Challenging the Discourse of Magical Thinking and Individual Responsibility in Environmental Policymaking

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Note to the reader: This paper, as initially proposed, has morphed into the essay that follows, which takes geoengineering as its point of departure. I will deemphasize geoengineering in my panel presentation and instead focus on the "trinity of despair" as an engine of marginalization in environmental politics. Thinking seriously about the trinity of despair forces academics and activists to interrogate the dominant individual-agency discourse that permeates contemporary environmentalism. Doing so has significant implications for the exercise of power in service of restoring natural capital and ecosystem resilience.

Magical Thinking and the Inevitability of Climate Engineering

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In what feels like the wink of an eye, climate engineering – the combination of solar radiation management strategies and carbon sequestration efforts deployed at scale, and often referred to as geoengineering – is moving from the stuff of science fiction to the ranks of serious policy debate. That this ascendency is occurring at a time of growing public skepticism of technocratic elites (think Brexit, or Donald Trump, or public wariness of GMOs or immunizations) is striking, to say the least. We live in an age of discontent with the marriage of science and technology in service of the public good.[1] For climate engineering to buck this trend suggests powerful forces at work.

Some of these forces are baked into the political economy of climate change. Fossil-fuel providers, together with industries dependent on cheap and easy energy, naturally resist efforts to decarbonize industrial economies. Initial choices about technological design create "lock in" that blocks movement to more desirable socio-technical configurations: the same lock-in that has me typing on a QWERTY keyboard (a poor configuration for speed and accuracy) commits even the most ardent supporters of renewable energy to a medium-term future of fossil-fuel dependence. Those benefitting most from activities that have ballooned the carbon burden of the atmosphere are among the least vulnerable to the cost of climate change, creating a "responsibility disconnect." And an international system anchored in nation-state sovereignty makes progress on global climate governance slow and messy, despite the recent ratification of the Paris climate agreements and the planned phase-out of

[1] See, for example, Jacques, M. P. J. (2013). *Environmental skepticism: Ecology, power and public life*. Ashgate Publishing, Ltd.; or Hayes, C. (2013). *Twilight of the elites: America after meritocracy*. Broadway Books.

HFCs under the Montreal Protocol. Superficially apolitical, efficiently technocratic responses to a warming world appear attractive by comparison.

Other forces convivial to climate engineering spring from emotional responses evoked by climate change, which is big and scary, a seeming juggernaut of dislocation and despair tied indelibly to the fossil resources that fuel sustenance and comfort across the planet. Calling to mind the characters in the *Restaurant at the End of the Universe*[2] who wear sunglasses that go opaque at the first sign of danger (on the premise that what you can't see won't hurt you), sociologists tell us that a common response to climate change is to simply avoid thinking about it – a condition described as "climate denial."[3] More information about the dangers ahead exacerbates this avoidance behavior.

A similar climate-change psychology holds true for initiatives that emphasize personal status or financial reward as reasons to "save the climate." On their face, arguments that we should shift to more efficient appliances to shrink the electricity bill, or buy green to achieve status among like-minded consumers make good policy sense, in that they appeal to self-interest. But this framing primes elements of human cognition most responsible for the materialist, short-term thinking that marginalizes climate-change action in the first place.[4] We worry about climate change except when we don't, which looks to be most of the time, in part because of public education and "call to action" campaigns that amplify self-interest while exacerbating climate denial. Climate engineering emerges to fill the void.

It is thus no surprise that despite weighty political, material, and ethical challenges,[5] an aura of inevitability now swirls around climate engineering – an inevitability that will only become more entrenched once the inability of Paris-driven "nationally determined contributions" to limit warming to 2 degrees C. becomes fully evident. Intractable configurations of power (e.g. the influence of fossil-fuel advocates or the centrality of the nation-state system) and contours of psychology (e.g. climate denial or information overload) have, almost by definition, their own unstoppable momentum: one

[2] Adams, D. (2010). *The Restaurant at the end of the universe* (Vol. 2). Pan Macmillan.
[3] Norgaard, K. M. (2011). *Living in denial: Climate change, emotions, and everyday life*. MIT Press.
[4] The literature on this point is voluminous. See, for example, Crompton, T., & Kasser, T. (2010). Human identity: a missing link in environmental campaigning. *Environment*, *52*(4), 23-33; or "Sacrifice, choice and climate change: (Re)framing the B.C. carbon tax," in *The Environmental politics of sacrifice*, Eds. Maniates, M. and Meyer, J. Cambridge: MIT Press, 2010, pp. 187-215.
[5] e.g. Hulme, M. (2014). *Can science fix climate change: A case against climate engineering*. John Wiley & Sons; and Nicholson, S. (2013). The Promises and Perils of Geoengineering. In *State of the World 2013* (pp. 317-331). Island Press/Center for Resource Economics.

flows from deeply engrained distributions of power and sovereignty, the other is part and parcel of human nature. If these forces confine us to lackluster political responses to impending climate convulsion, then we have but two choices. One is rapid and catastrophic climate change, with all the pain and suffering that implies.[6] Another is Apollo-project-esque technological interventions that accommodate existing patterns of human behavior, national power, and international political economy. Seen this way, climate engineering, despite its many dangers and limitations, becomes the best play given the cards we've been dealt.

