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Weaving local renewable energy projects into a coherent democratic energy landscape: Knowledge, cooperation, and social construction for system change

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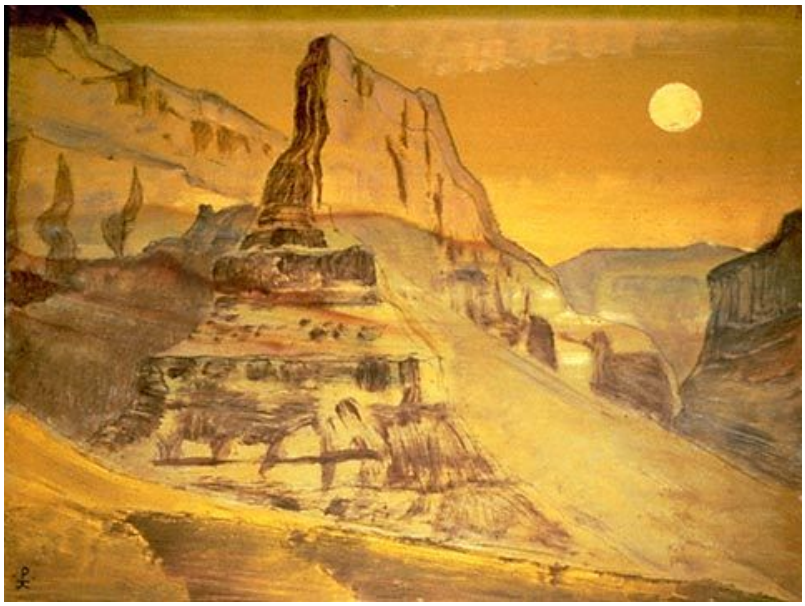

The first European saw the Grand Canyon in 1540. Three centuries later another went, this time with a landscape painter. But the painting was a grotesquely distorted image of the Canyon. Why?

"Neither the conquistadors nor the Army engineers... could make sense of what they saw; they were simply overwhelmed by unexpected revelation. In a fundamental sense, they were blind because they lacked the concepts necessary to organize a coherent vision of an utterly new landscape."

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Cover Image:
Grand Canyon. 1921. Nicholas Roerich. Public Domain uncopyrighted. Wikiart. https://www.wikiart.org/en/nicholas-roerich/grand-canyon-1921 (accessed 12-5-18)

Note: This is not the painting to which the cover image caption refers.

Caption & Quote:
Mike Davis, Can Obama See the Grand Canyon: On Presidential Blindness and Economic Catastrophe.
http://www.tomdispatch.com/post/174989/mike_davis_casino_capitalism_obama_and_us

Intended Audience:
Activists, concerned citizens, faith communities, various nonprofit organizations, funders, community development agencies, scholar-activists, local governments, energy transition projects, civic leaders, thinkers/doers, and agents of locally-driven, globally minded social change.

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The views expressed in this paper are solely my own and may or may not reflect the opinions of those with whom AIRE works. Neither AIRE nor myself have received any financial support from any source for researching, drafting or publishing this paper.

Production and consumption of electricity is my primary focus, but I do so from within a larger systems frame. My views are unapologetically critical in light of the urgency of the emergency we face. This simply cannot be ignored. Granted, some of us are wide awake to this and even a growing number of the public at large are awakening. But, we need more than mere acknowledgement now; we need concrete actions. I do not claim to have answers but do attempt to lay some ground for piecing parts of the solutions together. I have taken great pains to draw the line between perfect, publishable, and legible on the one hand, and producing a quickly drafted thought piece for sharing and conversation, on the other. Perfectly formatted citations and other transgressions substantive and not must be forgiven. I certainly have not adhered to any “rules of publication” and I welcome constructive comments and dialogue.

As reviews and comments come in, I’ll repost this paper with updates.

Introduction

This paper could start in several places. I constantly ask myself, why is it so difficult to develop small renewable energy projects, even in organizations where the desire is great and the funding is sufficient? This was one of the questions that led to AIRE's focus on project development a decade ago. "It's a finance problem," we thought. In hindsight, that's only partly correct and moreover, it is a systems problem in which many other barriers conspire. In a systems sense, solving a "problem" in one place ripples out creating another "problem" somewhere else in the system. It's the "squeezing jello" effect. Part of that system certainly is the human-created parts in the form of policies, economics, politics, beliefs and so forth. Reflecting on the pursuit of that work for the past decade, I ask myself has been it worth it; is this the place to put effort and resources? Yes, maybe, but only conditionally is my answer now. That "conditionality" is one thing this paper is about.

Another place to start is asking why do we want to build solar projects, especially ones of this kind? In other words, what are the motivating contexts for this activity, when many of these projects yield so little solar production for such big effort relative to what is needed to achieve "carbon zero?" There are multiple answers to this that may be combined differently depending on who answers the question. For some, the answer may lie primarily with economics, while for other, I expect the majority, the reasons are more ecological and moral. I don't mean to situate good economic reasoning as being in opposition with good morality, but I do find rational economics and morality oftentimes not shared in the same conversation. There does seem to be an unhelpful dualism. Many of these answers, if the dots are connected, lead to a larger set of questions. What about climate change? What about the human condition and the role that systems created by humans have played giving us this present circumstance, this emergency if you will, and what about that role now, given the direness of the emergency? Do we have the capacity to see all of this clearly, and will we sufficiently organize to insure that we have a future? There are many questions. I'll leave aside one of them; the question of is it too late? A considerable voice exists that suggests fear does not motivate. My intent isn't to stoke fear but I do think we must be honest. What I hope comes through is that we have the abilities to imagine better worlds. We might more modestly call this solutions-oriented work.

Where this all points is toward an emergency. I will use that word frequently so I might as well define in the full context in which I will use it. I intend the word emergency to be in the singular, composed of several interrelated emergencies (in the plural). The climate and carbon problem is one obvious context. This alone is serious and certainly warrants high alert emergency status. The other context has to do with the many struggles, suffering, alienation and dispossession that engulfs so many human beings– the erasure of lives, histories and possibilities. In my perspective, these as different dimensions of the same emergency.[1]

[1] I feel a kinship to Murray Bookchin's social ecology perspective that man's domination and destruction of the environment follows from the domination of man. See Murray Bookchin's *The Ecology of Freedom*.

A sober acknowledgement of emergency, is a departure point that must be understood and explicitly acknowledged, but not a place for dwelling. I intend to emphasize some ways we might think of overcoming this emergency that are honest, bold, different and possibly even pragmatic. The intersection of emergency and transcendence is where I pick up. The core of this paper deals with two energy models– democratic microgrids and socialized energy. I follow the arguments of noteworthy writers proposing these models, then I lay down some critical observations about barriers to change as well as speculate on some ways to deconstruct these barriers, including navigating in inner worlds of mindsets, commonsmaking, and collective work among multi-sited changemakers Here, rather than proposing “solutions” or claiming to have a “plan,” my intent above all is to shift the conversation in critical ways.

Transparent thinking, faulty assumptions, contradictions, and positions that will threaten certain beliefs and systems of power are are all things I can guarantee in this paper. I call this a working paper, and as such, will leave some topics and questions as works in progress. Also, I will break from any single convention (e.g. scholarly, agency white paper, essay, etc.). In fact, I am unconcerned with boundaries. I will cross boundaries from local to the global and back again, but it isn’t just spatial boundaries I’m referencing. Because I take a systems thinking view on the topic, I will veer into many disciplines, some a bit more deeply than others– public policy, political ecology, economics, philosophy, education, anthropology– to name a few. Something as complex as the climate emergency and our lack of response to it cannot be adequately understood without seeing in multiple ways. It will at times contain my reflexive voice that may be impolite to some, at times be ethnographic, and at other times be case study, or critical essay or even manifesto. The paper could be a difficult read for this reason but I do think there will be ideas in it to flag for further thought and action. Nonetheless, I hope it will invite and expand dialogue, plant seeds for collaboration, co-design and experiments that will accelerate the depth, scope and scale of community-based renewable energy development within a broader context of system change.

Energy at the crossroads of democracy and a livable planet

Our present “leaders” are blind, perhaps blinded by greed, and lack the human capacity to organize a new vision of an utterly new emergency landscape. Therefore, WE must. This modern new landscape is framed by threats to democracy and self-inflicted threats to human civilization. But some, especially the youth of the world, have the courage, vision and wisdom to confront a landscape that has no analogue in human history. It is a new landscape where there is no normal, only constant change, at a pace difficult to perceive. Yet, it is a landscape that has been in the making for a long time. Human constructed systems have put us here. I am stunned and inspired by the frank talk of one 15 year-old girl from Sweden. Gerta Thunberg’s remarks, face-to-face with the UN Secretary General in December 2018 at the COP24 climate talks reinforce hope that the youth will deal with the landscape that is rapidly foreclosing on our future. Her talk gained quick international notoriety around the progressive internet news sites. Bearing witness in the face of power, some of the story she told the UN gathering includes:

> ...when school started in August this year I sat myself down on the ground outside the Swedish parliament. I school striked for the climate.
>
> Some people say that I should be in school instead. Some people say that I should study to become a climate scientist so that I can ”solve the climate crisis”. But the climate crisis has already been solved. We already have all the facts and solutions.
>
> And why should I be studying for a future that soon may be no more, when no one is doing anything to save that future? And what is the point of learning facts when the most important facts clearly mean nothing to our society?
>
> Today we use 100 million barrels of oil every single day. There are no politics to change that. There are no rules to keep that oil in the ground.
>
> So we can’t save the world by playing by the rules. Because the rules have to be changed.
>
> So we have not come here to beg the world leaders to care for our future. They have ignored us in the past and they will ignore us again.
>
> We have come here to let them know that change is coming whether they like it or not. The people will rise to the challenge. And since our leaders are behaving like children, we will have to take the responsibility they should have taken long ago.[2]

Greta Thunberg is an inspiring young person, and she is not alone. There are many examples of youth speaking out, speaking truth to power and openly bearing witness to the harmful acts of adults. I’m comforted to know that their voices are speaking out. In the United States, there is no better example than the Juliana vs U.S. This landmark constitutional climate lawsuit pits 21 youth against the federal government.[3] Other examples of this growing movement include the Extinction Rebellion, which began in the UK and is rapidly expanding internationally, and the Sunrise Movement, led by youth in America. These developments are occurring too rapidly for an adequate description given the limitations of written text.

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[2] Gerta Thunberg speech to UN secretary general Antonio Guterres. YouTube. https://www.youtube.com/watch?time_continue=19&v=1Cve4bLDrIM (viewed 12-4-18). Updates- a better audio can be found here (https://www.democracynow.org/2018/12/11/our_leaders_are_behaving_like_children). Also, an extended interview with Gerta Thunberg, revealing her inspiring story, struggle, leadership and intellect can be found here (https://www.democracynow.org/2018/12/11/meet_the_15_year_old_swedish).

[3] See Our Children’s Trust for background and up to the minute updates. Also see Steve Owen and Audrey Koncsol. “The Trial of the Century: Kids, Climate and the Law’s Role in Allocating Harm.” *North Carolina State Bar Journal*. Winter 2017. Access at AIRE- https://drive.google.com/file/d/1urDQUXOO1ozzUUXG057-87dOClazN3Gz/view.

The world's investors are also increasingly concerned about climate change although for different reasons– MONEY. Gathered at the same UN conference with Greta Thunberg, investors expressed concern that climate change and urged immediate carbon emissions and implementation of a carbon tax, without which they foresee an economic crash several magnitudes worse than the 2008 crash.[4] "The long-term nature of the challenge has, in our view, met a zombie-like response by many,"[5] was the view of one IMF fund manager and no doubt a point of common cause with the youth.

Eight years ago, the scholars Herbert Reid and Betsy Taylor in *Recovering the Commons: Democracy, Place and Global Justice* suggested that deepening inequality and the myth of progress would lead to at least two possible political formations. "One direction is a right-wing nationalism enforcing new scarcity formulae rationalized by 'patriotic' sacrifice. A second possibility is the democratically chosen politics of limits based on a much more decentralized and sustainable energy system."[6] There can be little doubt now, just days into 2019, which path has emerged. Reid and Taylor's prophetic passage is one of the many markers of time wasted. Because of our demonstrable overshooting of limits, time is a luxury that we no longer have. Not only is it a marker of time, it is also a sketch of a preferred vision for livable communities and planet.

I mean to suggest then, with considerable urgency, that incrementalism, atomization, and compromise will perpetuate destruction more than catalyze change. References to "emergencies" in the context limits as manifested through climate change, the deterioration of human condition through vast and growing inequality, and the facistic turn in politics here and around the globe have ratcheted up dramatically in the past two years. The shocks and crises now come at us with mind-numbing speed. Regrettably, the examples are too numerous to list as each new one is quickly forgotten in the news cycle and replaced with yet newer ones. The Fourth National Climate Assessment[7] is the example I'll use for the current significant benchmark. Conversely, in other ideological orbits, discourses are deploying the language of personal fear and loss, scapegoating, and threats of the "other" against a certain status quo. The Central American migrant "caravan" and the ever present boogeyman of government regulation, bookend the daily dose of dystopian news from corporate media. These themes, stories, and images have become ubiquitous in daily life.

Which political formation will win out? Clearly, the emergent nationalism at home and abroad is a turn to be taken seriously. It feels like we are tilting heavily on that leg. However, despite the darkness in this convergence of emergencies, or maybe largely because of it, the attractiveness of democratic politics and sustainable energy system path is more compelling than ever. Let's

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[4] Tackle climate change or face financial crash, say world's biggest investors. https://www.theguardian.com/environment/2018/dec/10/tackle-climate-or-face-financial-crash-say-worlds-biggest-investors (viewed 12-10-18).
[5] Ibid.
[6] Herbert Reid and Betsy Taylor, *Recovering the Commons: Democracy, Place and Global Justice*. 2010. P.52.
[7] Fourth National Climate Assessment. Volume II: Impacts, Risks and Adaptation in the United States. https://nca2018.globalchange.gov/. This is a very long and devastating report. Prestige media coverage with summaries are available in New York Times, Washington Post, and others.

call this the “energy democracy” path. I am encouraged by the level of activism around it. Reid and Taylor are among those calling out the corporate state as a political entity as much as it is an economic entity. Lewis Mumford’s naming of this energy consuming political economy almost a hundred years ago astutely foretold the system’s core identity-- “carboniferous capitalism.”[8] Mumford, in this concept, recognized the merger of “science, capitalism, and carbon power” for the purposes of “fulfilling an underlying imperative of ceaseless growth.” Mumford, like Ivan Illich, also saw the social side of carboniferous capitalism’s environmental impacts, observing that “[e]nergy systems have underpinned and constructed deeply unequal social relations, as well as imbalanced nature-society relations, since the dawn of the fossil fuel era.”[9]

The notion of energy corporations being political entities is consistent with our experience in community scale renewable energy development and others actively fighting corporate energy. The large investor-owned utilities (IOU) have wielded their great powers[10] to protect their outdated business models and corporate profits, which has rendered AIRE’s individual accomplishments and that of our peers vastly unremarkable in view of the massive carbon reduction that will be required in the next decade.[11] Like many other nonprofit organizations, grassroots groups, and concerned citizens, we now recognize the dire emergency and the need for a plan– something new, radically different, and more interconnected. So even though our collection of work may be unremarkable in a “limits” sense, we have laid pedagogical and experiential foundations to build upon. Now we have to find better ways to continue.

I am talking about a politics that goes far deeper than the superficial partisan brand of party politics. I am talking about a system of politics, the source of its power and the purpose for which that power is projected. My nonpartisan claim might be best verified by a former president’s recent speech in Texas, a president that many identify as progressive:

> Barack Obama, speaking to the Baker Institute, made sure the audience of wealthy Texans, many in the oil business, gave him credit for making the United States a world leader for oil and gas production. He said, “American energy

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[8] Lewis Mumford. *Technics and Civilization*. 1934. p. 151-211. Cited in John Byrne, Noah Toly and Young-Doo Wang. 2006. Introduction: Modern Energy and Modern Society. In *Transforming Power: Energy, Environment, and Society in Conflict*, edited by J. Byrne, N. Toly and L. Glover. New Brunswick, NJ: Transaction Publishers. p.ix..

[9] Ibid. p. ix.

[10] For example, Duke Energy (Charlotte, NC) spends some $80 million annually to influence public opinion buy political influence, according to NC WARN. Duke disputes the claim. See Sue Sturgis. INSTITUTE INDEX: Challenging Duke Energy’s influence spending. 11-27-18. https://www.facingsouth.org/2018/11/institute-index-challenging-duke-energys-influence-spending.

