Wolstenholme 2003, 2004; Senge 1990: Chapter 6) use to identify, understand and explain common structural systemic patterns.

There's nothing easy about establishing such a means, evidence being the extent of related *commons* problems in the world, not only all the "over-" problems (overfishing, over-grazing, overpopulation) but even worse, the pollution and byproducts (e.g., global warming) that people freely "share," for which every living thing pays the cost.²⁴

Still, it can be done, and is in many cases now:²⁵ One such tool, *Individual Fishing Quotas* (IFQs), are widely used in New Zealand, Australia, Iceland, Canada. Considering carrying capacity, regeneration rates and future value, scientists decide the total allowable catch to be harvested in a fishery. Members of the fishery are granted IFQ rights to a percentage of the total allowable catch that can be harvested each year.

IFQs are not the only such tool available²⁶ nor without criticisms and controversies,²⁷ but large-scale studies provide strong evidence that IFQs can help prevent fish-stock collapses and even restore fisheries in decline.²⁸

Even without an advanced economy or institutions ready, willing and able to address such issues, overfishing can and is being taken on. Senegal is among the more recent countries to face catastrophe as trawlers from around the world now fish just outside – and inside – their waters. Analysis reported in the NY Times claims that Chinese boats in West Africa report just 8 percent of their catch, stealing well over 40,000 tons of fish a year from Senegalese waters and depleting the stock perilously. Despite limited resources and absence of functioning governmental institutions, Abdou Karim Sall of Joal (pop, 55,000), organized a local fishermen's association, and heroically "detained the captains of two Chinese boats that were fishing

24 Hardin (1968):

In a reverse way, the tragedy of the commons reappears in problems of pollution. Here it is not a question of taking something out of the commons, but of putting something in--sewage, or chemical, radioactive, and heat wastes into water; noxious and dangerous fumes into the air, and distracting and unpleasant advertising signs into the line of sight. The calculations of utility are much the same as before. The rational man finds that his share of the cost of the wastes he discharges into the commons is less than the cost of purifying his wastes before releasing them. Since this is true for everyone, we are locked into a system of "fouling our own nest," so long as we behave only as independent, rational, free-enterprisers.

25 Lindley, Jade, and Erika J. Techera. "Overcoming complexity in illegal, unregulated and unreported fishing to achieve effective regulatory pluralism." *Marine Policy* 81 (2017): 71-79.

26 See for example, MRAG (2010).

27 These quotas can also be, bought, sold, or leased, but IFQs are usually initiated through the de facto privatization of an otherwise public resource: the fisheries. Initial recipients of quota receive windfall profits through the gifting of share ownership, while all future entrants are forced to purchase or lease the right harvest fish. Many have questioned both the ethical and economic repercussions of dedicating a secure, exclusive privilege to access this public resource. For example, in the US, during a presentation given to the Gulf Fishery Management Council, Fishery Manager Larry Abele stated that the present value of the Gulf Fishery IFQ Harvest amounted to \$345,000,000 and this was given without requiring of any return to the public from IFQ holders "[The Red Snapper IFQ: Some Success and Serious Problems](#)" (pdf).

The US had an eight-year moratorium on IFQs because of concerns and contention about distribution, with smaller Alaskan fishing operations worried about equity in a battle with large trawlers from Washington state.

28 Costello, Christopher; Gaines, Steven D; Lynham, John (2008). "[Can Catch Shares Prevent Fisheries Collapse?](#)". *Science*. 321(5896): 1678–1681. doi:10.1126/science.1159478.PMID 18801999.

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["A Rising Tide: Scientists find proof that privatising fishing stocks can avert a disaster"](#). *The Economist*. 18 September 2008.

illegally.”²⁹ In the process, despite the economic power and economic might of the perpetrators, he has mobilized international awareness and pressure to help stem the trawling.

Sall still faces an uphill battle. Creating associations, working with (or against) established institutions requires learning on regional, national, and increasingly international levels. This requires not only learning and insight, but publication, debate, mobilization, etc.... in short, a whole network of knowledge, knowledge creation, and high level multi-dimensional learning how to learn.

Ultimately, that’s what it will take to create stable firms, communities and food supplies; healthy lives and *true* blue oceans. The serious problems of the modern world are planetary and likewise the solutions. And whether opting in or opting out, multi-dimensional learning how to learn is critical for most of the critical tasks faced in the modern world.

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²⁹ Jacobs, Andrew April 30, 2017 “China’s Appetite Pushes Fisheries to the Brink”
<https://www.nytimes.com/2017/04/30/world/asia/chinas-appetite-pushes-fisheries-to-the-brink.html>

These days, residents curse him under their breath because he has expanded his campaign against overfishing to include Senegalese boats that flout fishing rules designed to help stocks rebound.

“I understand why they hate me,” he said. “They are just trying to survive from day to day.”

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