As important as these forces of human psychology and political economy may be, to focus on them alone is to aid and abet a narrative of climate-engineering inevitability that insures its dominance of any future climate-solution landscape. Other, less visible dynamics also propel the rise of climate engineering – and some are far more amenable to change than, say, the muckiness of international climate politics or vexing attributes of human nature. Those wary of an inescapable climate-engineered future might shift their gaze, if only for a moment, to these less noted accelerators. They may discover new opportunities to challenge the momentum of large-scale technical responses to a warming world.

The rest of this essay explores one such hidden accelerator of climate-engineering inevitability: the increasingly widespread magical thinking about the ability of small efforts to aggregate into large-scale social transformation.[7] This magical thinking short-circuits the political potency of growing public concern about climate change. It also reinforces an ugly nest of cynicism, misanthropy, and faith in crisis that amplifies tendencies toward climate denial and creates fertile ground for large-scale technocratic solutions. The outcome, too often, is a phenomenon called "the trinity of despair," for which anecdotal and some emerging survey evidence exists.[8]

It would be silly to believe that a small cabal of climate-engineering advocates has conspired to infect the environmentally concerned with a way of thinking that cements the inevitability of climate engineering. But if such a cabal existed in some make-believe world with the power to frame or shift underlying assumptions about the nature of environmental problems and the ability of individuals to act

[6] See, for example, Young, O. R. (2016). The Paris Agreement: Destined to Succeed or Doomed to Fail? *Politics and Governance*, *4*(3), 124-132.

[7] I am indebted to Simon Nicholson for this framing of "magical thinking."

[8] Maniates, M. (2016). "Make way for hope: a contrarian view," in *A new earth politics*, Eds. Nicholson, S. and Jinnah, S., MIT Press, pp. 135-154.

on these problems, they would have produced this manifestation of magical thinking. For those made uneasy by the prospects of wide-scale deployment of climate engineering, replacing this magical thinking with something more powerful and strategic must become a pressing priority.

The Rise of Magical Thinking

I have an "Earth Day" rubbish bin in my office that looks to be from the early 1970s. The can is decorated with colorful drawings of environmental protesters with bell-bottoms, full heads of hair, and women in knee-high boots holding signs with phrases that resonate with my own recollection of the time: "This is where it's at: fight pollution," "Pollution is a bummer," "Don't Cop Out – Get Active," and "Fight the System – Save the Earth." One young man is waving a large Earth-Day flag, and his friends and he appear to be marching off to protest. The bins sits near my desk to remind me of a time when citizen activism and political mobilization seemed to be the first, most obvious way to act on one's concerns about pollution and environmental decline.

I am reminded that those days are behind us whenever I bring the rubbish bin into my environmental-studies seminars. My current and recent students – undergraduates from top liberal arts colleges in the United States, and undergraduates at a liberal arts college in Singapore – are alternately amused and flummoxed by the scene it depicts. With few exceptions, students characterize their stylized peers from 1970 as being idealistic, naïve, and counterproductive. My pupils wonder aloud if "all that protesting" really made a difference, forgetting the important environmental laws that were adopted in the United States in the early 1970s under Richard Nixon, a president not known for his progressive leanings.[9]

Students, no doubt like others who reflect on depictions of those early Earth Days, also inevitably raise questions of hypocrisy. Those protesters undoubtedly drove cars, ate meat, and embraced air travel, which calls into question their fundamental commitments and efficacy. Indeed, how can one be taken seriously as a public advocate for the environment if one isn't fully practicing their

[9] My students today are not unlike their parents who may have attended college in the late 1980s. See, for instance, Klein, J. (1990). *Letter to the Next Generation* (Documentary). New Day Films.

preaching?[10] This alarm about hypocrisy, something rather new to mainstream environmental discourse, inexorably drives the classroom conversation toward the centrality of "acting environmentally" if one wishes to make a difference – with the "acting" best occurring in our role as a consumer rather than in our life as a citizen. It becomes best to buy green and live lean in the hope of influencing business decisions and persuading, by example, one's neighbors and friends to do the same. The alternative, understood as noisy, confrontational protest, is deemed to be too risky. After all, this thinking goes, a tsunami of public outrage is perhaps the only way to alter dominant institutions and realign values, both necessary to save the planet. Generating widespread support for a sustainable world won't be helped by protests or sharp statements that make off-putting claims or risk alienating the super-majorities upon which fundamental change depends. It is far better to walk one's talk, lead by example, and reward "green" companies with our purchases, all the while keeping an eye on the horizon for an newly emergent ecological consciousness.

It is understandable that my students, and others like them, see the world this way. Indeed, it would be surprising if they did not. Everyday life is awash with messaging that we "save the world" one small act at a time. So awash, in fact, that it is hard to notice unless one is actually looking.

On a recent weekend trip from Singapore to Hong Kong I sought to tally the number of times and ways I was told that I should address environmental problems like climate change via small acts that would aggregate the good deeds of others. I gave up after counting more than 15 instances in the first five hours of my trip. The recycling bins in the lobby of my apartment building implore me to recycle to save the world. My taxi had a placard explaining that if I used a little less water I'd be joining thousands of others to create a significant impact. A message on the seat-back screen during my flight flashed "A simple act can save the planet – Please lower your window shade before leaving the aircraft." And, of course, there were not one but three reminders in my hotel room that I could help stop climate change if I reused my towels and acceded to an intermittent change of bed linens. The list goes on in surely familiar ways. Not only is this messaging ubiquitous – it also stands largely unopposed in the everyday landscape. No rival assertions emerge with any consistent force about how we best translate our concern for the planet into meaningful action.