[11] I suppose I shouldn’t speak for other, but I will say that I am not satisfied with the work I have done. The idea of impact is something that I struggle with, since on the one hand, grant funders like the language of impact and accountability. The problem I have with impact in this context is that impact is sometimes measured in small, safe, and atomized ways that lose all connection to any possibility of transformation. In other words, work can become instrumentalist when is too reductionist. On the other hand, our work has not shied away from “mission impossible.” We have not worked toward modest goals, while shielding our vision from the difficulties and challenges that seem to be closing in. There is, therefore, the personal “I” and the personal “we.” When I claim that we have not accomplished much, I mean I and we.

> production . . .went up every year I was president. And . . . suddenly America's like the biggest oil producer, that was me, people," eliciting cheers.[12]

And the facts bear out the accuracy of Obama's boasts. While he delayed the high profile Keystone Pipeline project, he approved the equal of 10 Keystones, oversaw the fracking boom and other fossil fuel bonanzas. The article's authors do admit that compared to Bush-Cheney before and Obama's successor, the current inhabitant of the White House "...takes climate denialism and climate destruction to new levels."[13] Clearly we are headed in the wrong direction, and maybe over the cliff already.

In their report *What Lies Beneath*, David Spratt and Ian Dunlop, reflect back to the 1992 Rio Earth Summit when it appeared that climate change might be recognized by the world's leaders as a planetary threat all held in common:

> Today, as a consequence, and despite the diplomatic triumph of the 2015 *Paris Agreement* , the debate around climate change policy has never been more dysfunctional, indeed Orwellian.
>
> In his book 1984, George Orwell describes a double-speak totalitarian state where most of the population accepts "the most flagrant violations of reality, because they never fully grasped the enormity of what was demanded of them, and were not sufficiently interested in public events to notice what was happening. By lack of understanding they remained sane."
>
> Orwell could have been writing about climate change and policymaking. International agreements talk of limiting global warming to 1.5–2°C, but in reality they set the world on a path of 3–5°C. Goals are reaffirmed, only to be abandoned. Coal is "clean". Just 1°C of warming is already dangerous, but this cannot be said. The planetary future is hostage to myopic national self-interest. Action is delayed on the assumption that as yet unproven technologies will save the day, decades hence. The risks are existential, but it is "alarmist" to say so. A one-in-two chance of missing a goal is normalised as reasonable.[14]

Therefore, I am thinking about something that transcends politics, at least the kind of politics we consider normal, since we see the trouble with normal.[15] I am thinking about transformative possibilities and what it takes to change our energy system, but more importantly, to transform

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[12] Kevin Zeese and Margaret Flowers. Climate Crisis Made Worse. counterpunch. 12-5-18. https://www.counterpunch.org/2018/12/05/climate-crisis-made-worse/ . (accessed 12-5-18). The Baker Institute link in the quoted passage from the article article is https://www.c-span.org/video/?455056-1/president-obama-secretary-state-james-baker-discuss-bipartisanship.

[13] Ibid.

[14] David Spratt and Ian Dunlap. "What lies beneath: The scientific understatement of climate risks." Breakthrough- National Centre for Climate Restoration. Melbourne, Australia. September 2017. p.2.

[15] I purposefully borrowed the phrase "the trouble with normal" from Canadian singer-songwriter Bruce Cockburn's album of that title. The key line of lyrics is "the trouble with normal is it always gets worse."

of our relationships with one another and with the planet we all share in common. Without a doubt, this transformation is much broader than remaking ways we generate and consume electricity, though that is my primary focus. This kind of transformation, moral in its roots, will be necessary, I believe, if our technological designs deliver what they must– benefits to society and a zero carbon economy. However, those technologies alone, without social transformation, will not deliver what is necessary. I am thinking thus, about worldviews, and this is something the youth have to teach us.

As Greta Thunberg stated in plain language, we can't save the world by playing by the rules, which brings me to this– First, we need a more critical understanding of the current state of renewable energy, which is dominated by corporate logics. Second, we certainly need to divorce ourselves from monopoly utilities and the economic system of which they're a part. I propose that there is a better way.

Rethinking energy

Much of energy reform talk glamorizes the increases in installed capacity of renewable energy, but largely stays within instrumental[16] bounds, careful not to wholly implicate the corporate state energy model and market-based ideology driving much of that renewable energy capacity growth. This celebration is underpinned by the belief in the ultimate progress of renewables as a market inevitability.[17] What is largely absent in the discourses on energy and society are more radically transformative possibilities that have less to do with market primacy and more to do with service to people, like public ownership and other socially innovative reorientations of energy production and consumption, and the logics behind them. The term "death spiral" is sometimes associated with the centralized utility business model's fear of competition with distributed generation, and a sinister justification for continued monopoly protections and regulatory giveaways.

The point here is to make the distinction between "instrumentalist" efforts aimed at improving the current energy system without fundamentally changing it, and critically questioning the value of the current system itself, including arguing for a better system, which, in this case must include net zero carbon emissions and concrete accountability timelines.[18] There is room no longer for compromise, which is a call to discard instrumentalist strategies and adopt full-fledged critical strategies. Again, to make the distinction clear, instrumentalism is when reason "is made subservient to practical utilitarian ends. Diverting reason from the study of universal questions,

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[16] Instrumentalism comes from the famous critical theory work of German sociologist, Max Horkheimer at the Frankfurt School. Horkheimer's seminal publication on the topic was *The eclipse of reason*. 1974 [1947]. New York: Continuum.

[17] The intrepid David Roberts left us a parting gift for 2018, a very useful distillation on Vox dealing with market scenarios for carbon reduction. See "The case for 'conditional optimism' on climate change." 12-31-18. https://www.vox.com/energy-and-environment/2018/12/28/18156094/conditional-optimism-climate-change.

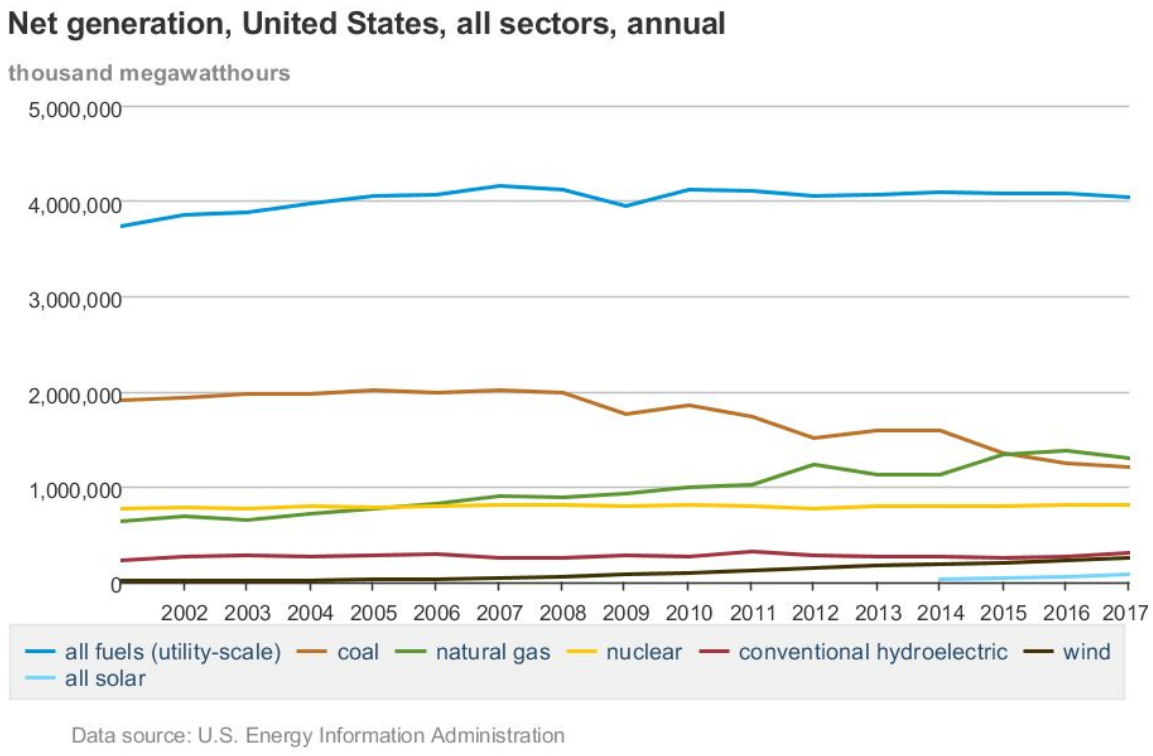
[18] I exclude nuclear here, even though that industry claims itself carbon free, as do some proponents of nuclear as a solution to the climate emergency.

and attaching it only to the resolution of short-term practical problems, serves to maintain capitalism and bolster bureaucratic rationality".[19]

By explicitly rejecting instrumentalism, I can make two claims in order to build the foundation for the argument I am putting forth here. First, that the centralized model of energy generation is outmoded, undesirable, and dangerous given present emergencies. The second, is that renewables are not yet the disruptive, transformational force that some gleefully believe. Renewables are growing, but the optimism should be put into a more concerning, albeit accurate context:

> Relative changes within the overall energy mix should not be confused with changes in the overall levels of production and consumption of any given form of energy. By focusing only on the levels of growth achieved in deployment of renewable energy in recent years, outside the context of the broader growth in overall energy demand and consumption during that same period, we risk drawing conclusions that are completely out of touch with reality.[20]

The chart below from the U.S. Energy Information Administration (EIA) shows solar barely



registering a visible appearance in the source mix in 2014 and wind doing a little better. Natural

[19] Stephen D. Brookfield. 2005. *The power of critical theory for adult learning and teaching*. Maidenhead, UK: Open University Press. p.69.
[20] Sean Sweeney and John Treet. Energy Transition: Are We Winning? Trade Unions for Energy Democracy. Trade Unions for Energy Democracy. January 2017. p.13.

gas overtook coal in about 2015 (coal is bad but so is natural gas). Overall, I think Sweeney's point (quoted above) holds, which is that changes in overall energy mix isn't sufficient to declare victory. I'll avoid the deeper-dive quantitative argument for now. The gap appears large but one that could be rapidly closed with adequate purpose.[21]

What about new demand for electricity? What purpose does it serve? One of the more interesting turns in energy in "modern" life is the use of bitcoin as an investment and payment cryptocurrency.[22] Although I suspect many of us know only generally what bitcoin is, it does merit some attention for its potential for radically increasing global warming. A new study published in the journal Nature Climate Change claims that if bitcoin continues its present adoption path, it alone, because of its massive electricity consuming computing needs, would produce enough CO2 emissions to push the planet over the 2 degree C threshold in less than three decades.[23] Add to this, video gaming, the expansion in server farms, electric vehicles and so many other new demands for electricity beg the question, if we are to power these things and achieve energy equity, how would we do it and stay under 1.5°C or 2°C limits, and what are the societal values of these new electric demands?[24] In other words, can we keep increasing consumption? We must fundamentally evaluate the growth in renewables relative to overall energy demand.

Amazon is touted as a corporate champion of renewables, and indeed, it has lots of wind and solar. North Carolina is one of the states hosting some of the company's renewables, with the state's largest wind farm.[25] The power goes to Amazon's suburban Virginia facilities. Other tech companies are also leading the way with renewables adoption. But the question arises, again, for what purpose? Amazon gives us an opportunity to critically reflect. Here we have all of the elements of the dominant paradigm that I have/will make claims are in need of change if we are to stay under 1.5°C. More renewables to power more consumption? Big corporate wind? Consumption and profit? Interestingly, the governor stated at the groundbreaking that "we can provide affordable, reliable and secure sources of energy that are environmentally clean and safe." This is rarely the rhetoric aimed at renewables, especially coming from a pro-fossil fuel republican politician. This wind capacity is impressive given what existed before it. But these attributes ought to be more critically assessed, if we're asking "energy for what?"

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[21] EIA does show renewables being the fastest growing source in the mix. See https://www.eia.gov/todayinenergy/detail.php?id=38053#.

[22] Nathan Schneider calls bitcoin an experiment in anthropology as much as one in cryptography, and gives an interesting journalistic account in *Everything for Everyone: The Radical Transition that is Shaping the Next Economy*. Nation Books. 2018. p.101-132.

[23] Mora Camilo, etal. Bitcoin emissions alone could push global warming above 2°C. Nature Climate Change. October 29, 2018. p.931-933.

[24] I must add that some scientists estimate that we already have a near-zero probability of staying under 1.5C and an only slightly better chance of staying under 2C.

[25] See this 2015 piece from Carolina Country, the monthly periodical published by North Carolina electric membership corporations, Amazon plans to buy power from a big wind energy operation in northeastern North Carolina. In it the former governor, a conservative Republican and former Duke Energy employee, touts the project as an important energy diversification step. https://www.carolinacountry.com/your-energy/energy-education/departments/more-power-to-you/amazon-plans-to-buy-power-from-a-big-wind-energy-operation-in-northeastern-north-carolina.

This is not an easy qualitative and subjective critique. It has many layers, nuances and contradictions. Landowners receive income and that's important. It's likely that there are good permanent jobs associated with operations and maintenance. But here's where I suggest we ought to look more critically at the Amazons, Googles, Apples and Facebooks, when we point to them as leaders in corporate renewables and jump on the bandwagon of server farm's as economic development and renewable energy opportunities. According to an interesting Truthout piece, Amazon is vying for a Pentagon contract that is as real as it's science fiction counterpart. According to the piece, the Pentagon recognizes that it would be preferable to privatize the project it envisions rather than develop it in house. The project is "to build a global 'brain' for the Pentagon called JEDI, a weapon of unprecedented surveillance and killing power, a profoundly aggressive weapon that should not be allowed to be created."[26] Understanding that modern warfare is a modern technology affair would surprise nobody, but what is interesting is the merger of a technology that most perceive as the innocent domain of modern consumerism with modern militarism. Purportedly, this project would give the Pentagon access to Amazon's customer profiles that would become "instruments of these customers' intimidation and control" adding further, "In a real way, the acquisitive impulses of hundreds of millions of people may well become the stuff of their imprisonment and, in some cases, their deaths."[27] It is worth noting that Google dropped out of the bidding in large part because of employee pushback. Amazon and Microsoft, facing similar employee blowback, did not.

Let me offer another story that may give us some perspective on these "modern" technology questions. Reflecting on an earlier time, the agrarian Wendell Berry gives a simpler example of this. He describes how farmers in hilly eastern Kentucky used to carefully terrace their farm fields with teams of mules or horses in order to prevent soil erosion. Then came tractors and mechanization, and unintended consequences:

> When they bought their first tractor, the farmers, without knowing it, had put themselves onto the ratcheted single track of technological progress, which would lead millions of them into failure and out of farming. Meanwhile the survivors were ignoring the old terraces, and were cropping slopes and waterways as if they were flat.[28]

Berry continued, connecting the dots:

> [t]he first tractors were small, not significantly "better," which to say faster or more powerful, than the teams of mules or horses that they replaced. They were merely more fashionable and in some ways more convenient. And yet the difference the tractors made was profound and without limit. Before, the farm's working energy came freely from the sun, and cheaply from homegrown pasture, hay, and grain; now it had to be purchased from a corporation at a cost determined by the corporate economy; fuel, parts, and depreciation the farmers now paid as a kind of rent for the use of their own

[26] Jared Rodriguez. "Alexa, Drop a Bomb": Amazon Wants in on US Warfare. *Truthout*. 12-16-18. https://truthout.org/articles/alexa-drop-a-bomb-amazon-wants-in-on-us-warfare/
[27] Ibid.
[28] Wendell Berry. "Leaving the Future Behind: A Letter to a Scientific Friend." In T*he Art of Loading Brush: New Agrarian Writings*. Counterpoint. Berkeley, California. p.90.

> property. Before, the scale and speed of work was subject to biological limits; now it was subject to the mechanical logic of industrial progress, which doomed the small tractor to be replaced by a big one that was doomed to be replaced by an bigger one, and so on and on.[29]

Lastly, Arturo Escobar's example of technology and design brings us an important axiom or guiding principle:

> ...the Amazonian indigenous maloca (indigenous longhouse) versus the archetypical nuclear-family house in suburban America…"give me a maloca, and I will raise a relational world"... conversely, give me a suburban home, and I will raise a world of decommunalized individuals, separated from the natural world. Design thus inevitably generates humans' (and other Earth beings') structures of possibility.[30]

Whether we're designing modern energy systems to power modern enterprises and modern warfare, or tilling the earth, or American suburbs, there is a guiding principle that could help us critically reflect on the question of energy for what. "Design designs" is that guiding principle, to which I will return shortly.

In thinking deeply, morally, socially and physically about energy in the context of public good, I've found it interesting to reread *Energy and Equity*, Ivan Illich's 1974 reflection of the oil crisis precipitated by a political conflict involving Israel and an oil embargo imposed by middle eastern oil exporting countries. Although his critique is aimed at the energy consumption of mobility, it is an important text for critical studies of energy in general. One of the capstone points is:

> The energy crisis cannot be overwhelmed by more energy inputs. It can only be dissolved, along with the illusion that well-being depends on the number of energy slaves a man has at his command. For this purpose, it is necessary to identify the thresholds beyond which power corrupts, and to do so by a political process that associates the community in search for limits.[31]

Illich called for "counterfoil" research, which he defined as research that runs counter to the research of experts for institutions, and instead sought to situate energy within and in service to moral communities. This research program consisted of three steps. First, recognizing that limits on per capita energy use is a social imperative. Next was to determine where that "critical magnitude" might be found, which I read to mean understanding where, and the processes by which that limit should be established. Then in the final step, every community would decide what trade-off it would accept between "idolizing power devices and joining in rituals directed by the professionals who control their operation."[32]

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[29] Ibid. p.90.
[30] Arturo Escobar, Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press. 2017. p. 111.
[31] Ivan Illich. Energy and Equity. Calder & Boyars Ltd. London. 1974. p.22
[32] Ibid. p.22-23.

Thus, it is time to radically rethink energy production and consumption. To rethink radically means that questions are more important and more plentiful than answers. Some critical guiding questions, to this end, should include:

- who owns energy generation,
- what kind of generation sources,
- how much is to be produced,
- energy for what (e.g. bitcoin or people's needs in a community),
- is energy generated proximate to demand
- what does ownership, governance, culture, and structure look like
- In short, how do institutions, communities, and more broadly, the commons work out the relations of energy production and consumption?

These are a few of the questions but by no means the only ones. In fact, there may be more important questions than these. "Even if non-polluting power were feasible and abundant, the use of energy on a massive scale acts on society like a drug that is physically harmless but psychically enslaving."[33] This may well be one of the manifestations of modernity; and, a burden to be overcome. Renewable energy, in and of itself, is not the solution to the emergency. Fascination with technology and technique, and the mastery of them, alone are insufficient. I will return to this in greater detail when I discuss two possible energy transition pathways later in this paper.

What is needed is a deep, critical, systemic look at the production and consumption of energy from a social perspective. Many point to capitalism as the source of the climate problem,[34] along with its growth ideology, commodification and profitization of energy. Yes, changing the dominant world system is a mammoth project not readily imaginable. But, what are some possible scenarios we could analyze, experiment with, and pursue in order to change one of its most dangerous industries? In other words, how can we collectively imagine something we can't yet, and what does praxis look like for those of us doing energy transition work? I'll probe that question in this paper, stopping short of offering answers.

As nonprofit solar energy developers and wayfinders over the past decade, AIRE has seen ordinary folks go to extraordinary lengths to develop solar at their schools, churches, and other institutions they value. We see a lot of motivation and personal commitment to solar development for their respective communities, even when faced with repressive policies and regulations that make such work extremely difficult. With the Intergovernmental Panel on Climate Change (IPCC) telling us we have 12 years to avert the most catastrophic impacts of climate change,[35] the rate at which AIRE and others like us can contribute to closing that gap is

[33] Ibid. p.18. And, to note, Illich wrote this in 1974. Now, we would surely amend his speculative tone to acknowledge that renewable energy is feasible.
[34] Naomi Klein's *This Changes Everything* is a widely known example of writers making this claim. Penguin Books, 2015.
[35] If this sounds foreboding, honesty compels me to add that this dark caution– the IPCC tends to be a conservative articulation simply because of the process the body uses and the inevitable political pressures to avoid. What it shields us from are certain nonlinear climate behaviors and the growing probabilities of high consequence events. For more, see for example, David Spratt and Ian Dunlap. "What

insignificant unless our works are somehow woven into a cohesive and collaborative change-making landscape of design and action.

Mind-sets, perceptions and ontologies

The Donella Meadows 1997 classic *Leverage Points: Places to Intervene in a System*[36] ranked and described in order of effectiveness ten leverage points for changing a system. What always fascinated me was her assertion that policy and things like that, where much nonprofit work, expert knowledge and schooling tend to focus, were not very effective places to intervene. She equated these levers to “rearranging the deck chairs on the Titanic.” The most effective place to intervene was changing mindsets out of which the system arises. Yes, I thought, this is a great axiom, but I never satisfactorily answered the question for myself of how we go about changing mindsets. Divine intervention? Education? Spiritual conversion? Coercion? Miracle? Moral argument? Language? Leadership? Crisis reaction?

How do mindsets change? How do we come to see the world differently? How do we come to see that different worlds may be possible and that the myth of the modern world we’ve inhabited may be a fraud?

Fritoff Capra called our interrelated crises a “crisis of perception.”[37] The sociologist Mike Davis used an old Grand Canyon exploratoration metaphor in his critique of the financial crash of 2008. I want to quote it at some length because surely it applies to the interrelated crises now:

> Let me begin, very obliquely, with the Grand Canyon and the paradox of trying to see beyond cultural or historical precedent.
>
> The first European to look into the depths of the great gorge was the conquistador Garcia Lopez de Cardenas in 1540. He was horrified by the sight and quickly retreated from the South Rim. More than three centuries passed before Lieutenant Joseph Christmas Ives of the U.S. Army Corps of Topographical Engineers led the second major expedition to the rim. Like Garcia Lopez, he recorded an "awe that was almost painful to behold." Ives's expedition included a well-known German artist, but his sketch of the Canyon was wildly distorted, almost hysterical.
>
> *Neither the conquistadors nor the Army engineers, in other words, could make sense of what they saw; they were simply overwhelmed by unexpected revelation. In a fundamental sense, they were blind because they lacked the*

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lies beneath: The scientific understatement of climate risks.” Breakthrough- National Centre for Climate Restoration. Melbourne, Australia. September 2017. Clearly, I’m emphasizing the climate crisis but I do not want to dwell here and as such, there is much more that I could cite on the issue that I’ll leave to others.

[36] Donella Meadows, Places to Intervene in a System. First published in Whole Earth Catalog and republished in longer version by the Sustainability Institute in 1999.

[37] Fritjof Capra. 1999. Systems theory and the new paradigm. In *Ecology: Key concepts in critical theory*, edited by C. Merchant. Amherst, NY: Humanity Books.

concepts necessary to organize a coherent vision of an utterly new landscape. [38] (emphasis added)

To whom does this perception charge apply? Certainly those in climate denialist and free-market camps, and likely others merely acquesing even though they have enough information to overcome faulty perception. But I am speaking here to a specific audience. As a devotee of critical theory, I consider myself as one capable of a perception deficit. I am sure I have blind spots. By extension, I would also place nonprofit environmental organizations, grassroots organizing, and others in this category. I see a kind of humility much needed but in short supply with all of the "experts" chiming in with solutions, making claims to funding sources that may or may not be wise, and each jocking for agency as if it's a zero-sum cut throat game. Wendell Berry has written about wisdom, ignorance and the limits of human knowledge, directing a good bit of his reasonable contempt at "experts" of various stripe:

> Ignorance, arrogance, narrowness of mind, incomplete knowledge, and counterfeit knowledge are of concern to us because they are dangerous; they cause destruction. When united with great power, they cause great destruction. They have caused far too much destruction already, too often of irreplaceable things. Now, reasonably enough, we are asking if it is possible, if it is even thinkable, that the destruction can be stopped. To some people's surprise, we are again backed up against the fact that knowledge is not in any simple way good. We have often been a destructive species, we are more destructive now than we have ever been, and this, in perfect accordance with ancient warnings, is because our ignorant and arrogant use of knowledge.[39]

My potential blind spots acknowledged however, the rapid crescendo of emergency alarms right now is so audible that I, therefore, believe a radical rethinking is urgent. In doing so, what I've just said is, in essence, we need to rethink using the different filters that situate experts along side different kinds of knowledge.[40]

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[38] Mike Davis, Can Obama See the Grand Canyon: On Presidential Blindness and Economic Catastrophe. http://www.tomdispatch.com/post/174989/mike_davis_casino_capitalism_obama_and_us

[39] Wendell Berry. "The Way of Ignorance" in *The Way of Ignorance and Other Essays*. Shoemaker & Hoard. 2005. p.59.

[40] And more directly to the point, we need to recognize the institutions and their motivations that steer the public mind into an uncritical acceptance of a brand of knowledge and worldview that benefits its corporate sponsors and not people. For example, see Berald Coles. *Miseducating for the Global Economy: How Corporate Power Damages Education and Subverts Students' Futures*. Monthly Review Press. 2018. I also need to say that I am in no way disqualifying certain people who teach and do research in higher education. Many of them are critical of the academy for reasons noted here. Escobar, "In my view, most major universities are bowing to the pressures to train people to be allegedly successful in what is described without much reflection as an increasingly globalized and interconnected world; this means preparing individuals to compete in market economies, and many of these individuals will carry on the mandate of unsustainability and defuturing." Arturo Escobar, Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press. 2017. p. 154.

We are overwhelmed by multiple escalating crises and by a dominant energy system that is so powerful as to be almost incomprehensible even though we understand it from technological and policy perspectives. There are indeed technical, policy and legal complexities, but the current energy system becomes very complex and yet is rendered malleable to change once we see it as a social system. Affirming the complex nature of systems, the anthropologist Arturo Escobar[41] says, paraphrasing, "design designs" (i.e. we design and design designs us back).[42] I introduced this and offered several examples earlier. Whether it's the adoption of tractors for farming, or artificial intelligence in consumer and military applications, or energy and climate, clearly what we've "designed" has designed us back. In other words, this dominant energy system is a social construction with societal impact which has, in turn, produced a climate system that may ultimately doom human civilization, with tipping points on that slippery slope already at hand, if they haven't already occured. Design designs should not be read as merely a clever word play, rather this seemingly circular logic actually points the way to a powerful leverage point for change. I will come back to design later in the section on places to intervene.

False ideology of optimism

Sean Sweeney and John Treet[43] point to an "ideology of optimism" as it relates to mindsets of progress in reducing carbon and the structures within which such mindsets are guarded and reproduced. They argue that we are not reducing carbon and, in fact, are increasing carbon emissions, even though renewables have expanded marginally. They name this condition the "ideology of optimism," which arises from the neoliberal core of a capitalist system with a sleight of hand— that economic growth can continue and carbon emissions can stabilize. This is labeled "green growth" and growth is the emphasis. Challenging the ideology of economic growth has been a risky business for many decades. We are rapidly running out of road though for reducing carbon. In fact, with only half-hearted efforts to stop, we may not be able to stop the carbon bomb before the cliff edge.

In the introduction to *Tools for Conviviality*, Ivan Illich offers guidance on the value of a technology to society in the form of a natural scale for dealing with the corporate state when it has run afoul of limits. It has to do with the dynamic in which technology (i.e. "man's" tools[44]) becomes inverted (diminishing marginal returns[45]) in its usefulness to society. That is, when tools and technology go beyond a certain point on the scale, "it first frustrates the end for which it was originally designed, and then rapidly becomes a threat to society itself. These scales must

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[41] Arturo Escobar, Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press. 2017. p. 110.
[42] For a very brief commentary and introduction to 'Pluriverse' see Steve Owen. AIRE blog- Making Community Energy Together in the Pluriverse: Thoughts on an Important New Book. 9-26-18. http://aire-nc.org/2018/09/26/making-community-energy-together-in-the-pluriverse-thoughts-on-an-important-new-book/.
[43] Sean Sweeney and John Treet. Energy Transition: Are We Winning? Trade Unions for Energy Democracy. Trade Unions for Energy Democracy. January 2017. P.1-2.
[44] Illich used the gender term "man" consistently, and I am using his term as well when quoting his work.
[45] Basic microeconomics teaches us to stop (whatever we are doing) when adding one more unit of input produces less than the value of that unit.

be identified and the parameters of human endeavors within which human life remains viable must be explored."[46]

He further warns that, "corporate endeavors which thus threaten society cannot be tolerated. At this point it becomes irrelevant whether an enterprise is nominally owned by individuals, corporations, or the state, because no form of management can make such fundamental destruction serve a social purpose."[47] Here it is noteworthy that social purpose has primacy over any form of economic organization, so that there's no preferential argument for socialism or capitalism, for example. (Although one of the models I'll discuss later will make a case for public ownership.)

What are some ways that we might rethink both individually and collectively? I will save this discussion for later in the paper when I discuss places to intervene. For the moment, one tool, a way of framing our critique, our vision and our actions, comes from Frank Adams, and his classic *Unearthing Seeds of Fire: The Idea of Highlander*. He simply and elegantly framed the interrelated importance of honesty, vision, and faith in ordinary people as change agents:

> What ought to be, rather than what is.... From two words—ought and is—arises the tension out of which people will learn and act.[48]

Honesty and humility are necessary, even when derided as pessimistic (I often hear "oh, don't be such a downer"), if we are to accurately know "what is." One has to know her/his departure point to reach a desired destination. Equally necessary is this radical possibility of "ought to be" for driving peoples work together toward it. How "out to be" is envisioned and defined is itself a participatory, democratic process. In between lies a lot of urgent work and wayfinding. It is my sense that we have largely misperceived, distorted and have missed our coordinates on both ends of Adams' great statement and also misplaced one of the two key activities in between. That is, I suggest that there may be too much "acting" and not enough corresponding "learning."

From a climate perspective, one of the most important articulations of the "is" right now, obvious to some, is that the fossil fuel industry must be stopped, by means of better choices that are freely available. We cannot precisely know when any one particular feedback loop will switch from balancing to reinforcing, causing runaway climate change. Maybe it already has. We need to stop extracting and burning, and we need a critical counter narrative to the one the industry spends billions of dollars on to shape the public's perception on energy. And then, we need some possible paths to a just energy transition with deep systemic change. Finally, we need to start walking the path even when it means we're unsure of the next step.

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[46] Ivan Illich, Tools for Conviviality. 1973. P.x-xi

[47] Ibid. P.xi.

[48] Frank Adams. 1992 [1975]. *Unearthing seeds of fire: The idea of Highlander*. 4th ed. Winston-Salem, NC: John F. Blair. P.214.

Fossil fuel industries concede nothing

The energy democracy approaches for changing the dominant energy system that I will discuss shortly will require strong will and unbounded imagination to implement. If that transition is to occur, we will have to face a fact that some would prefer to sidestep for one or a variety of reasons (fear of retribution, funding risk, other dangers of criticality, misperception, etc.). That fact? The industry will concede nothing, as David Sirota recently wrote in The Guardian. It knows it has much (profit and power) to defend. The electric utilities industry itself admitted this when its trade association, Edison Electric Institute, published a report in January 2013 entitled *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*. This report detailed threats to its profitability posed by "distributed energy resources." It called this "a near-term, must consider action by all policy setting industry stakeholders."[49] One recent political manifestation of this is the industry's hard ball response to a very modest grassroots ballot initiative in Colorado.[50]

> As Colorado's local media effectively erased the term "climate change" from its election coverage, the industry managed to defeat the measure by outspending its proponents 40-to-1. In the process, fossil fuel companies' scorched-earth campaign was a clear statement that in the face of an environmental cataclysm, oil and gas moguls will not accept even a tiny reduction in their revenues.[51]

It follows then, paraphrasing Illich's mandate, when industry will not accept a tiny reduction in its revenue in the face of cataclysm, then that industry behavior cannot be tolerated.[52] This is a perfectly rational and appropriate response given the consequential magnitude of the emergency.

In terms of public perception, uncritical perception from within the broader renewables community, and industry clout, there tends to be a celebratory veneer to solar development, North Carolina provides a prime illustration. There is a certain euphoria and sense of pride for the amount of solar that's been developed in the state. It's largely corporate, built with tax incentives, and even though the quantity may be impressive, when put in context of underlying systems of power, carbon budgets, and systemic change strategies, it becomes far less significant. My most critical comment is pointed toward the system within which this great solar

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[49] Edison Electric Institute. *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*. January 2013. P.2.

[50] For an overview, see Steve Owen, Appalachian Institute for Renewable Energy (AIRE). AIRE blog- Energy Politics, Local Autonomy, and the Emergency of Now. http://aire-nc.org/2018/11/12/energy-politics-local-autonomy-and-the-emergency-of-now/

[51] (https://www.theguardian.com/commentisfree/2018/nov/15/climate-change-democrats-oil-gas 11-15-18)

[52] By what means is another story. My focus is on the scenarios discussed in this paper. Others may emphasize direct action and other tactics. Examples of resistance outside of my focus in this paper are, among others, the "valve turners" and the like who engage in civil disobedience and employ "necessity defense" in their legal defenses. The peaceful protest of the 'water protectors' at Standing Rock that was met with state and corporate violence, and other pipeline protests are also examples.

development operates. Corporate, monopoly energy operating within the boundless world of a corporate state. This produces what has been called “energy colonialism” and “energy imperialism.”[53] Duke Energy (and other electric utilities to be sure) has been the beneficiary of this solar largesse by virtue of its monopoly power that allows it to buy the solar output of private developers at wholesale without competition, sell at its monopoly-protected retail rate, and it can “greenwash” its support for solar even while it invests heavily in a natural gas lock-in. This is problematic to say the least. It seems that we have to recognize the barriers to change that energy imperialism present in a social system, carbon budget, and timeframe context.