[10] Protesters from the 1970s aren't the only ones subject to this gaze. See, for instance, Attari, S. Z., Krantz, D. H., & Weber, E. U. (2016). Statements about climate researchers' carbon footprints affect their credibility and the impact of their advice. *Climatic Change*, *138*(1-2), 325-338.

Of course, naïve faith in the spontaneous aggregation of good deeds isn't new to environmental thinking. The voluntary simplicity movement, which valorizes low-consumption simple living, was an especially effective carrier in the 1970s and 80s of the notion that we change the world one individual lifestyle choice at a time.[11] The appropriate technology movement, flourishing during roughly the same period, advanced a similar sensibility. Its "Cuisinart theory of social change" (if everyone owned a Cuisinart we'd all become great home chefs) asserted that fundamental social change could be achieved by individual adoption of small-scale, environmentally benign technologies. To drive fossil-fuel companies out of business, or at least weaken them to the point of political malleability, bolt a solar collector onto your roof, persuade your neighbor to do the same, and wait for the power of aggregation to assert itself. [12]

Both movements were largely swept aside by the rise of neo-conservatism in the early 1980s. As political theorist Langdon Winner poignantly observed with reference to the appropriate technologists, "they were lovely visionaries, naïve about the forces that confronted them."[13] Important as living a simple life or being mindful of the technologies we purchase can be, focusing only on these elements too often constituted a flight from power rather than engagement with it.

One might have expected an alternative ideology to arise within mainstream environmentalism, but this was not to be the case. Instead, three self-reinforcing elements produced a deepening of magical thinking, even at a time when its shortcomings were becoming more evident. One was the rapidly escalating level of public concern over global environmental ills. The sudden and starkly visual discovery of the ozone hole in 1983 focused and crystalized this concern; events culminating in the 1992 Earth Summit in Rio de Janeiro gave it full form. But what was one to do with all this concern? One convivial venue for individual action was, clearly, the marketplace – it was (and is) a seemingly apolitical

[11] Maniates, M. (2002). In search of consumptive resistance: The voluntary simplicity movement. In *Confronting Consumption*, Eds. Princen, T., Maniates, M., and Conca, K. Cambridge: MIT Press, pp. 199-235. For one example from an abundance of "small n" anthropological studies, see Ballantine, P. W., & Creery, S. (2010). The consumption and disposition behaviour of voluntary simplifiers. *Journal of Consumer Behaviour*, *9*(1), 45-56.
[12] The "Cuisinart theory of social change" comes from political theorist Langdon Winner. See Winner, L. (1986). Building the better mousetrap. *The Whale and the Reactor: A search for limits in an age of high technology*, 61-84. See, more recently, Meyer, J. M. (2015). *Engaging the Everyday: Environmental Social Criticism and the Resonance Dilemma*. MIT Press.
[13] Winner, ibid.

venue where the rules are clear, individuals (acting as consumers) are in control, and businesses can be rewarded or punished, daily and easily, via purchasing decisions.

Another driver was the unprecedented growth of membership in mainstream environmental groups like the Sierra Club, Greenpeace, and the World Wildlife Fund.[14] These groups benefitted from deepening public apprehension about environmental degradation and the perceived lack of government action. Their membership rolls and coffers grew during this period, but this good fortune was a mixed blessing. Most groups were coping with a political backlash against legislative victories in the 1970s and were resisting, with limited success, the rollback of key environmental policies. While the lobbying work of these groups was essential to the preservation of key environmental initiatives, it made for poor copy in the newsletters that went out to members. "We managed to keep environmental policy X or program Y from being completely gutted" isn't the sort of inspirational news that the membership department uses to attract support and demonstrate organizational vitality.

A different (or at least complementary) approach to produce desirable environmental outcomes was necessary – something that could involve members in hopeful and effective action capable of circumventing the toxic political environment. The result was campaigns that emphasized personal responsibility over collective political action informed by a new political calculus: If you care about the environment, and are frustrated with government and corporate malfeasance, you can still make a difference through the magical aggregation of small acts of ecological living. Lists of "easy ways to save the planet" proliferated, and *50 Simple Things You Can Do to Save the Earth* became a bestseller. No doubt some environmental groups hoped that increased green consumption would translate into more environmental activism. Other groups were likely trying to buy time until the political landscape shifted in their favor.

Declining corporate profits in the 1980s was the third element in the mix. Cratering profits pressured business to develop new markets and grow existing market share. One outcome was "green marketing" as we understand it today, which rose to prominence in the late 1980s. With increasing sophistication punctuated by moments of recalibration, companies created and promoted an array of

[14] Bosso, C. J. (2005). *Environment, Inc: from grassroots to beltway*. University Press of Kansas.

"ecological" products wrapped around a story of consumer-driven environmental change.[15] "Buying green" and "conscientious consumption" took off like few marketing initiatives before or since, for good reason: these strategies simultaneously met the needs of business, environmental groups,[16] and a public in desperate search of agency.

This unintentional convergence of need and interests among disparate actors, which by and large became the new norm by the mid-1990s, prospers today. It is boosted by the ascendency of neo-liberal faith in markets and emphasis on the individual over the collective, and is wholly consistent with the growth calculus of corporate capitalism.[17] It produces the view that if you are not living and buying "green," you're part of the problem, not the solution. And it leads one to the seemingly obvious conclusion that fixing climate change or other environmental threats to human well-being ultimately depends on enlightened consumer action, leavened by better information and fueled by a mix of guilt and fear.