Situating the critical narrative (energy as a social system)

Agendas and narratives are tools for dominant institutions to control subordinate threats and reproduce power. When agendas and narratives exclude important transformative possibilities outside of incumbent energy systems, as if they didn’t exist, the effect is normalization. We have to critically examine beyond our field of normal sight to see new possibilities.

I will introduce two possible pathways to energy transition in a moment. Both of these pathways paint a clear picture of what energy production and consumption could look like post-transition. First though, I want to bring in what I think is the central theme and important distinction I hope to make about renewable energy.

Energy is a social project.[54] However, much if not most of the literature on renewable energy focuses on technology or economics, even the writing that claims to address social dimensions of energy. This statement serves as a point of departure for the discussion that follows in this paper. The point I wish to make here about mindsets is to jump the track, from the technical to the social, and in doing so, shine light on the renewables discourses, while not so much for the moment at the dominant dirty energy ones, though always bearing in mind. John Byrne and Noah Toly have given us an indicting work from which to pry open these important distinctions, claiming:

> The euphoria of contemporary energy studies is noteworthy for its historical consistency with a nearly unbroken social narrative of wonderment extending from the advent of steam power through the spread of electricity. The modern energy regime that now powers nuclear weaponry and risks disruption of the planet’s climate is a product of promises pursued without sustained public examination of the political, social, economic, and ecological record of the regime’s operations.[55]

They go on to give examples of how voices and organizations that have considerable reputation and agency have been co-opted, bending their work toward the protection of the existing energy

[53] Sean Sweeney. Resist, Reclaim, Restructure: Unions and the struggle for Energy Democracy. October 2012, updated November 2012.
[54] John Byrne and Noah Toly. 2006. Energy as a Social Project: Recovering a Discourse. In *Transforming Power: Energy, Environment, and Society in Conflict*, edited by J. Byrne, N. Toly and L. Glover. New Brunswick, NJ: Transaction Publishers. p.1-32.
[55] Ibid. p.2.

regime, through techno-fixing and economic rationalism, which amount to a de facto defense of the underlying energy system itself. At best, they have adopted critical pragmatists positions, softened their language and adopted the language of economic rationalism so as not to be dismissed by the dominant actors. While Byrne and Toly won't fault these organizations for being strategic, they do point to the dilemma of incrementalism versus the need for deep and systemic change.[56] Now, more than a decade after publication, this incrementalism and hedging is more troubling than ever. I find it difficult to believe that any positive impacts made incrementally will be enough. This view will surely put me on the outside with many (of the incrementalists) of those Byrne and Toly had in mind. That's fine. But to them I also say that I am frustrated with my own contributions to that incrementalism. It is out of that frustration, exacerbated by a heightened sense of tipping points, that I want to challenge conventional thinking to imagine some radical possibilities for change.

Two paths for energy transition (and system change)

In reading the Grand Canyon story as "seeing a metaphoric landscape," that sight has two parts. First, it looks at the emergency landscape. What will a 1.5 or 2 degree celsius world look like in any particular place? Many of us have a truthful feel about these awful possibilities. Many do not. We have to see it as it is, without distortions. Seeing the landscape also implies a forward sight of what the imagined, preferred and necessary alternative would look like. In the sense of both but especially the latter, what are the concepts and visions for what must be created in order to comprehend that landscape and to create the most desirable future? Primarily as a means to spark imagination, I want to look further at two possibilities:

1. Microgrids as a common pool resource -- gives us a vision of what the system (technical and social) might look like leading up to transition, during and after
2. Public ownership and reclaiming the public sphere -- allows us to critically examine and flip the public/private narrative

Democratic Microgrids

My overarching emphasis here with microgrids is transitioning from centralized, corporate, dirty energy generation and transmission to a democratic, distributed, and sustainable community-owned energy system. This is a possible pathway to transition the energy system from the bottom up with democratic principles. Investor-owned utilities also have some interest in microgrids, but not with democratic principles as a desired outcome. This fact is something I will emphasize shortly. Microgrid is typically thought of as a technical concept, but it is also a social concept and it is this latter aspect that I want to highlight. For this reason, I draw from the research of Maarten Wolsink, a Dutch researcher that I have followed in the past for his work on the social aspects of renewable energy acceptance, such as NIMBYism[57] and other explanatory frameworks for local resistance to renewables. Let me begin with a brief description of a distributed generation (DG) microgrid.

[56] Ibid. p.13-14.
[57] For anyone perhaps not familiar with the "NIMBY" acronym, it stands for "not in my back yard."

Microgrids have a long history. Think of small hydroelectric dams on rivers that supplied power to a village or a textile mill.[58] Wolsink defines the modern version as "a cluster of electricity users and microsources that operate as a single controllable system for generating and using power. It encompasses a variety of DG, distributed storage (DS) and a variety of end-use loads."[59] The diversity of energy generation suppliers and storage capacities is one key attribute, such that "they all become small-scale co-providers of energy."[60]

Common pool resource in this case consists of each individual renewable energy generating system in the smart grid, the land and space available to install such systems, and the member participants in the common pool. Each kilowatt hour (kWh) of electricity that is used by a member is a kWh that is unavailable for another member to use. Co-production of energy, rules for consumption, along with democratic governance are the cornerstone ideas for microgrids in a common pool resource scenario.[61]

Socially constructed energy systems and key barriers

Before moving on to the social aspects, it is important to define the term "smart grid," which is the larger grid that integrates microgrids. For our purposes, it is also vital to distinguish and understand the different creation paths that smart grids may follow. The two Wolsink identifies are:[62]

1. via policies that encourage local autonomy to develop microgrids,
2. strategies that reduce customer autonomy and instead, surveil and control consumption behavior by use of smart meters and related technology to regulate demand for centralized policy goals.

The former is democratic, while the latter is corporate. We might recognize in this second path "demand-side management" and things of that sort. The current IOUs favor this strategy. However, it is also reasonable to think that it may be resisted by a suspicious subset of the population, perhaps already leary of smart metering, seeing it as invasive and a vehicle for such things as automated non-pay disconnects. The public perception would be that smart metering gives the utility total control over its customer. This seems somewhat reminiscent of James C. Scott's *Seeing Like a State*[63] in which projects of an insensitive modernist state supposedly aimed at benefiting the human condition and simplifying things actually coerce and disempower civil society. With small adaptations for our discussion on energy, I would replace the state with the corporate-state and consider what its modernizing strategies ("grid improvements" etc.) are

[58] For example, see the 100-year history and images of the Town of Boone's electric utility, New River Light & Power. https://nrlp.appstate.edu/about-us/history. (accessed 11-30-18)
[59] Maarten Wolsink. "The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources." *Renewable and Sustainable Energy Reviews*. January 2012. p.223.
[60] Ibid. p.223.
[61] Ibid. p.235-236.
[62] Ibid. p.224.
[63] James C Scott. Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed. Yale University Press. 1998.

doing to exert corporate control over utility customers. In a report recently published by the North Carolina Leadership Forum,[64] one of the policy solutions in the section on energy poverty and inequity, was to pre-pay with smart meters, with justification being to "help low-income customers manage their energy consumption and avoid disruptions…"[65] That may be code for impunity to a critical reader or a critically attuned low-income population. At a minimum, it is an example of a formal dialogical process that likely failed to make the critical distinction (autonomy vs non-autonomy) Wolsink emphasizes above.

Wolsink, unsurprisingly, claims that the optimal impact microgrids will have on societal efforts at carbon reduction will come from path one, "policies that enhance the autonomy of (local) groups of end-users to further develop their options to apply renewable sources and limit their power supplied by central power plants…"[66] I want to place special emphasis on autonomy of local groups. For change agents and advocates of the autonomy path, this undertaking faces many challenges on the ground. For example, the NC Leadership Forum report contains talk of grid modernization and microgrids but with politically dominant IOUs at the table, the report contains no mention of the autonomy path above, so I am left to assume that it was never discussed. In fact, the framing rather explicitly allows for only "limited competition" relative to the existing monopoly protection enjoyed by incumbent utilities. As close as the report gets in its spectrum of possibilities is "full competition," which normalizes the incumbent monopoly model in its relativistic usage. Wolsink's first path could be located here, but did the cohort discuss autonomous smart-grids? I do know that the cohort was divided in general with regard to full competition, stating that "additional concerns about consumer protection, and greater concerns about the reliability of the system and of the possible equity impacts"[67] were present.

With utilities unlikely to give ground, here is where rethinking becomes vital. Wolsink believes that actors, what we might simply refer to here as passive consumers (or what utilities euphemistically call "rate payers" which I find to be a pejorative and disempowering label) tend to passively and uncritically accept the utility regulation (non-autonomy) path because "it fits existing patterns of thinking, organisation, and power in the energy domain".[68] The industry's mechanisms of shaping public perception are themselves intentional and powerful.

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[64] NC Leadership Forum 2017-2018 Final Report. *How can North Carolina best meet the future energy needs of its residents and businesses?* The report is from the North Carolina Leadership Forum, a program of the Duke University Sanford School of Public Policy. The purpose of the forum is "to create constructive engagement between North Carolina policy, business and non-profit leaders across party lines, ideologies, professional experiences, and regional perspectives." The guiding question for the 2017-2018 forum was "How can North Carolina best meet its future energy needs?" p.4. The cohort was comprised of 35 participants from business, utilities, state and local government, charitable foundations, higher education, and NGOs. p.5.

[65] NC Leadership Forum 2017-2018 Final Report. *How can North Carolina best meet the future energy needs of its residents and businesses?* p.18.

[66] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.244.

[67] Ibid. p.16.

[68] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.224.

Our challenge as energy system transitioners will be to respond to five categories of institutions that reproduce this normative response in order to overcome what Wolsink terms “lock-in,” or what might be understood as ways incumbent utilities reproduce economic and political power. There are several areas where lock-in occurs. Though I won’t detail each of these, I will discuss some issues and barriers that are located within these areas, which, as quoted from Wolsink, are:[69]

1. Government policies;
2. Dominant technologies- including standardisation;
3. Organizational routines and relations;
4. Industry standards and specializations;
5. Societal expectations and preferences.

Wolsink is pragmatic in his assessment of the power these institutions hold over efforts to transition to energy production and consumption models that diminish such power. Yet, he also sees leverage in smart grid as a means to more radically transition if smart metering can be redesigned to serve needs not of centralized energy supply corporations, but of a more socially constituted two-way information flow where consumers are also producers within a democratic institutional arrangement built on deep and durable trust.[70] In essence, this would be a cooperative, common pool of energy producers and consumers with collective goals of autonomy and carbon reduction. A more conservative utilitarian goal for pursuit of common pool micro grids, and likely a more agreeable one, at a microeconomic level could be capping energy inflation since the incumbent utilities cannot; in essence, creating a comparative advantage. The city of Georgetown, Texas is an example of a municipal government recognizing and acting on this opportunity.

I would like to see the imagination turned toward cooperative formations that may be new enough to handle this. It’s one thing to start a cooperative laundry business for example, but with vastly different microeconomics, maybe quite another to start a microgrid or smart grid cooperative. Such newly constituted cooperative structures tend to emerge “when the order of things is in flux…”[71] Nathan Schneider reaches back to the nineteenth-century Rochdale Society of Equitable Pioneers, a group of English textile weavers, to trace the history of cooperatives and explores new arrangements that are cooperative at heart but treat “the required board structures as a legal formality and governing themselves more like an open-source software project– whether they’re writing code or growing vegetables. They’re forgoing co-op language altogether, speaking instead about ‘political consumerism’ and ‘solidarity purchasing.’”[72] The importance of citizen participation, that is, citizens as “co-producers” is well supported by Elinor Ostrom, a Nobel Prize (Economics) winner for her work on commons governance, who noted that citizens will invest in renewables without optimising for financial gain, if on their own terms,

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[69] Ibid. p.225.
[70] I think this could be an example of what Jeff Boyer calls dialectical free space in his Appalachian Commons paper (cited later in this paper).
[71] Nathan Schneider. *Everything for Everyone: The Radical Transition that is Shaping the Next Economy*. Nation Books. 2018.
[72] Ibid. p.231.

and, crucially, will reduce their efforts considerably if they are treated as unimportant or irrelevant.[73] At AIRE, we termed this person an "empathetic investor."

As currently configured, metering infrastructure, routines, and data collection create many lock-ins antithetical to this possibility. If the the multi-sited protests fighting the construction of new natural gas pipelines across North America are unsuccessful, the resulting pipelines would be another example of lock-in. Completion of these pipelines would not completely foreclose on the possibility of a renewables transition, but certainly make the project more difficult. Ratemaking is a similar routine that creates lock-in, though less visible and legible than a pipeline, that monopoly utilities have erected. My own electric utility, a cooperative, views solar in this light. At a recent "town hall" the CEO, Doug Johnson, makes this point for me:

> During the telephone town hall, Johnson took questions on a variety of subjects, including right-of-way easements, trees that threaten power lines and much more over the 45-minute call. *One customer asked about the need for the $53 monthly fee for customers with solar panels, which Johnson defended.*
>
> *"We believe it's not fair for members who do not participate to subsidize the cost of the wires to solar or renewable energy,"* Johnson said.[74] (emphasis added)

This is one of many such local examples of utilities imposing regressive, punitive "taxes" on solar adopters– solar "punishment" fees. The problem with the explanation above, in my view, is that customers in this circumstance are grid-tied and thus, by definition, already pay for the "wires" in the form fixed cost charges on the monthly bill that are levied by the utility.[75] Johnson's logic is tantamount to saying that being conscious and conserving energy is a punishable act too, with the utility being both judge and jury. The net effect to the utility is no different than a customer being frugal and keeping the lights off when they aren't needed. Imagine grocery stores charging home gardeners a fee for growing a backyard vegetable garden even though the majority of the gardener's food is purchased from the grocery story. We aren't alone in making the claim that solar adopters do not cost non adopters.[76]

AIRE's project development experience reveals the destructive impact on project "bottom lines and paybacks" in real terms. Interconnection tariffs and riders that artificially and (I would argue) subjectively, put their thumb on the "fixed costs" scale deflates the real value of electricity to small solar system owners. Add to this, other costs such as interconnection studies, stand-by fees (this list is long) and one begins to see how the industry weaponizes regulation and

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[73] Wolsink citing Elinor Ostrom *Coping with tragedies of the commons*. Annual Review of Political Science. 1999. p.493-535. And also, Ostrom Along polycentric journey. Annual Review of Political Science. 2010. p.1-23.

[74] The Watauga Democrat. Boone, NC. https://www.wataugademocrat.com/news/blue-ridge-energy-rate-hike-likely-in/article_f1124182-3457-5cf4-9a1a-b1d674f8d607.html (viewed on 11-12-18)

[75] The utility's claim that the power is cheap while the "wires" are not seems to be a go-to tactic the IOUs fall back on and the utilities commissions rubber stamp. The effect distorts the value of solar for a homeowner in very tangible terms.

[76] See Mark Muro and Devashree Saha. "Rooftop solar: Net metering is a net benefit." *Brookings Institution*. May 23, 2016. https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/.

bureaucracy.[77] Nevada is one of several sites of high profile national case that pitted the state's utilities commission against big solar companies (SolarCity and SunRun), solar owners and solar industry workers by imposing similar solar "punishment" fees.

The caution with a corporate utility microgrid is the potential for cooptation of a technology in ways that undermine the ability of the technology to create a democratic energy transition, and instead serve to reinforce corporate goals over public good.[78] Nonetheless, utilities are experimenting with microgrids, and what's interesting is the contradictory language they use in their materials on them. While disparaging renewables' positive benefits to the grid when they're fighting, they advocate their benefits when promoting their own microgrids.[79]

Externalities need to be accounted for and Wolsink makes this clear.[80] Although this is obvious for all sustainability advocates, the punitive effects can be seen very specifically from a small developer's or owner's perspective. "Solar doesn't pencil" is a phrase we hear from solar project investors and even from right-minded advocates. What they are claiming is that dirty grid power is cheaper than solar. With no subsidies including environmental externalities, this would be a laughably false statement. In a more economic analytic frame, even if we assumed that centralized utilities had zero fuel costs, they still could not compete based on marginal cost of transmission. As I've already discussed, externalities are gifts to the utilities and they must converted to internalized costs. These are costs the utilities should bear. Keep this in mind the next time a utility says solar is more expensive than its grid power.

As we have learned from our past literature review and from a wind development contestation in our home region, projects proposed by outsiders (i.e. the utility or private investors) face local resistance.[81] Ownership, benefit and control are important hallmarks of community-owned renewable energy, and vital preconditions to energy transition required to effectively disrupt the destructive power of the incumbent utilities. These are critical social components, wholly consistent with Wolsink's microgrid.[82]

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[77] A Troubling Trend in Rate Design: Proposed Rate Design Alternatives to Harmful Fixed Charges. *Southern Environmental Law Center*. December 2015.
[78] David J. Hess. 2003. The green technopole and green localism: Ecological modernizations, the treadmill of production, and regional development. Presented at the Symposium on the Treadmill of Production, University of Wisconsin at Madison, October.
[79] Kristi Brodd. Microgrid Case Study: Duke Energy Carolinas. Advanced Energy. 9-22-17. https://www.advancedenergy.org/2017/09/22/microgrid-case-study-duke-energy-carolinas/.
[80] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.230.
[81] Steve Owen and Jeff Boyer. *When the Well is Poisoned: Local Knowledge, Power, and the Politics of Scale in Shaping a Socially Responsible Wind Energy Strategy in Appalachia*. Conference paper presented at Energy and Responsibility: A Conference on Ethics and the Environment. University of Tennessee. April 12, 2008. http://aire-nc.org/wp-content/uploads/2018/09/owen-boyer-UT-final.pdf.
[82] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.230.

To such an end, the microgrid scenario would introduce opportunities for new actors to participate in an energy system more democratically and in ways that expand actors' identities beyond passive, powerless consumers.[83] AIRE has long envisioned the composition of community-owned renewable energy projects as including individuals, schools, hospitals, farms, commercial entities and what we've called "critical public infrastructure" (water and wastewater treatment, town hall, fire stations, etc.). Wolsink specifically adds tourism to the list, which in many areas offers interesting opportunities. This is the behavior that we intend to help design; the rapid adoption of renewable energy, broad community participation, and formation of cooperative institutional governance. I have long felt that the "anchor institution"[84] concept developed by the Democracy Collaborative is an important strategy for community wealth building with renewable energy playing a foundational role. I have not found them to be eager partners, however, the strategy makes a lot of sense and their work is to be admired, as it does provide exceptional experience-based guidance. My experience is that Ted Howard, DC's executive director is a responsive, accessible, and willing advocate.

The fact that electric vehicles (EV) are slowly gaining in market penetration exemplifies yet another key resource for expanding personal and institutional identity and agency as microgrid designers and co-participants. I recently purchased an EV, yet at the time it hadn't occurred to me that I was actually participating in a microgrid experiment.[85] My intentions were good but the basic learnings about how and where to charge, and range issues occupied my concentration, not a deeper understanding of my own contribution to vital storage capacity of a formative microgrid. EV driving has revealed some deeper questions that I had not previously given much consideration. Greater consciousness of mobility, the need for and how we achieve mobility needs and how much waste can be avoided by behavior change. For example, we can better coordinate with family, friends and coworkers when planning travel in order to double up. Moreover, how much do we need mobility? At this moment in time for example, I do not have the structural means to restrict my mobility to a bicycle or foot travel. Haphazard land use and development has given me little choice. The rural and suburbia effect. So even with an electric vehicle, it isn't just me moving around, what does a billion EVs on highways and urban streets look like? The infrastructures of roadways, charging stations, and urban/suburban/rural living will need rethinking. What does it do to electric demand and distribution; in other words, what does EV charging compete with on the grid? Cooling? Heating? Industrial use? Medical services? Servers for bitcoin? Finally, what are we powering EVs on? Coal, natural gas, nuclear, renewables? This isn't to discourage EV adoption at all. I'm merely saying that we have to be more conscious.[86]

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[83] Ibid. p.232.
[84] Democracy Collaborate Anchor Institutions. https://democracycollaborative.org/democracycollaborative/anchorinstitutions/Anchor%20Institutions. (viewed on 12-7-18).
[85] Steve Owen, Appalachian Institute for Renewable Energy (AIRE). AIRE blog- Electric Vehicle Moonshot: Our Newby Road Trip. http://aire-nc.org/2018/09/25/electric-vehicle-moonshot-our-newby-road-trip/
[86] Again, as I've mentioned earlier in the paper, on the topic of mobility and energy, I recommend- Ivan Illich. Energy and Equity. Calder & Boyars Ltd. London. 1974.

A word of caution is in order for critical thinking energy transition voices who advocate the smart-grid path. David Morris of the Institute for Local Self-Reliance, writing in an Alternet piece in early 2009, coined the phrase “corridors of power” to refer to a national grid, along which flow not only electricity, but also financial and political power. Morris put forward two arguments against a national grid. First, he argued that building a national grid would divert “resources from the more important task of making the best use of the existing electrical network and integrating the new generation of decentralizing energy technologies.” The essence of this argument is that the scale of investment required would lead to centralized and remote generation, and reduce incentive and value for more local and distributed generation. His second argument was a preemption warning, in which federal eminent-domain authority would have to be created in order to site new transmission lines. Morris cited T. Boone Pickens as being a leading proponent of the national grid and of giving FERC the exclusive jurisdiction in siting new transmission lines. Finally, Morris was careful to differentiate between national grid and smart grid where, presumably the former, if emphasized, would merely aid big fossil fuel and not the development of distributed generation.[87] Corridors of power indeed.

Challenging dominant narratives and monopoly utilities primacy

As mentioned earlier, the centralized utilities have a profound economic interest in perpetuating their favored narrative and, thus, their power and profits. As experiments in microgrids evolve, advocates of democratic distributed generation should explicitly challenge the perception that ”large energy companies are the ‘natural’ investor in renewables”.[88] Here, Wolsink cautions that tariffs and policy can actually be cover for marketing schemes that give IOUs power over tariff diversification (“green”) to attract a segment of the market. In other words, to co-opt the market. Also, because regulations do not allow for power delivery without being obligated to use the existing grid, another utility narrative will need to be challenged, which is that this path dependency lock-in is justification for protected monopoly status under the guise of consumer protection.[89]

An example of “utilities as natural expert” can be found in the North Carolina Forum report, where one unattributed participant is quoted saying “A utility is best-positioned to see those things that are harmful or less than helpful.”[90] (Just as a wolf in sheep’s clothing is best-positioned to say what’s best for the hen’s in the hen house.) The report elaborates on this benevolent imagery, saying:

> [s]upporters of the current system pointed to North Carolina’s relatively low prices, clean fuel mix, and overall system reliability...Supporters of the current

[87] David Morris. *Why Obama’s Plan to Help Renewable Energy May Backfire and Aid Big Coal*. AlterNet. February 5, 2009. And at ISLR https://ilsr.org/obamas-plan-help-renewable-energy-may-backfire-and-aid-big-coal/.
[88] Maarten Wolsink. “The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources.” *Renewable and Sustainable Energy Reviews*. January 2012. p. 233.
[89] Ibid. p.238-239.
[90] NC Leadership Forum 2017-2018 Final Report. *How can North Carolina best meet the future energy needs of its residents and businesses?* p.15.

> centralized system also argued that it can provide greater consumer protection and is better at introducing grid modernization, tools such as smart meters to allow customers to manage their use, financing and other programs for weatherization improvements and innovative rate plans.[91]

"Current system" in the quoted passage refers to IOUs and their protected monopoly status that, in North Carolina, allows for what critics see as socialized costs and privatized profits, with public utilities commission blessings for a guaranteed rate of return. The industry admits that it has leverage over the public via public utilities commissions, stating in the trade group's report "While tariff restructuring can be used to mitigate lost revenues, the longer-term threat of fully exiting from the grid (or customers solely using the electric grid for backup purposes) raises the potential for irreparable damages to revenues and growth prospects."[92] If any single statement illustrates the need for reclaiming the utilities for the public (i.e "socializing" the IOUs), this would be it. Examples of socialized costs, are coal ash spill clean ups and other environmental contamination paid for by utility customers, not by the offending utility, and the economic externalities (which I've already spoken of) from fossil fuel extraction and combustion, just to name a few.

Public Ownership

The case for public ownership is one that rarely articulated let alone uttered out loud. In his seminal energy democracy paper, Sean Sweeney, wrote that:

> An energy transition can only occur if there is a decisive shift in power towards workers, communities and the public– *energy democracy*. A transfer of resources, capital and infrastructure from private hands to a democratically controlled public sector will need to occur in order to ensure that a truly sustainable energy system is developed in the decades ahead. (emphasis in original)[93]

The term "energy democracy" is used frequently now among nonprofit organizations, however, its history is less frequently understood, and therefore its current usage should be defined. Let me do that by means of a story. I was a civil society delegate to the United Nations Commission on Sustainable Development (CSD) in New York for several years. In 2005 and 2006, a review and policy thematic cycle on sustainable energy was the focus. These venues and fora had become greenwashing sites where corporate-state actors pushed civil society to the margins. This is especially so with regard to "big greens" and grassroots civil society, where the former often didn't hide their intentions to be the official voice of civil society. In this international setting, the dominant actors promulgated a definition of energy democracy that meant "enough for everyone" and by extension, a call for big nuclear, big oil and all the rest. Energy democracy was used as a foil to thwart critical counter-narratives. We had arranged a private meeting with

[91] Ibid. p.15.
[92] Edison Electric Institute. *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*. January 2013. p.3.
[93] Sean Sweeney. Resist, Reclaim, Restructure: Unions and the struggle for Energy Democracy. October 2012, updated November 2012. p.ii.

our “Appalachian Coalfields Delegation” and the U.S. State Department’s official delegation. Seated around the large conference room table in the dark paneled room were twenty some coalfield residents, one of whom was Larry Gibson. The leader of the official delegation pushed back on the coalfield group by claiming that mountaintop removal mining was necessary for energy democracy (i.e. so that more people in the U.S. and globally could have more energy). Gibson’s reply? A classic– “I’d like to know what part of the United States you’re talking about.” To Gibson and his grassroots peers, there was no energy democracy. Only extraction, dispossession, desecration, and poverty.

Toward a definition then, the distinguishing features of the type of energy democracy I’m discussing include renewable energies, reduced and eliminated extraction and combustion of fossil fuels, and various means of making energy production and consumption just and democratic. Energy democracy also provides a platform for merging various discourses and movements of “red” and “green” sustainability.

The large IOU’s clearly are not a friend of solar and are not proponents of changing the basic energy system. This has been critiqued earlier in the paper, thus no need to elaborate further. But now, we need to distinguish the structure of the renewables industry, which is not monolithic. Is “big solar” (i.e. investor/profit driven corporate solar) capable of leading a transition to a low carbon democratic energy system? Opposing fossil fuel should not mean uncritically accepting corporate renewable energy.[94] Kate Aronoff, in a 2016 Dissent magazine article, daring to imagine a wider landscape of possibilities, asks the essential question:

> What other possibilities are there? Beyond Big Solar are a range of ownership and profit structures that complicate the renewables landscape, and could ensure that an economy powered by something other than fossil fuels will be more equitable and democratic than today’s. Energy cooperatives and publicly owned utilities are two promising models that allow for stripping dirty energy from our power grids without doubling down on profit-hungary development. The alternative to a corporate-controlled fuel transition is simple: socialize America’s energy economy.[95]

Socializing America’s energy is a strategy that is perhaps capable of confronting the emergency facing human civilization. It finds leverage at the core of the problem in that it:

> ...opposes the idea that the commodification of nature is key to solving the profound ecological crisis we face as a species. It regards the idea of putting a price on ‘natural resources’ in order to make capitalism green and sustainable as plainly false and deeply perverse.[96]

The significance of Sweeney’s public ownership argument is that it challenges the dominant market-based ideology and its propensity for “green-washing of existing capitalist structures

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[94] Sean Sweeney. “Working Toward Energy Democracy.” *State of the World 2014*. The Worldwatch Institute. p.219.
[95] Kate Aronoff, “How to Socialize America’s Energy.” *Dissent*. Spring 2016.
[96] Sean Sweeney. Resist, Reclaim, Restructure: Unions and the struggle for Energy Democracy. October 2012, updated November 2012. p.i.

rather than addressing the real causes of the multiple crises."[97] Also, it aims directly at resurrecting the dispossessed public sphere and situating energy and livelihoods as societal goods.

Sweeney, a labor movement scholar, writes that the actions of markets such as privatization have completely failed and implores that we explicitly acknowledge that market-based approach has failed, and adds that "[t]his is not a question of allowing more time for the transition to take off, or being patient with policy makers in the hope that the strength of our arguments will soon prevail."[98]

Given that the market cannot drive the renewable energy transition, government will have to play a role. Germany has long been known for such leadership with its successful feed-in-tariffs (FIT). "Politically, the fight for democratic control over energy is as difficult as anything that can be imagined at this point in time. But is there an alternative?"[99] Democratizing energy will be an enormous challenge with the present corporate-state fossil fuel hegemony. As difficult as Sweeney saw the challenge when he published *Resist, Reclaim, Restructure* in 2012, we now inhabit a political world that is more absurdly unrecognizable than then.[100] There are numerous examples, that unfortunately, if all fully listed and described, would become a lengthy chapter. Perhaps the latest example, a non-headline buried far below the fold, will suffice in making the point that renewables are gravely threatened by the current political state of affairs. Bernard McNamee, a Trump administration nominee to the Federal Energy Regulatory Commission (FERC) board, has advanced through committee votes to the full Senate for for a final vote. McNamee is reported to have disparaged renewables in a February speech to the Texas Public Policy Foundation. According to the Associated Press he remarked to the group:

> Renewables, when they come on and off, it screws up the whole the physics of the grid... So when people want to talk about science, they ought to talk about the physics of the grid and know what real science is, and that is how do you keep the lights on? And it is with fossil fuels and nuclear.[101]

This has a farcical, almost infantile quality to it, which is indeed, the character of present day politics. David Morris, warned of this sort of possibility in his piece on national grid versus smart grid (cited earlier in this paper). Moreover, while the president's caustic and theatrical rhetoric is headline-grabbing for its surreal shock value, the structural backsliding on renewables (and of course, many other things) seems to be occurring at bewildering pace, and doing so largely out

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[97] Ibid. p.3.
[98] Ibid. p.17.
[99] Ibid. p.29.
[100] I am not suggesting that the underlying structures of neoliberalism were not well formed and powerful a mere 8 years ago. I am saying that the results of that system have have intensified so greatly in that time and that the fossil fuel industry has shown its scorched earth endgame on K Street, in congress and in the White House.
[101] Ellen Kickmyer. Associated Press. November 27, 2018. *Trump energy nominee clears hurdle after fossil-fuel remarks*. https://www.apnews.com/cd1c791c9b7d4ce0bd26e1958eb244d2 (viewed on 11-28-18).

of the news cycle. Applying Wolsink's lock-in concept here is very appropriate. Where then, does the transition to energy democracy begin?

Transferring resources, capital and infrastructure

The core action that Sweeney identifies in socializing energy is the transfer of resources, capital and infrastructure to public entities, reasoning that "[t]he current business model for energy- based on commodification, profit, and limitless growth- needs to be abolished."[102] This is not to suggest a hostile seizure of these assets without transition planning and just compensation.[103] There is another point of awareness in cases where existing public entities, such as EMCs "behave like private or 'state capitalist' corporations [will need to] be reoriented in ways that can address the energy emergency…"[104] Some of the things this would accomplish include:

1. Without the commodification and profit motive, it would give us an ability to reduce energy demand with conservation and efficiency, and generate with renewables.
2. Public financing that will help reduce costs
3. Eliminate favored status of any one technology and prioritize the technology's value to society and environment.
4. Perhaps most important, it would empower creativity and involvement of people to be active agents of change.[105]

Sweeney envisions socialization at a national scale (with labor solidarity at a global scale), but the beauty of the energy democracy idea is that there are other strategies and scales by which the goals of democratic energy in the public benefit can be achieved. To what sort of public entities would these transfers be directed at lesser, sub-national scales? Also, what are the precedents?

Municipalization and community choice aggregation (CCA) are two strategies that can be implemented at the local government level. Municipalization is when a local government replaces the private utility. Boulder, Colorado is the most often cited example. CCA is more of a group aggregation strategy that allows a local government to bargain with the utility over green generation sources and prices. The utility would still own the transmission infrastructure under a CCA arrangement. Most noteworthy perhaps is that CCA is not legally possible in many locales.

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[102] Sean Sweeney. Resist, Reclaim, Restructure: Unions and the struggle for Energy Democracy. October 2012, updated November 2012. p.30.