If a rubbish bin portraying environmental action were produced and marketed today, it would show environmentally minded shoppers in a checkout line, or perhaps concerned environmentalists installing energy- and water-saving devices in their residences. It would be purchased in droves by anxious, conscientious, environmentally informed individuals looking to signal the urgency of climate change and other forms of biospheric assault. The message that this contemporary rubbish bin would send – that we're at our best as agents of change when we modify our lifestyles and shift our consumption – only reinforces the inevitability of climate engineering. It must be challenged if other climate-change solutions are to flourish.

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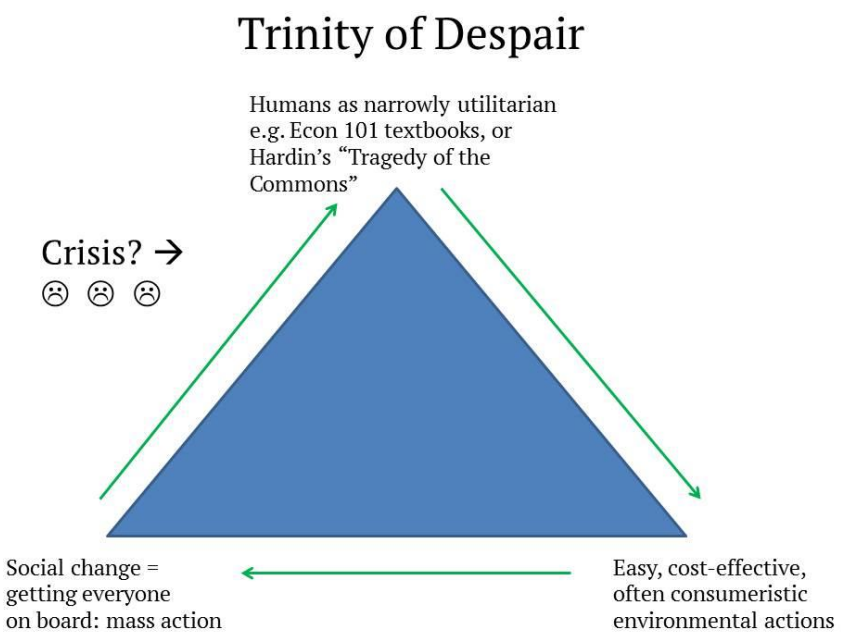
[15] See, for example, Peattie, K., & Crane, A. (2005). Green marketing: legend, myth, farce or prophesy? *Qualitative Market Research: An International Journal*, *8*(4), 357-370; Peattie, K. (2001). Towards sustainability: the third age of green marketing. *The Marketing Review*, *2*(2), 129-146; or Crane, A. (2000). Facing the backlash: green marketing and strategic reorientation in the 1990s. *Journal of Strategic Marketing*, *8*(3), 277-296.

[16] Mendleson, N., & Polonsky, M. J. (1995). Using strategic alliances to develop credible green marketing. *Journal of consumer marketing*, *12*(2), 4-18.

[17] See, for instance, Speth, J. G. (2008). *The bridge at the edge of the world: Capitalism, the environment, and crossing from crisis to sustainability*. Yale University Press, or Smith, T. M. (1998). *The myth of green marketing: Tending our goats at the edge of apocalypse*. University of Toronto Press.

The Trinity of Despair

The notion that we save the planet one small act at a time rests on a naïve faith in the magical aggregation of good deeds. The problem, to be clear, isn't with the good deeds themselves. Living simply or doing our best to consume environmentally friendly products is a pillar of mindful living. These everyday acts keep us present to the urgency of problems like climate change and help us act with grace in the midst of the biological unravelling of the planet.[18] As a colleague of mine often says, it is important that you help your elderly neighbor across the street when you're both standing on the corner. Doing so cultivates inner decency and community connection. Just don't think that your good deed will solve the pension crisis.



Some suggest, moreover, that this so-called naïve faith may not be all that naïve at all. If small acts of green living are, in fact, politically mobilizing, then persuading your neighbor to buy organic food today could prompt her to become a food activist tomorrow.[19] No doubt this hope for so-called "positive spillovers" of green living informed the dissemination of many of the "easy ways to save the planet" lists back in the 1980s. Alas, despite considerable research in this area, there is little empirical evidence that individual acts of everyday environmental stewardship foster higher levels of meaningful political activity around environmental issues.[20] In those many instances where individuals practice

[18] e.g. Litfin, K. T. (2014). *Ecovillages: Lessons for sustainable community*. John Wiley & Sons.
[19] e.g. Lorenzen, J. A. (2014). Convincing people to go green: managing strategic action by minimising political talk. *Environmental Politics*, *23*(3), 454-472.
[20] By "meaningful" I mean sustained engagement with others to alter in conscious and explicit ways prevailing social rules, policies, norms, and/or patterned ways of doing things operating at different scales of human activity,

simple living or green consumption, and also are engaged in community environmental actions or collective political struggle, the causal arrows are muddied; all of these activities appear to be part of a larger citizen sensibility toward the environment. This leaves open the intriguing, underexplored question about which kinds of small and easy lifestyle actions, situated in what sorts of contexts, might be most politically activating.[21]