[103] For example, in the UK, with Jeremy Corbyn and the Labour Party gaining traction in the midst of Brexit turmoil, there has been talk of socializing energy systems. See *Public ownership of the UK energy system- benefits, costs and processes*, a 2016 report published by Public Services International Research Unit at University of Greenwich and prepared by David Hall, a visiting professor Faculty of Business. http://www.psiru.org/sites/default/files/2016-04-E-UK-public.pdf. (accessed 11-30-18). Also, *What If We Just Buy Off Big Fossil Fuel: A Plan to Mitigate the Climate Calamity*. Steve Hendricks. Counterpunch. https://www.counterpunch.org/2018/12/07/what-if-we-just-buy-off-big-fossil-fuel-a-novel-plan-to-mitigate-the-climate-calamity/ (accessed on 12-1-188).

[104] Ibid. P.30. See also, Sean Sweeney. *Working Toward Energy Democracy*. State of the World 2014. The Worldwatch Institute. p.221.

[105] Sean Sweeney. Resist, Reclaim, Restructure: Unions and the struggle for Energy Democracy. October 2012, updated November 2012. p.30-31.

California is an active CCA state and home to the nonprofit Local Clean Energy Alliance. The group published the paper *Community Power: Decentralized Energy In California*[106] in 2011, which introduced the idea of community choice.

Rural electric cooperatives are a similar target, though with organizational cultures that are rigid and difficult to change. Although this reclamation of literal assets is obvious, reclamation should also apply to the culture of the cooperatives' including access, transparency and democratic governance. While these institutions that are labeled public, they act as though they are private enterprises, as I've already mentioned. In any of these sites there will be lock-ins to overcome, such as unexpired all-needs contracts with the utility. I will present some cases where this has been overcome later in the paper.

Puerto Rico is an interesting and exceptional case in progress that embodies all of the elements colliding with privatization and socialization ambitions. After Hurricanes Irma and Maria destroyed the islands electrical grid in 2017, and after more than a decade of economic crisis preceding the storms, the question of what kind of power system will replace it is heavily contested.[107] Clean, domestically produced energy or more imported fossil fuel electric generation is the outcome being contested. The economic crisis is also a social crisis, again, amplified by the desperate living conditions in the storms' aftermath. In short, this case will be an interesting litmus test of competing discourses, lifting the ever-thin veil of colonialism, Wall Street political power, democratic autonomy, and the reach of disaster capitalism. A debt jubilee is one plank of the alternative proposals, which provide an explicit rebuke to vulture capital (e.g. Goldman Sachs), claiming that investment is by nature a risk proposition. Therefore investors would get a substantial haircut.[108] In other words, Puerto Rico's citizens would not socialize Goldman Sachs' investment loss.

The Green New Deal that is currently gaining political currency, remarkably somewhat bipartisan at this juncture, is perhaps an indication of an opening. Although this is a politically fragile movement and may not survive the drafting of this paper, it is nonetheless an incipient opening. Whether or not it expands is for time to tell. While there remains little information on the specifics, labor is sure to be one of the groups paying keen attention. Fossil fuel industry has long made use of the jobs argument and now is an opportunity to consider green jobs. This moment is reminiscent of the 2008 green jobs the short-lived moment after Barack Obama became president. The labor implications for energy socialization and green jobs are obvious at national and global scales. Less obvious and potentially misaligned is the local perspective. Here, something like a local community-owned renewable energy project may diverge from the interests of labor more interested in manufacturing and macro industry levels, as opposed to

[106] Al Weinrub. "Community Power: Decentralized Energy In California." Local Clean Energy Alliance. Oakland, California. February 2011.
[107] Amanda Page-Hoongrajok, etal. "Austerity Versus Green Growth for Puerto Rico." PERI Working Paper Draft: Political Economy Research Institute, University of Massachusetts Amherst. August 2017.
[108] Beyond the view that investors invest knowing there is risk, the essence of investing, there is a history debt relief with acknowledged societal benefits of "jubilee." See for example, David Graeber. "Debt: The First 5,000 Years." Melville House. 2011.

community scale locally oriented visions.[109] Development and innovation clusters are primarily funded by federal and state agencies with growth-oriented objectives come to mind here as examples of local or regional development models that may not square with localist renewable energy visions, which would have healthy impacts on local livelihoods and wellbeing but not register on the national scale. Attracting large manufacturing plants seems to be everyone's goal, yet this is proven time and again to be a pipedream for local economic developers and well-meaning citizen groups. I once had a the leader of a fledgling group in a rural North Carolina mountain community tell me that "we'd take one job; that would be worth fighting for." Thus, we don't need a major manufacturing plant to make a positive impact on a community. To be clear, since the overall goal is carbon reduction, it isn't just energy generation that we need to transform. We need to decarbonize everything and we need to replace insecurity with dignified livelihoods. Energy efficiency, retrofitting or replacing housing stock, carpenters, electricians, roofers, trackhoe operators and the entire value chain is there to be organized. Class analysis

And it is here we have the opportunity to redefine work, since the aim is energy democracy and system transition. The Green New Deal and the green jobs movement use the language of jobs. Of course this language the speaks to people since a job equates with a paycheck and a means by which workers support themselves and their families. But a job is merely one arrangement by which work can be done. Meaningful work in which one takes pride in his/her craft or contribution as opposed to merely producing goods for mass consumption and living in the economic terror of job insecurity and stagnant wages. The precariat class may be the most equipped to lead the transition. Alexandra Koves, standing on Illich's foundation, argues "[i]n a convivial world, work is something we do for our own self-development, for our family, for our community, and for society as a whole." [110] But even in the narrowest of definitions, labors perspective on socialized energy makes a valuable contribution by bringing class analysis into the discourse intersecting social movements and public policy work, against a backdrop of declining faith and trust in traditional governance and productions systems.[111] Here, we have the opportunity to dig much deeper than energy poverty, which, as the Larry Gibson/United Nations story illustrates, is easily co-opted.

Given the nature of complex systems, I have to mention that public ownership alone, will not solve the climate crisis. Consider that gas and oil worldwide is largely publicly owned. Saudi Aramco and Gazprom are but two of the large national fossil fuel corporations worldwide and together they control some 90% of the world's reserves, 75% of the productions, plus much of the infrastructure. This is according to UMass economist Robert Pollin.[112] Even so, we can and should push hard for public ownership for public benefit, and ownership that is transparently governed as such. Pollin makes this point:

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[109] David J. Hess. "Good Green Jobs in a Global Economy." The MIT Press. Cambridge, Massachusetts. p.147-167.
[110] Alexandra Koves. "Debating the Precariat: A Roundtable," *Great Transition Initiative* (October 2018), https://www.greattransition.org/roundtable/precariat-alexandra-koeves .
[111] Matthew Burke and Jennie Stephens. Energy democracy: "Goals and policy instruments for sociotechnical transitions". *Energy Research & Social Science*. 33 (2017) p.35-48.
[112] Robert Pollin. De-Growth vs A Green New Deal. *New Left Review*. July/Aug 2018. p.21.

> Juliet Schor describes in *True Wealth* (2011) what she calls 'a prima facie case that the emerging green sector will be powered by small and medium-size firms, with their agility, dynamism and entrepreneurial determination'. Over time, Schor writes, 'these entities can become a sizeable sector of low-impact enterprises, which form the basis of animated local communities and provide livelihood on a wide scale.'[113]

Socialism is "normal" in monopoly utilities

"Natural monopoly" as it has evolved in the IOU electric utilities business has morphed into what critics euphemistically call "corporate socialism." The monopoly was, in theory, granted to spread fixed costs over a large pool because its service was vital and valuable to the public it served. It was to be regulated by a public utilities commission working for the public in order to assure that the public received its just benefit in exchange for the granting of monopoly protection. However, that is demonstrably not the case, as regulation has been beaten back by neoliberalism's sledgehammer over the course of the last four decades in collusion with the market-based mythology it has perpetuated. Examples include, utilities commissions rules that make customers foot the bill for failed nuclear projects and environmental contamination (e.g. coal ash spills),[114] the promise of guaranteed profits, lax environmental and environmental justice regulation, and deepening assaults on the public interest. The "gift of externalities" and then all the subsidies and corporate tax breaks are the icing on the corporate welfare cake. Because this has been so uncritically accepted as normal for so long, the idea of "socialized" energy should not be be new, revolutionary or shocking. In fact, it's been with us for a long time. It's -- corporate welfare-- the dominant operating paradigm in energy for a long time and its merely been normalized. We need flip the script whereby the public reclaims its agency and interest where public interest, not private profits are socialized.

The CEO of Duke Energy, Lynn Good, made $21.4 million in total compensation last year. That's 175 times more than the median Duke employee's salary. She received a 55% pay increase at a time when the company wants to raise customer's bills an average of 13.6 percent, to pay for coal ash spills-- call it socialized "malfeasance insurance"-- among other things.[115] In 2016, Duke Energy had 28,798 employees. Using simple arithmetic, that means 14,399 employees made 175 times less (i.e. $122,285 or less), and the same amount made 175 times more. I do not have enough descriptive data to know more, such as salary ranges within the company, but it is heuristically sufficient to make the point that this sort of compensation is wildly unjust.

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[113] Ibid. p.20.
[114] For example, see "Governor Signs 'Duke Energy Protection Act'. Rob Schofield. *The Progressive Pulse*. NC Policy Watch. http://pulse.ncpolicywatch.org/2016/07/18/governor-signs-duke-energy-protection-act/ (accessed on 11-20-18).
[115] The Charlotte Observer. Deon Roberts. "Duke Energy CEO sees 55 Percent Jump in Compensation." March 9, 2018. https://www.charlotteobserver.com/news/business/article204293519.html (accessed 11-20-18).

Duke Energy[116] made a profit of $4,203 billion in 2017. The company also received a $247 million tax rebate in the same year, meaning that its tax rate was minus 5.9 percent.[117] Notice that is *minus* 5.9%. One single year is no anomaly. In fact, Duke paid no taxes and received a tax refund of totaling $370 million from 2013 to 2017, a rate of *minus* 2%. Even farther back, Duke raked in substantial profits and received a tax rebate of $299 million, representing a tax rate of *minus* 3.3%.[118] Compare that largesse to the Duke employee earning a wage at the median range ($120,000 for a round number) and filing married jointly, her or his tax rate would be 25% and would have paid nearly $23,000 in federal income taxes. This inequity is the result of a tax and regulatory policy regime that shifts the burden onto middle class wage earners to fund corporate welfare for wildly profitable companies. Furthermore, these figures were all before the corporate tax rate was cut from 35% to 21%.

Contrast Duke Energy's corporate social ethic with that of Patagonia, whose CEO, Rose Marcario made the following comment in response to the latest round of corporate tax cuts: "We recognize that our planet is in peril. We are committing all $10 million [of Patagonia's tax cut] to groups committed to protecting air, land and water and finding solutions to the climate crisis. We have always funded grassroots activism, and this $10 million will be on top of our ongoing 1% for the Planet giving."

Marcario continued: "Being a responsible company means paying your taxes in proportion to your success and supporting your state and federal governments, which in turn contribute to the health and well-being of civil society."[119]

And lastly, I want to say that the figures above on Duke Energy's corporate welfare do not even include other subsidies from which it benefits. Duke has bet the rate payers' money on fracked natural gas, with its climate killing wellhead methane leakage. Coal is still in its generation mix. Both methane and coal are dirty and have environmental and human health costs throughout the extraction and combustion cycle. Though Duke Energy and other utilities like it will claim that they merely buy fuel–nothing more than a procurement management job– and that they are looking for low cost contracts, the fact remains that the price of that fuel (coal, fracked natural gas, etc.) is subsidized by the public at every point throughout the supply chain.[120] This is an

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[116] I pick on Duke Energy intentionally because it is a big offender and because it is most familiar to me. Rest assured, Duke is in good (bad) company on this list of offenders.
[117] *Fifteen (of Many) Reasons We Need Real Corporate Tax Reform*. Institution on Taxation and Economic Policy. April 11, 2018. https://itep.org/fifteen-of-many-reasons-we-need-real-corporate-tax-reform/ (viewed on 11-27-18).
[118] Rob Schofield. Profiles in corporate tax avoidance: Duke Energy. NC Policy Watch. http://www.ncpolicywatch.com/2013/04/10/profiles-in-corporate-tax-avoidance-duke-energy/ . 4-10-13. (viewed on 11-29-18).
[119] Huffington Post. Patagonia Donates $10 Million Tax Break To Green Groups, Says Trump 'Irresponsible'. Nick Visser. November 28, 2018. https://www.huffingtonpost.com/entry/patagonia-donates-tax-break-10-million_us_5bff2b32e4b085062319510d (viewed 11-28-18).
[120] For example, in Colorado alone (see "Fossil fuel industry concedes nothing" section in this paper) saw a modest proposition defeated in the November 2016 election by an avalanche of money the industry spend to defeat a setback provision that would have kept fracking operations 2,500 feet from homes, schools and waterways. Now, Colorado taxpayers may be on the hook for the costs of clean up after a

enormous financial benefit the company receives at the public's expense. Estimates in the U.S. on the amount of such subsidies[121] for the industry as a whole range from $10 billion to $52 billion annually.[122] Some critics have pointed out that the expenses of patrolling the oil tanker shipping lanes through the Persian Gulf is one massive public gift to the fossil fuel industry.[123] When all subsidies and externalities are tallied, it makes the total corporate welfare figure a very large one. A 2015 International Monetary Fund study put the subsidy figure for fossil fuels at $5.3 trillion per year.[124] While this is a very large number, I suspect it is low, and moreover, believe some things are beyond pricing systems. That is, they are priceless, for example, life.

Defenders of corporate socialism will argue that it is they, the corporations, who generate value FOR the public. That myth and narrative needs to be deconstructed. In reality, it is quite the reverse. Because the atmosphere and public health, for example, are "commons" and that vast wealth transfers are routinely made from the public to fossil fuel industries and utilities (by virtue of externalities, subsidies and favorable tax law), one can argue that value is created publicly and then privately appropriated. If so, it follows that democracy and the commons need to be reclaimed.

Places to intervene

Thus far, I've given attention to the emergency, and thus don't feel the need to dwell any further on it. Suffice it to say that it seems like we need not do more than monitor each new report to know the disturbing trend. This would include paying attention to a growing number of scientists who choose to break with protocol and constraints of the academy and political limitations to

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well's production has peaked. Just like popping the top on a soda can that's been shaken vigorously, fracked wells spew gas prolifically at first but quickly die down. The fracking industry is in deep debt to the tune of $260 billion, and bonding requirements are inadequate to cover the cost of capping spent wells. With bankrupt companies and bonding that falls far short of the actual cost of capping a well, the Colorado taxpaying public will be on the hook for $8.5 billion and likely a lot more. Top that off with the reality that capped wells will need periodic monitoring for years, since "fracking is primitive" leaving 90% of the gas to leak into the atmosphere. See Philip Doe. "Fracking Future Shock in Colorado." *counterpunch*. 12-28-18. https://www.counterpunch.org/2018/12/28/fracking-future-shock-in-colorado/.

[121] There are many types of subsidies. For a listing see http://priceofoil.org/content/uploads/2009/09/koplowtypesofsubsidy.pdf.

[122] See Ending US Fossil Fuel Subsidies. Oil Change International. http://priceofoil.org/campaigns/separate-oil-and-state/ending-us-fossil-fuel-subsidies/

[123] Michael Klare, for one, has written extensively about the energy geopolitics of the military's oil protection mission, that actually reaches well beyond the iconic Persian Gulf. See *Resource Wars: The New Landscape of Global Conflict*. Henry Holt and Company, LLC. 2001. Since climate change is my topic here, I can't let the Pentagon off the hook, with its acknowledgement of existence of climate change yet its own massive carbon footprint.

[124] David Coady, etal. "How Large Are Global Energy Subsidies?" IMF Working Paper. International Monetary Fund. May 2015. p.5.

add their voice to the chorus of warnings.[125] I've also discussed a couple possible alternatives for organizing electric production and consumption with the aim of expanding the imagination.

Now, in homage to Donella Meadows and thinking about where we might intervene, so as to avoid the wasting of time as has occurred up to now, to put us on a transition path to energy democracy, I offer a few ideas that involve inner worlds, policy work, coalition-building, and sites for action. All of these places are essential in ensemble, systems form. One "place" must have the rest. These are places that AIRE will seek to expand its interactions with, and some perhaps even participants in a network or coalition if that were to be the path. I have only ideas and questions. I do not have a blueprint or any brilliant prescriptive suggestions. In fact, I am not confident that I (alone) have good ideas or solution, nor do I believe anyone else (alone) does either. What I envision with places to intervene, is a nothing more than a prompt for dialogue, a draft of ideas to be discussed, collectively shaped, improved or rejected as the case may be. It is cross-cutting systems thinking and guided by the Frank Adams "Highlander" framework:

1. An accurate assessment of "is"
2. A moral imagination of "ought"
3. The space in between where we work (creative tension and action plans)

For me this explicitly includes the questions around how we work toward something more comprehensive, and how we truly work collectively.

So where does this all leave us? Whether it is democratic microgrids or a socialized energy system as the transition aim, or some other visionary approach, mindset will be a key leverage point since we no longer have the luxury of time for incremental change. Transition without change is a failed discourse.[126] This idea cuts at two pieces of fabric, one being the politics and economy in which big energy operates, and the other, within our own minds. The latter is aimed at an understanding that the renewable energy technologies we have at our disposal can be deployed within an existing social and economic order or a new, democratic one. Drawing on the Grand Canyon metaphor again, is our sight distorted or clear? We need a clear and accurate view of "what is possible *and* what is necessary." Possible doesn't mean "what will be compromise or settle for?" Possible means understanding the power we have to create radical change in the energy system.[127] We will need to overcome the perception that incumbent monopoly utilities are the natural investors, idea designers, and rulemakers of the energy universe. Can we see the Grand Canyon clearly? Or does the emergency further distort our views of what is possible, necessary, and most importantly, better?

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[125] Dr. James Hansen comes to mind most prominently for breaking this ground. More recently, see an example of scholarship and publishing to reject journal reviewer censure: Jem Bendell. *Deep Adaptation: A Map for Navigating Climate Tragedy*. IFLAS Occasional Paper 2. Institute of Leadership and Sustainability (IFLAS). University of Cumbria. 7-27-18. http://www.lifeworth.com/deepadaptation.pdf.
[126] John Byrne and Noah Toly. 2006. "Energy as a Social Project: Recovering a Discourse." In *Transforming Power: Energy, Environment, and Society in Conflict*, edited by J. Byrne, N. Toly and L. Glover. New Brunswick, NJ: Transaction Publishers. p.22-23.
[127] Another way of putting this is the difference between "strategic intent" and "strategic fit."

This “places” section is where I see the need for discussion, critique, co-authorship, cooperation, imagination, and new formations of cross-sector collaboration. Even though I’ll expose some of my thinking in this section, it is incomplete as a strategy, and laden with contradictions, language gaps and overall systems complexities. Nonetheless, I’m laying down some thoughts that may be useful for engaging others in a formative co-creating dialogue.

Places in consciousness: inner worlds

I have already introduced the important idea, which I’ve variously called mindsets, perceptions, or ontologies. Here, I will say a few more things to hopefully deepen the sense that we need to expand . This is the place where I would like to consider the beginning of an experiment. That said however, I’m certain that in the end, questions will predominate though hopefully ones that will contribute to a dialogue with emergent value. Energy transitioners have much work being done in policy, advocacy, and other areas related to energy. I cited the Grand Canyon story which works well as a parable because I believe we need to correct distortions in our sight looking both at history and toward new futures. I mean to point attention toward a difficult and mystical place, a place in our minds, which is a critical understanding of “what we know.” I recently saw a bumper sticker that said it all– “Don’t believe everything you think.” The anthropologist Arturo Escobar sees ontology, which I will define very basically as what we unconsciously know the world to be, the “real world” as it were, as a gateway to the making of worlds. Thus, ontological design is about designing the ways in which we exist, or, as I’ve already mentioned– design designs us back. However, we want to deal with this theoretical approach, my salient point is to find ways that we might discover and reveal faulty assumptions, dangerously wrong myths, and such.

Alistair McIntosh,[128] the Scottish thinker, draws on the history of his people during the Highland land clearances (“the enclosures”) and resulting Scottish diaspora to understand the intergenerational trauma caused by an earlier form of privatization– colonization, or the taking of what is not one’s to take. Using imagery from the stone ruins of long-ago inhabited lands forcibly cleared, he uses the lintel stone metaphor, crossing under it and into an inside space, to bring us to our inner worlds. Inner worlds are liminal spaces in which “guides” are needed to navigate the cross currents of economy, culture, markets, and places.[129] These inner worlds, as McIntosh points out, are where walls are built. Walls in our mind, which he suggests, using the example of “Trump’s wall,” are formabile barriers even though they are not real, material structures. Extending this metaphor to understand the power that exists in inner worlds, it is clear that an actual wall is unnecessary to achieve its aim. Rather a wall in one's mind is equally effective. Deeply held beliefs are powerful. So we seem to have an imagined wall with real, dire consequences, that prevents us from rapidly decarbonizing, transitioning to 100% renewable energy, and creating more just and sustainable communities and worlds. That wall becomes

[128] Alistair McIntosh. Lecture at Wake Forest University. April 17, 2018. Lecture title: Working With Intergenerational Trauma: Scottish Land Clearances and Donald Trump. (https://events.wfu.edu/event/alastair_mcintosh_scottish_land_clearances_and_donald_trump#.XAL7IpNKhTa)

[129] See Sharon Zukin. “Landscapes of Power: From Detroit to Disney World.” University of California Press. Berkeley, California. 1991. Various essays including the anthropological origin of liminality, social meaning, and moral landscapes.

even more impenetrable when adding that all this change must occur very rapidly under a deadline that is dictated by our past failures to see limits and consequences, and by physics and chemistry.

Michael Duggin, writing in counterpunch, noting that "mankind is a runaway project" and rages in disbelief about climate denialism at this stage of the emergency, concludes with this observation:

> I have found that neither fact-based reason nor the resulting cognitive dissonance it instills change many minds once they are firmly fixed; rationalization and denial are the twin pillars of human psychology and it is a common and unfortunate characteristic of our species to double-down on mistaken beliefs rather than admit error and address problems forthrightly. This may be our epitaph.[130]

I feel like one collective goal we should have is recognizing that we can, rewrite that epitaph. Given that the emergency is one for which we have solutions, yet, few of which are applied in effective measure, we have to deconstruct these walls in our minds. How do we dismantle these inner walls in order to dismantle the outer walls? As I've mentioned several times already, I do not offer a blueprint nor do I believe anyone else has one, at least a complete one. Here is where I trust one of Escobar's core premises in his exploration of design thinking as opposed to rational knowledge production– that creativity is emergent. If I had to name one thing above all that should be taken from Escobar's Pluriverse now, it is possibility. I see opportunities to change the epitaph that Duggin suggests may be ours to bear. My reading of Meadows' "Places to intervene" two-plus decades ago left me accepting of the need to change mindsets in order to make meaningful social change, but as I confessed earlier, how to do such a thing was a blank page. Earlier, I also speculated rhetorically about what might bring about this sort of change and one of those possibilities was crisis reaction. Escobar points out something that is surely more than a linguistic twist, noting that designers talk about "breakdowns" as opposed to problems or crises. Opportunity appears in this moment of breakdown:

> Breakdowns are moments in which the habitual mode of being-in-the-world is interrupted; when a breakdown happens, our customary practices and the role of our tools in maintaining them are exposed, and new design solutions appear and are created; we can intuitively feel the appropriateness of this notion for the myriad cases of ecological breakdown in contemporary situations.[131]

Escobar helps. Drawing from others, he sees that technology as understood in rational terms "traps our imagination" and that a redirection is necessary, one that makes central the idea of human purpose.[132] For example, because it is my central topic here, solar power as a technology project abstracted from social meaning and context would fit this bill.

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[130] Michael Duggin. *Climate Change and the Limits of Reason*. 12-14-18. counterpunch. https://www.counterpunch.org/2018/12/14/climate-change-and-the-limits-of-reason/.
[131] Arturo Escobar, Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press. 2017. p.113.
[132] Ibid. p.111.

Thus, design thinking challenges existing paradigms and ways of doing things. This is a tool we need to use.

Who can use the tool? In other words, who are designers? Design typically has to do with the obvious– skyscrapers, cars, toasters, iPhones, things, F-35s, objects, commercial goods, all market-oriented things. In the use I intend here, design is open to all. That's because, more importantly, it is about designing societies and worlds. It can help us address the emergencies of our time. The good news is everyone designs; "co-design" or collaborative design if you will. Like the energy system I am advocating, democratic distributed generation, it might be appropriate to call this distributed design (through broadly distributed networks), although others use different names as I'll note momentarily.[133] In line with this tenet therefore, is the idea that expert-driven projects and institutions need to be viewed with a wary eye since they are generally in service of capital and come out of the paradigm that has given us this emergency. Designers for social change are committed to exposing the class basis of professionals, to making subordinate knowledge legitimate, and to fight "design's own 'wicked problem,' where the design professions may lack the fortitude to work on intractable problems of society.[134] An example of non-professional design, "vernacular design"[135] is practiced by non-experts, or those with skills and capacities for crafting projects that support resilience, not capital, yet who have no formal credentials. Manzini calls this "diffuse design."[136] He doesn't dismiss the role of experts, but rather situates them in the design process so that their knowledge is democratically integrated.

The core role of a designer is that she/he is a "discloser" who works intensively and collectively within a community on a pragmatic activity around the community's shared concern. Escobar points out that the discloser must show awareness that she/he is a discloser. The idea here is attachment and embodiment, not detachment and isolation.[137]

I certainly cannot do adequate justice to the ideas in Escobar or Manzini. These ideas are so interdisciplinary and Escobar's treatment is so sophisticated with tentacles in so many literatures, fields, and practices that his 258 pages with thorough endnotes cannot even fully contain the ideas. I will return to design for social innovation in a moment to attempt to ground design thinking more concretely in the work of energy transition. These writers have some insights about how our work might be practically organized that bear consideration from all of us working toward energy system transition.

If our inner-world of mindset is a powerful place to create change, we surely have to look to other places to ground and reproduce desired change; places in the outer world. I turn to some of these places next.

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[133] Ibid. p.159-160.
[134] Ibid. p.36,47.
[135] Ibid. p.37-38.
[136] Ezio Manzini. Design, When Everybody Designs: An Introduction to Design for Social Innovation. MIT Press. Massachusetts Institute of Technology. 2015.
[137] Ibid. p.111-112.

Places in common

The commons and cooperation are the threads that emerge. Microgrids operating as a common pool resource and socializing energy systems both represent massive structural change in energy production and consumption systems. We want transition and change and to have them both, some sort of space-place-mindset process in which people, ideas and actions come together to reclaim our commonwealth will be needed. Here, I want draw from some important work and history in my region of the country, the Appalachian Mountains. Rural residents here are skilled "vernacular" or "diffuse" designers.

Commons-making

The arc of Appalachian commons-making is rich, with autonomy, struggles against exploitation land and people, cultural misunderstanding, and with a history of trans-local activism and commons-making. With *Reinventing the Appalachian Commons*,[138] Jeff Boyer[139] contributed an important chronicle and departure point for looking at our present emergency and opportunity. In it, he identifies three phases of commons-making: agrarian, multiple livelihoods strategies, and, importantly for our present needs, free spaces, whose purpose is to help fight back "against unjust markets, industrialization, and corrupt politicians."[140] Though not dismissing the first two, it is primarily the third phase, free spaces, that I would like to consider how we might currently configure our collective works. Echoing other prominent Appalachian scholars,[141] Boyer emphasizes the significance of phase 3 and how it is created, suggesting "that the commons must involve not only the sharing of resources but also the dialectical processes of building and protecting 'free spaces.'[142] Free spaces, as Boyer notes, are "time-place environments where more communal and liberating thought, feeling, and action can occur."[143] Boyer also touches on mediating structures, that, simply put are the organizations that help create free spaces.[144]

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[138] Jefferson Boyer, "Reinventing the Appalachian Commons," *Social Analysis*, Volume 50, Issue 3, Winter 2006.

[139] Jefferson Boyer (Jeff) is one of the pioneers of sustainability scholarship and practice in the Appalachian region. I believe this is important with the various discourses converging as "the resistance" to this emergency need grounding in sustainability theory, as we approach and perhaps overshoot "hard sustainability" limits. An anthropologist by training, he co-founded the Goodnight Family Sustainable Development Program at Appalachian State University in 1991. He reminds us that history, both distant and recent, is an important and useful resource as we confront the emergency of now.

[140] Jefferson Boyer, Reinventing the Appalachian Commons, Social Analysis, Volume 50, Issue 3, Winter 2006. P.221. (This paper also appears as a chapter in in The Global Idea of 'The Commons'. Volume 10, Critical Interventions: A Forum for Social Analysis. Ed. Donald M. Nonini. September 2007.

[141] Steve Fischer, most notably Fighting Back in Appalachia, and Richard Couto most notably, Making Democracy Work Better.

[142] As for the dialectical processes, I wonder if the undertaking by a community solar association, for example, might be an example of space making right now? I argue in this paper that such projects, though often difficult and slow, are useful if not immediately for reducing atmospheric carbon concentrations, because the are a space for experimentation and praxis.

[143] Ibid. p.221.

[144] Rather than develop that conversation here, I suggest reading Reinventing the Appalachian Commons or reading Richard Couto's original work proposing the idea. *Making democracy work better: Mediating*

Acknowledging this historically tilting view of commons-making, where culture does have an enduring memory that can serve as a resource, what new wrinkles can be introduced to advance the work of merging rural and/or local energy production with livelihoods and wellbeing? What might those new free spaces look like? What does the constitution of effective new free spaces involve? And, do Boyer's two historical commons phases actually form solid, existing foundations for a new rural energy production and livelihoods economy, as I suspect they could? Wolsink's microgrid and his recognition of the multiple sites of collaboration within rural cultures and attendant institutions overlay nicely in my view.

Design spaces, organizational collaboration and distributed agency

I propose that community-owned renewable energy project planning and development is one such opportunity for dialectical process and creation of free space. A particular approach I am interested in developing is design thinking for social innovation, as I've just introduced. This is really where my mind goes in the "next steps" sense. That is, I would like to see some formative effort to create an experimental ad hoc network or coalition.

Once again I want to invoke the wisdom of Frank Adams who, owing to his history at Highlander with Myles Horton, comes from a formative group of popular educators and critical pedagogists who fought for democracy, workers rights, and civil rights.[145] A well-known contemporary critical pedagogist, Henry Giroux, carries on the Adams "is and ought" systems ethos in much of his writing, where he emphasized first the language of critique, then the language of hope and possibility. "Is" has no meaning without the "ought" and I think this is why Adams' idea of a creative "tension" between critique and imagination is so important in our collective work. This may help to explain, at least partly, why we have massive mobilizations and protests, yet find it so difficult to affect change after the marchers go home.

Energy transition will need to be situated within a movement that is sufficiently broad, one that crosses boundaries to touch the issues of equity and justice of all kinds– environmental, climate, worker, social, economic, class, intergenerational, racial, and so forth. The proponents calling for a Green New Deal will need to heed this. They will also need to pay attention to the Yellow Vest uprising in France, which helps reveal class divisions and the wealth inequality that has pushed many into the precariat[146] class, and into the streets. They have no ability nor tolerance for paying the financial cost of climate mitigation while they watch elites and corporations pay little or nothing. The gas tax proves to be an unpopular solution in France. Like most taxes, it is regressive and places a disproportionate burden on working class. Even though the French government has walked back the gas tax, the Yellow Vest mobilizations reveal something basic yet nuanced that is being manifested across the ideological spectrum from progressive to conservative nationalist orientations. Austerity and the growing wealth gap is a source of

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structures, social capital, and the democratic prospect. 1999. Chapel Hill: University of North Carolina Press.

[145] Myles Horton and Paulo Freire are two of the most well-known popular educators.

[146] Guy Standing. *The Precariat: Today's Transformative Class?* Great Transition Initiative: Toward a Transformative Vision and Praxis. October 2018. https://www.greattransition.org/publication/precariat-transformative-class. (viewed 11-20-18).

grievance, discomfort, anger with accompanying rage and violence, and at the same time, an energy source for change. Sean Sweeney's discursive and strategic perspective on radical energy system change through the eyes of labor should resonate and align with with this gathering storm.

"One mind alone, like one life alone, is perfectly worthless, not even imaginable,"[147] so says Wendell Berry in his typical humble fashion. Distributed agency and collaborative organizations are two cornerstone concepts in designing new energy systems and new worlds. But how can we reorient and reorganize our work and social practices to such an end?

This is the pivot-point at which I want to:

1. lay out something approaching a framework for a collaborative organizational effort, and
2. in the current moment acknowledge that this isn't a "plan" or a recommendation, and
3. thus express an openness to conversation and ideas for beginning to build some sort of a community energy design coalition or network.