For now, it appears that small acts of sustainable living, on their own, fail to foster sustained environmental activism or other forms of environmental-citizen mobilization.[22] Indeed, as psychology professor Katherine Lacasse notes in her comprehensive summary of the academic literature, many scholars observe that mobilization or other "pro-environmental behaviors" may be undermined if, after (for example) recycling your trash and cooking your organic food over your sustainably fueled charcoal grill, you put your feet up and assure yourself that you've done your bit for the planet.[23] A naïve faith in the magical aggregation of environmental good deeds could, in other words, impede more muscular citizen action.[24] Since green consumption and simple living cannot, on their own, meaningfully address our most pressing environmental ills – government policies must also change, and they're not for sale at the check-out counter [25] – the prospect of millions of politically complacent eco-consumers is unsettling,

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from the local to the global. This characterization is consistent with that found in, for instance, Steinberg, P. F. (2015). *Who Rules the Earth?: How Social Rules Shape Our Planet and Our Lives*. Oxford University Press; or Bellah, R. N., et al. (1992). *The good society*. Vintage. Because I do not consider writing a letter to the editor of a newspaper or speaking occasionally with a friend about environmental issues to constitute "meaningful" political action (though these are certainly laudable activities with potential political effect), I am at odds with the argument that green consumption does, in fact, lead to political activity. This argument is offered by, for example, Willis, M. M., & Schor, J. B. (2012). Does changing a light bulb lead to changing the world? Political action and the conscious consumer. *The ANNALS of the American Academy of Political and Social Science*, *644*(1), 160-190.

[21] See, for example, Seyfang, G. (2006). Ecological citizenship and sustainable consumption: Examining local organic food networks. *Journal of rural studies*, *22*(4), 383-395. For some ideas about "catalytic" or "wedge" behaviors around green consumption, see Thøgersen, J., & Noblet, C. (2012). Does green consumerism increase the acceptance of wind power? *Energy Policy*, *51*, 854-862.

[22] There is a large literature on this point. See, for example, Johnston, J. (2008). The citizen-consumer hybrid: ideological tensions and the case of Whole Foods Market. *Theory and Society*, *37*(3), 229-270; or Webb, J. (2012). Climate change and society: the chimera of behaviour change technologies. *Sociology*, 0038038511419196.

[23] Lacasse, K. (2016). Don't be satisfied, identify! Strengthening positive spillover by connecting pro-environmental behaviors to an "environmentalist" label. *Journal of Environmental Psychology*, *48*, 149-158.

[24] See, for example, Leonard, A. (2010). *The story of stuff: How our obsession with stuff is trashing the planet, our communities, and our health-and a vision for change*. Simon and Schuster; Princen, T. (2010). *Treading softly: Paths to ecological order*. MIT Press; or Fridell, G. (2007). Fair-Trade coffee and commodity fetishism: The limits of market-driven social justice. *Historical Materialism*, *15*(4), 79-104

[25] e.g. Sanne, C. (2002). Willing consumers—or locked-in? Policies for a sustainable consumption. *Ecological economics*, *42*(1), 273-287.

especially if one hopes for effective climate-change policy that would obviate the need for climate engineering. [26]

As logical as this may sound, the idea that environmentally focused lifestyle choices could distract from citizen action is a lightning rod for some scholars and activists. They argue that framing these issues as consumer versus citizen hides important complexities of human behavior and social change. They note that green consumers and simple-living enthusiasts often characterize their behaviors as political acts that are every bit as well-intentioned as more familiar forms of citizen mobilization. [27] They'd question, moreover, the assertion in the above paragraph that more consumeristic, individual environmental behavior, even when it embraces the magical thinking of naïve aggregation, lacks political salience. What about the communicative aspects of simple acts, in which my small actions signal my commitment to others, laying the foundation for a broad shift in social norms? Or the education that occurs when individuals reflect on their lifestyle choices and discuss these choices with others? Wouldn't the resulting growth in awareness heighten the likelihood of later action in more conventionally political ways?[28] Isn't, then, the "distraction" argument misplaced?

As important as these objections are, they overlook a more devastating effect. Rather than potentially *distracting* us from our capacities and obligations as citizens, naïve assumptions about the power of aggregation may fundamentally *disable* our ability to act effectively should we decide to move beyond our shopping carts and living rooms. The process that could produce this outcome is presented here as "the trinity of despair,"[29] which is represented in the nearby diagram.

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[26] Simple calculations of individual ecological footprints bear this out. The ecological footprint for U.S. citizens, for instance, remains stubbornly high regardless of the mix of individual consumption choices or changes. Even the most dedicated "eco-consumer" ends up with an ecological footprint three to four times sustainable levels. The reason lies with the "services" component of these footprint calculators, which allocates the environmental damage from government policies and programs to citizens of that country. In many instances this governmental impact, which cannot be influenced through savvy consumer choice, is more than half of an individual's overall environmental footprint. See, for example, http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/

[27] e.g. Zamwel, E., Sasson-Levy, O., & Ben-Porat, G. (2014). Voluntary simplifiers as political consumers: Individuals practicing politics through reduced consumption. *Journal of Consumer Culture*, 1469540514526277.

[28] e.g. Schudson, M. (2007). Citizens, consumers, and the good society. *The annals of the American academy of political and social science*, *611*(1), 236-249; Middlemiss, L. (2014). Individualised or participatory? Exploring late-modern identity and sustainable development. *Environmental politics*, *23*(6), 929-946; and Atkinson, L. (2015). Locating the "politics" in political consumption: A conceptual map of four types of political consumer identities." *International Journal of Communication*, *9*, 2047-2066.

[29] As I've reported elsewhere (Maniates 2016, op. cit.), the idea of trinity of despair (TOD) emerged after returning to the U.S. in 2005 after international teaching. My time away made me more aware of behaviors among my

For the next few paragraphs, think of the trinity of despair (TOD) as a thought experiment about how magical thinking might influence citizen action. The TOD begins at the apex of the triangle, with the belief that humans are rational actors with short time horizons who focus only on their own prosperity and security. We are, in short, those *homo economicus* creatures described in economics courses or, to the surprise of some, in environmental science textbooks that analyze environmental degradation through a "tragedy of the commons" lens[30] that privileges the same *homo economicus* caricature. When policy pundits assert that "people will never sacrifice" on behalf of one environmental initiative or another, this view of human nature is on full display. It seems to them to be self-evident: we are selfish and utilitarian creatures. Oddly out of sync with experience – we in fact sacrifice daily, voluntarily and otherwise, for family, the nation, our gods, team-mates, our company, or some future self – this "they'll never sacrifice" narrative is nevertheless deeply embedded in contemporary conversation about climate change and other forms of environmental decline.[31]

If humans are indeed short-sighted and sacrifice averse, then initiatives grounded in easy, cost-effective, "win-win" actions become the best way of engaging individuals around environmental issues (as noted in the lower right corner of the TOD). There are three ways to entice the utilitarian, rationally calculating masses to join in the work of "saving the planet:" (i) encourage them to adopt cost-effective energy- and water-efficient technologies that pay for themselves (e.g. new light bulbs); (ii) promote easy behavior changes that produce tangible personal benefits (e.g. eating more vegetables and less meat for the health effects, or packing one's lunch in reusable containers to save money on disposable bags and eating out); and (iii) market a range of lifestyle and consumer choices that are easy and inexpensive and signal about one's commitment to the environment (e.g. recycling or consciously buying products made

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students back home that I previously taken as "normal." Since then I have gently queried my environmental studies and global affairs students at three different institutions (Allegheny College in Meadville, Pennsylvania; Oberlin College in Oberlin, Ohio; and Yale-NUS College, in Singapore) about the applicability of the TOD to their own experience. I have also shared the TOD in several guest lectures around the United States, and at workshops at international conferences. A large majority of students report that the TOD accurately describes their experience, or the experience of others with whom they closely interact around environmental concerns. For many, the TOD is an epiphany. A national U.S. survey of undergraduate students in environmental studies and science programs in 2009 and 2010 (Rigotti, S. (2010). *Environmental problem solving: How do we make change?* Department of Environmental Science, Allegheny College) offers tentative support for the TOD. More ambitious survey work, to which I allude later in this essay, is nearly complete.

[30] Hardin, G. (1968). The tragedy of the commons. *Science (New York, NY)*, *162*(3859), 1243.

[31] Meyer, J. M. (2010). A democratic politics of sacrifice?, in *The Environmental politics of sacrifice*, op. cit., pp. 13-32.

of recycled materials). Each set of measures produce a stream of benefits to our rational, sacrifice-allergic actors – and, not surprisingly, these are precisely the kinds of measures promoted in the top "easy ways to save the world" lists and books.

Conspicuously absent are measures that might be difficult, expensive, or intellectually taxing. But that's no surprise given the framing assumptions about who we are as a species. The logic behind these "save the world" lists isn't surprising either, and it goes something like this: If small groups of individuals begin adopting some set of these measures, others will notice and jump on board. As this process builds, fueled by the dissemination of information about the sorry state of the planet, even more people will join in. As a large proportion of the overall population climbs onto the bandwagon, the cumulative benefits of these small acts of ecological stewardship will become apparent – and this will lead to further propagations of these behaviors. So far, so good. Inspired by evidence of real impact of individual action, many will become politically active around environmental issues, and policymakers will feel the pressure. New and far-reaching policy initiatives will enjoy support not just from these policymakers, but from major corporations too, since consumers will be voting *en masse*, via their purchases, for clean and green products. The outcome: A more sustainable and just planet, initiated by small and easy changes that grew from insignificance into a force to be reckoned with.

The *sine qua non* of this process is mass participation. The math of magical thinking and naïve aggregation is inescapable: small, individual actions morph into politically potency only if everyone, or nearly everyone, participates. Ubiquitous advertisements for environmental action that say "If everyone recycled their phone book, we'd save 10,000 trees a year" or "If everyone moved to energy efficient lighting, we could shut down five coal-fired power plants" acknowledge as much. Corporations won't change their practices unless they see a significant change in buying patterns. Governments won't alter policy unless most people shift from "ignorant consumer" to "eco-shopper." My neighbor won't start composting until all his neighbors do, at which point he'll awkwardly realize that he's the odd man out. All of the support structures associated with this process – more environmental education, savvy information campaigns, new labeling systems that communicate the environmental consequences of individual choice – are geared toward this "everybody on board" mentality.

This curious notion of social change, which flows directly from a preoccupation with green consumption and simple living and the magical thinking infusing both, is represented in the lower left

corner of the TOD. This curious view exacts three kinds of costs. One is a sea of missed opportunities for mobilization and change around initiatives like the decarbonization of the energy system. For instance, instead of celebrating that 15 – 20% of Americans regularly engage in determined "green" behavior (a remarkable level, given the structural incentives in the U.S to be anything but environmentally sensitive), and strategizing about how to further mobilize this minority, those operating within the TOD focus on the absent 80 – 85% as evidence of failure, and redouble their efforts to recruit the masses to their cause. In doing so, they forget their history lessons about social change. During critical moments of social transformation, large portions of populations are either disengaged or discomfited by the prospect of change. The end of slavery, womens' suffrage, the rise of economic liberalism, gay marriage, the U.S. civil rights movement, the banning of ozone-destroying CFCs – in each of these instances and others like them, social change was driven by determined and strategic minorities. Mass acceptance came only later or, at times, not at all.

A second cost is damage to public perception of environmental thought and action. When those operating within the TOD recognize that not everyone is jumping on board, they naturally respond with more information, flashier messaging, and a stronger appeal to individual self-interest. When these measures fail to deliver – and they will always fail, since super-majority participation is a fantasy, and appeals to immediate self-interest are paradoxically counterproductive – guilt, blame, and fear are the next set of prods to action. The trinity of despair may stand as the most powerful explanation for why the environmental movement, which at one time celebrated the human spirit and the potential of the possible, has succumbed to a woefully ineffective politics of guilt.

A final cost is the "despair" piece of the trinity of despair. Individuals trapped within the TOD easily come to view humans as especially short-sighted and selfish. How else, their thinking goes, can one explain the failure of most people to subscribe, in enduring ways, to critical elements of green living? The planet, after all, is at stake, and the measures being asked of people are small to the point of being almost inconsequential. From here, it is a short hop to the conclusion that we are a corrupt people that value the wrong things in the wrong ways – an evolutionary dead-end, in other words, bent on our own destruction. The only force capable of driving change is crisis: deep, broad, even devastating. The TOD loops back onto itself, reinforcing a dismal view of human nature that started the process.

These costs are the inevitable result of a dynamic that sits atop plausible but dead-wrong assumptions about how people tick and why social change occurs. In theory, at least, they explain much of the cynicism and despair I observe in my students and colleagues who think about climate turbulence and social change. The ascendancy of guilt and fear as primary motivators for individual change also begins to make sense within the context of the TOD. The problem, of course, is that except under very specific conditions, guilt and fear as instruments of mobilization are toxic to enduring social change. Additionally, misanthropy and a misplaced faith in the power of crisis to deliver thoughtful, comprehensive, and just solutions to environmental ills diverts us from the more promising paths to a climate-stable world. Prisoners of the TOD may toil endlessly on behalf of environmental sustainability, but to no good end for themselves or the larger movement of which they are a part.

The TOD is plausible. It conforms to anecdotal evidence gleaned from more than a decade of conversation with environmental-studies students and professors, and many environmental activists. But does it actually explain reality, or even a small piece of it? To explore this question, student colleagues and I surveyed undergraduate students enrolled in environmentally oriented courses at randomly selected colleges and universities in the United States. The survey instrument, available at the website of the author, poses more than two-dozen questions meant to assess the presence or absence of the TOD in the lives of these students. Almost one thousand responses have been collected, making our data collection nearly complete.

It would be premature to report here on intra-group correlations (i.e. statistically significant differences by gender, size of the college or university, age of student, number or type of environmental-studies courses, and the like). However, even at this early stage of data analysis, it is possible to say that large portions of the sample (often approaching 80% or more of our respondents) appear to live within the trinity of despair. A sizeable majority of the respondents argue, for instance, that meaningful social and political social requires, as a prerequisite for action, overwhelming support from the general population. They characterize small and easy environmental measures as a compelling mechanism for recruiting this support. A similarly large portion of the sample blames fundamental deficiencies in human nature for our environmental ills, and supports the claim that a foundational shift in environmental values must occur prior to any meaningful change. Not surprising, crisis is understood by most respondents to be the central source of social change, especially in light of the alleged short-sightedness of humans and the inherent difficulties of persuading the masses to adopt a suite of

environmentally supportive behaviors. Most of our respondents, not surprisingly, confess to cynicism about the future and look, with hope, to some combination of the market and technology to ride to the rescue.

Challenging the Inevitability of Climate Engineering

In theory, magical thinking and the TOD it produces makes climate engineering nearly inescapable. If the TOD is more than a thought experiment – if it indeed captures conditions on the ground – then those who'd oppose the inevitability of climate engineering will benefit from the puncturing of attitudes and assumptions that keep this trinity alive. I count myself among those who oppose this narrative of inevitability and imagine that many readers share my view. In that spirit I employ "we" and "our" for these concluding paragraphs.

The above analysis suggests, first and foremost, that we must reverse the cooptation of the climate-change and energy decarbonization movement by narratives that privilege the small and easy approach to environmental action. We cannot continue to accept the marketing of magical-thinking climate-change solutions to potential climate activists. These supposed solutions are not politically activating, nor are they merely distracting. They are instead likely carriers of immobilizing notions of social change and human nature. By trivializing the tasks before us they cement a set of lowered expectations about what our fellow citizens can be called to do in the struggle to avert potential climate catastrophe. Too often, these lowered expectations and appeals to short-term self-interest prime the very behaviors and attitudes that slow progress toward climate stability.

Instead of condoning, implicitly or otherwise, small and easy initiatives to combat climate change, our task becomes that of creating similarly accessible entry points into meaningful citizen support for a future in which climate engineering is unnecessary. There is nothing wrong with the idea of starting people off with small and easy activities. Time behind the wheel with a driving instructor is advisable before planning a career as a race-car driver. But these easy entry points have to be congruent with the more difficult tasks ahead, and easy lifestyle changes don't generally cultivate the skills and temperament for more ambitious collaborative social change.[32] Buying a more efficient

[32] A point that Paul Steinberg and his "Social Rules" project wonderfully illustrates. See http://www.paulsteinberg.org/the-social-rules-project/

lightbulb is a great thing to do, but it can't make you more confident about your role as a citizen, conventionally defined. It makes you more comfortable as a consumer drawn to notions of naïve aggregation.

To acclimate people to the tasks of citizenry we need a "buy a lightbulb and save the world" equivalent for more robust climate citizenship. President Obama's first campaign for President had it exactly right in those precincts in Pennsylvania where I was living in 2008. Potential volunteers were invited to observe the evening ritual of staffers making phone calls to voters to urge them to become involved in the campaign. At one point, the observers were allowed to listen in on a call (with the permission of the person being called) and then were invited to make a call of their own, with their mentor listening in. Likely supporters of Obama were targeted for these calls, resulting in typically pleasant and affirming conversations. Soon the would-be-volunteers were diving into a set of phone calls on their own and, with the training wheels off, signing up for more ambitious organizing activities. Start easy then move forward. Congruency is key.

What might these "on-ramps"[33] to robust and rewarding citizen action look like for individuals who worry deeply about climate change but are drawn instead to simple living and green consumption? Tackling this question at varying levels of scale, from the local to the supranational, would be a worthy project for those who'd resist a climate-engineered future. It isn't immediately apparent what the Obama-campaign equivalent would be for the local or regional climate organizing. It is clear, however, that the familiar practice of using guilt and fear to urge the public to "get involved" is both insufficient and counterproductive. "It isn't enough," observed sociologist Robert Bellah and his colleagues, "to exhort people to participate. . . We must build institutions that make participation possible, rewarding, and challenging."[34] The Paris climate agreement, by privileging sub-national and city-scale carbon abatement measures as never before, makes even more relevant Bellah's demand for thoughtful institution-building around participation. Rather than embracing the alleged power of naïve aggregation, we could seize this opportunity to demonstrate that social change for the better occurs when small groups of committed individuals work in common for the common good.

[33] Leonard, A. (2013). Moving from Individual Change to Societal Change. In *State of the World 2013* (pp. 244-252). Island Press/Center for Resource Economics.
[34] Bellah, R. op. cit.

All this calls for a healthy dose of introspection. One lesson of the TOD is that most solutions to climate change (or other environmental ills) embody specific claims about how why we have a climate problem and how individuals best act on their environmental concerns. We are typically inattentive to these implicit claims about power, agency, and social change, even as we mix and match solutions (e.g. "getting the prices right," "educate the masses," "develop new technologies," or "mobilize elite sentiment") in service of efficacious climate policy. On its face there is nothing wrong with drawing on an eclectic conceptual and policy tool box in service of climate stability. But if this intellectual pluralism produces dissonant notions of social change and personal agency, then we should be troubled. As Thomas Princen and I have observed elsewhere, the danger is that:

> The openness and flexibility of this approach can produce cobbled-together notions of social change that manifest themselves as simplistic and counterproductive juxtapositions (e.g., "top down vs. bottom up change"), unchallenged articles of faith (e.g., "things only change when there is a crisis"), or a politics of guilt given life by a "naïve aggregation" model of social change that imagines new social and environmental arrangements arising from millions of small "green" consumer choices. Especially troublesome is the apparent belief among some students that all theories of social change are equally valid, to be mixed and matched according to personal taste (or) folk wisdom…[35]

Magical thinking about how small efforts aggregate into large-scale social transformation swirls about us. It permeates contemporary climate-change discourse and operates with near impunity in everyday life. Exposing the pitfalls of this thinking and providing conceptual alternatives could refocus growing public concern about climate change in ways sufficiently powerful to move climate engineering back into the realm of science fiction. We needn't directly resolve the intransigencies of the nation-state system or struggle to circumvent hitches in human psychology to challenge the inevitability of climate engineering. Instead, we might continue to ask why significant support for ambitious climate-friendly measures, especially in the United States,[36] hasn't fully translated into the kind of muscular policy needed to keep us below a 2 degree C. increase in global temperatures. Many answers to this question arise: the intricacies of interest group politics, the inertia of regulatory systems, increasing partisanship and gridlock, a resource curse, among others. But one reason, surely, is the preoccupation by the environmentally concerned with getting everyone on board in service of naïve aggregation.

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[35] Maniates, M., & Princen, T. (2015). Fifteen claims: social change and power in environmental studies. *Journal of Environmental Studies and Sciences*, *5*(2), 213-217.

[36] Roser-Renouf, C., Maibach, E., Leiserowitz, A., & Rosenthal, S. (2016). *Global Warming's Six Americas and the Election, 2016*. Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication.

Turning this disabling preoccupation in more fruitful directions, away from the trinity of despair, must now rise to the top of our agenda. The alternative is a climate-engineered future, with all the peril that implies.