Thus far in formulating my thoughts around rethinking energy in this paper, I've leaned heavily on Escobar, who in turn, has carefully studied Ezio Manzini's[148] work around fusing expert designers and "diffuse" or "vernacular" designers (defined previously in this paper as non-experts) to create "design for social innovation." I'll now draw from Manzini to make a very provisional sketch of an organizational collaboration. Elements of this framework might include:

- *Places*- any organization, group, community, or agency that is entertaining how they can develop their own renewable energy project
- *We are all designers*- that is to say that everyone in such a coalition has some contribution, some role in creating, in this case, a renewable energy project
- *Distributed*- not only are we attempting to convert a centralized energy system to a distributed one, we also see everything as "distributed" from information, knowledge, finance, organizations, production, consumption, politics, etc.
- *Diverse*- cross-sector collaborations such as housing, public health, food production and distribution, critical infrastructure, transportation, and so forth.
- *Project and process*- these are separate but interrelated things. A group may have a solar project to develop and there should also be a process that is more encompassing and ongoing
- *Network or Coalition*- the latter is more formal with perhaps greater potential to be strategic, though with the requisite amount of coordination and commitment
- *Multi-scale*- particular projects in specific places but also more systemic amalgamation of knowledges, experiences, and ideas with the intent of seamlessly spanning local/regional/national/global

These are a few that come to mind. Surely there will be others.

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[147] Wendell Berry. "The Way of Ignorance" in *The Way of Ignorance and Other Essays*. Shoemaker & Hoard. 2005.p.x.
[148] Ezio Manzini. Design, When Everybody Designs: An Introduction to Design for Social Innovation. MIT Press. Massachusetts Institute of Technology. 2015.

Places in politics

I should say politics and regulation, but I think the emphasis should be on politics because regulatory agencies have been captured by corporate money and interests, and therefore are politicized. Below are some of the governmental bodies, agencies, and branches of government, all sites where much of the work on energy transition is being carried out. Much civil society work on energy transpires here and volumes could be written. Therefore, I will not elaborate. Instead, my main point would be that there are multiple sites of contestation and leverage. Keeping an eye on the "ends" and not letting the "means" themselves overtake the ends is an important principle that without leads to cooptation. In other words, the practices and bureaucratic structures, procedures and "professional" domains and agency can render radical change agents out of the agenda. I had a one-time colleague make a vision statement "wouldn't it be great if this was a room full of accountants." The statement was well-intended but it reflected, at least to me, an instrumentalist mindset, where the rules of the game are uncritically revered, mastery of them was valorized, and glorious, obedient accounting practices represent high technique in renewable energy development. Contrast this mindset with what Nathan Schneider calls "fiscal disobedience" coming out of "occupy" and hacker cultures aiming to radically undermine a socially and ecologically destructive corporate-state.[149] Setting aside what might be viewed as criminal activities for which hackers are most widely known, the aim here ranges from forming a new kind of politics, under which a new, democratic energy economy might emerge, to revoking politics altogether. Whether it be in policy advocacy roles, project development, or other places, professional "technique" has a tendency to become an end unto itself with no greater purpose without an overarching, moral guiding principle.

Public utilities commissions, state and federal policies

All 50 states have public utilities commissions (variously named in each state, e.g. public service commission, utility regulatory commission, etc.), that regulate a wide range of public utilities from water service, natural gas and electric utilities including public and investor-owned. These are quasi-judicial bodies with several commissioners, the number of which varies in each state. Some are political appointments and others are elected, again varying by state.

While these commissions are regulatory agencies and not policy making bodies, they possess tremendous power. Rate making, integrated resource plans, supply and demand projections, and critical decisions on who pays for what essentially is malfeasance or mismanagement (the utility or the public; known as "construction works in progress" or (CWIP) are examples of rules and regulations that affect the viability of renewables and the sectors of the renewables movement that gain favor or not. I would add value of solar studies and methodologies to this list.

Utilities commissions are the sites of contestation between renewable energy interests and incumbent utilities fighting to preserve their advantage across the nation. The Georgia Public Service Commission gives us one of many case studies in utility politics, money and influence.

[149] Nathan Schneider. *Everything for Everyone: The Radical Transition that is Shaping the Next Economy*. Nation Books. 2018. P. 129.

Here, Georgia Power has been fighting for its nuclear life after the company's Votgle nuclear plant under construction hit the $27 billion figure, a project cost double the original projection, not to mention years behind schedule. This is in the aftermath of the Fukushima nuclear meltdown in Japan, and the meltdown of another sort, the bankruptcy of Westinghouse, the nuclear reactor designer. The commission allowed the project to continue amidst protests to pull the plug on the boondoggle. Furthermore, thanks to the "construction works in progress" (CWIP) provision in Georgia, which allows a utility to charge ratepayers for work that may never be completed (i.e. failed projects), the power company was able to extract $2 billion from the public, which it then turned around and claimed half of that as corporate profit. With a commissioner election pending, the industry-favored incumbent on the ropes, and the challenger favored to win likely to pull the plug on Votgle, the nuclear industry and Georgia Power evaded every campaign spending law it could and piled up a mountain of money to shut down the threat and defeat the anti-nuclear challenger.[150]

CWIP isn't the only mechanism that IOUs have for socializing their risks and faulty strategies. Integrated resource plans (IRP) are another. Lots of maneuvering occurs here. The arguments contained in them represent a major pivot point with outcomes bracketed by lock-in or openings for renewables. Currently, this takes the form of IOUs betting the farm on natural gas, which involves construction of the power plants (or at least conversion of existing stations). The more troubling part of this is the fuel contracts the utilities innocently tout as "cheap," and their rigorous backing of new pipelines. IRPs are where this contestation plays out, and the weeds can get very deep. The renewables camp will argue that such new generation isn't necessary and that a committed renewables program will meet projected demand more inexpensively. How do costs get modeled and do models include the variables necessary to accurately reflect the costs the public is being asked to bear. Also, do they adequately model the value of renewables in the comparison?

Sue Sturgis summarized the affair, perfectly illustrating how so-called regulatory agencies that are supposed to oversee in the public interest, are in fact, political actors taking from the public and giving to the private:

> Following the nuclear industry's million-dollar outside spending effort, all five of the PSC members remain Republicans who have supported pursuing Vogtle reactor construction at ratepayers' expense — just as Georgia Power wanted.[151]

Indeed, transparency, access, accountability, and the public interest all need to be restored in public utilities commissions.

The terrain of state and federal policies is simply to large for me to really comment in any detailed way. I think it best to simply tick off a few samples of the important ones that are being addressed by groups now or should be. Of course, some of these approaches are market-based, such as setting a price on carbon, thus may not be capable of the level of

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[150] Sue Sturgis. Secret industry money helped utility interests win Georgia runoff. Facing South. 12-7-18. https://www.facingsouth.org/2018/12/secret-industry-money-helped-utility-interests-win-georgia-runoff?eType=EmailBlastContent&eId=6a8cab97-87aa-4e5d-afc6-ef47170bb490.
[151] Ibid.

change required. Also, as I've mentioned already, Sweeney points out that "big greens" tend to dominate national policy discourses and occupy much of the space where more critical voices and views are needed. Establishing mandatory net carbon reduction goals in line with what's needed to avert that 1.5C threshold in 12 years and adding serious accountability (teeth) measures would be an inspiring leadership statement. (You might say the "Apollo moment.") From there, supporting institutions and resources could be formed such as green banks along and other financial resources and incentives. I've already mentioned the Fed's unique ability to create money for infrastructure and social investment, which could be done through a Green New Deal. Ending fossil fuel subsidies immediately and in fact, banning new fossil fuel extractions would seem to be essential, and at a minimum, ceasing all fossil fuel extraction on public lands. Given the unprecedented level of ungovernability we're experiencing would leave the likelihood of such things manifesting as questionable at best. But again, we're in a moment inflection, so we make our demands.

Places of electricity generation

All of the following are likely places of contestation on the one hand, and places of change on the other. Municipal electric systems, rural electric cooperatives, investor-owned utilities, and individual renewable energy generators will fall at various points along the continuum of struggle and change. In all cases, the fact that system change is the goal, all will exhibit pushback against any demands for fundamental change and renewables transition. Some, however, will easier to reach tipping points than other. Finally, it should be said that there is a multi-sited aspect to each of these places. Changes in rural electric cooperatives will also involve interventions in other places such as utilities commissions. In the end, I want to break the system down into its parts, examine them and then put them back together.

Municipal electric systems

Although municipal electric utilities are subject to local politics and could rightfully be discussed in the politics section above, I see "muni's" and public utility districts as a direct and immediate target for change. Why? They are local, relatively numerous and are regulated differently. Furthermore, there is the readily scalable opportunity. On top of that, many of the nation's mayors have signed various climate-related resolutions, whether it be committing to the Paris Climate Accord after President Trump's spectacle of withdrawal, or to reaching a 100% renewables goal.

Boulder, Colorado is the most well known example of a municipalization driven by the citizens goal of increasing renewable energy reliance in its energy mix (to more than 50% over a twenty-year timeframe) and achieving the goals around energy democracy.[152] Boulder's multi-year remunipilization project was completed in November 2017. Boulder's efforts involved leadership and public financing from the city government, an organized citizens planning and

[152] Evans, Ashleigh E., "Perceived Issues and Successes Associated with Municipalization for Increased Renewable Energy Reliance: Case Study Analyses to Inform Boulder, Colorado on Municipalization and Renewable Energy" (2015). University of Colorado, Boulder. Undergraduate Honors Thesis. 1007. https://scholar.colorado.edu/honr_theses/1007

advocacy process, and featured constant and forceful resistance from Xcel Energy, including litigation.[153] While Boulder's story is well known, there are less well known examples.

In 2008, I participated in several roundtables in Benham, Kentucky with citizens, town officials, and regional nonprofit groups, including co-organizers Kentuckians for the Commonwealth (KFTC) and Mountain Alliance for Community Economic Development (MACED).[154] For all of the accolades Boulder attracted, Benham was very interesting for different reasons. The small town had produced coal for a century, but the mines were closed and the power supplier, Kentucky Utilities informed the Benham Power Board that it would not be renewing its service contract. This was an opportunity of a different sort than Boulder's. Here's the utility was leaving town on relatively short notice and leaving a void in which renewable energy advocates could not only dream, but also meet a pending power supply crisis head on. While the time required to fulfill that sort of goal was initially short, one immediate outcome was that struck a chord with other nearby small municipalities who expressed an interest in Benham's idea. The result was the formation a new power agency, a collaboration among these small municipalities.[155]

The hope is that municipalities would adopt energy democracy platforms and goals that guide their renewable energy transitions. Besides local leadership and citizen involvement, the nuts and bolts will deal with issues such as franchise service agreements (exclusive and non-exclusive, expiring, amending, and terminating), potentially stranded cost negotiations via FERC, and funding sources. The economic impacts from keeping energy dollars in the local economy–import substitution– would be a significant long-term benefit in addition to hedging energy inflation.

Rural electric cooperatives

Rural electric cooperatives (or electric membership corporations, "EMC's") are attractive sites for intervention for many of the same reasons as discussed with municipalization. There are some additional reasons as well, foremost in my mind being the possibility for rural sustainability and livelihoods design work.

As with municipalization, the value of import substitution is significant here as well. Even more so perhaps with much rural land in places like the southern Appalachians where traditional livelihood strategies that included "public work" to supplement income from agricultural production with crops like tobacco, and intergenerational family land holdings, threatened by rising property taxes due to pressures from second home development (i.e. landscapes of dispossession and consumption). The potential for electricity generation as a "new crop"[156] is

[153] For a useful summary, see http://www.energy-democracy.net/?p=364.
[154] Jonathan Cherry. *Benham Community Energy Initiative: A preliminary report to the City of Benham, KY*. MIT Community Innovators Lab. Cambridge, Massachusetts. September 2008. Also see *Benham residents building community energy*. http://kftc.org/benham-residents-building-community-energy.
[155] James Brugers. Kentucky cities form new power agency. Louisville Courier Journal. 9-24-15. https://www.courier-journal.com/story/tech/science/environment/2015/09/24/kentucky-cities-form-new-power-agency/72743826/.
[156] As I recall, the term "new crop" was coined by Lisa Daniels of Windustry. She was referring to wind power in the upper midwest, but the idea is adaptive to each rural place with its appropriate scale and technology.

significant and the skills and thriftiness of rural residents very well match the opportunities. With rural economic and social unraveling, comes the need for a new approach to livelihoods. I make a distinction here between jobs and livelihoods, because I think the latter is more flexible and applicable to rural settings (see the section of commons above). Historically, rural areas have been landscapes of production– of agricultural crops both for provisioning and market sales, of the kinds of knowledges and relations that livelihoods (resourcefulness, if you will). But more importantly, this may be a juncture where social innovation emerges and takes root.

Perhaps one of the best success story is in Iowa.[157] Skepticism was the initial reaction to a proposal to integrate solar into Farmers Electric Cooperative's energy mix. That all began with economics as the main goal, although environmental benefits weren't ignored, but sustainability as an issue was purposefully sidestepped. The pitch was economic and the cooperative made sure its members could install solar and see a return relatively soon. It did so with the twin tools of structured project finance in order to take advantage of the investment tax credit (ITC) and a feed-in tariff (FIT) similar to what Germany used so successfully to stimulate a community-owned renewable energy movement that benefited farmers and local landowners.

Cost is important as a make or break determinant, even as climate-related environmental benefits and local economic benefits are espoused. In the beginning, if costs aren't competitive and recovered in a decade or less, renewables transitions are likely to be a hard sell, as the Farmers Electric Cooperative case study in Iowa shows. The Rocky Mountain Institute's (RMI) cost study of intermountain co-ops[158] shows how coal-intensive "legacy" generation in a regional wholesale generation and transmission (G&T) cooperative serving its multiple distribution cooperatives across four states can be more cost effective by adopting renewable energy sources. The RMI study does not address ownership configurations for renewable generation. Instead, it looks at procurement scenarios from the large IOU in that region, including Excel Energy. A keen focus on cost is especially important since, as Wolsink pointed out, the tendency of these member-owned institutions to behave as if they were private, for-profit corporations. And it naturally follows that favorable cost translates into member benefits. I agree that Wolsink's "acting like private" is an accurate observation and concern that will have to be addressed if rural electric cooperatives are to live up to their potential as sites for democratic energy transition.[159]

Finally, where RMI's cost study intersects with a cooperative's motivations to look to local renewables, look again to the intermountain region. One of the cooperative members of G&T cited above, Delta-Montrose Electric Association (DMEA), on Colorado's western slope, developed two small hydroelectric plants that attracted the interest of renewable energy developers, which, in turn, attracted the interest of federal regulators. Their intent was to protect the G&T, with whom the member cooperatives had agreements to purchase 95% of their power

[157] Karlee Weinmann. Thanks to Co-op, Small Iowa Town Goes Big On Solar. Institute for Local Self-Reliance. 2-3-17. https://ilsr.org/thanks-to-co-op-small-iowa-town-goes-big-on-solar/.
[158] Dyson, Mark and Alex Engel. A Low-Cost Energy Future for Western Cooperatives: Emerging Opportunities for Cooperative Electric Utilities to Pursue Clean Energy at a Cost Savings to Their Members. Rocky Mountain Institute, 2018. https://info.rmi.org/low-cost-energy-futurewestern-cooperatives
[159] See AIRE blog Steve Owen (9-20-10). Are Rural Cooperatives Cooperative and Democratic. http://aire-nc.org/2018/09/20/are-rural-electric-cooperatives-cooperative-and-democratic/.

generation. With the agreement came imbedded federal requirements to generate with coal (a hidden subsidy). However, DEMA learned that it could produce clean local power cheaper than it was buying coal-fired generation from the cooperative to which it belonged. Here, the local cooperative board of directors, liked the idea of cheap power. The local sources came from hydro, solar and interestingly, methane leaking from area coal mines. DEMA filed a request with FERC asking for authority to exceed the allowance for local generation as specified in its G&T contract. FERC concurred with DEMA's argument, in fact, saying it was obligated to do so.[160] This case illustrates the potential for change within rural electric cooperatives. However, it equally illustrates that the transformation has yet to take root with old models and mindsets fighting back. In as much as rural coops tend to be characterized by conservative organizational cultures, there are exceptions, as these examples illustrate. To this list I would add United Power on Colorado's Front Range, because of its experiments with battery storage.[161] Both United and DEMA challenged their wholesale power suppliers; such a move seems unlikely here in North Carolina where Duke Energy effectively dominates rural cooperatives who are in essence, subsidiaries of the corporate utility.

Investor-owned utilities

AIRE, as a developer of small nonprofit solar projects, has encountered rafts of dense bureaucracy and rules that seem aimed more at discouraging these types of small solar projects than at any other real purpose. Furthermore, these rules, informally and pejoratively dubbed "nuisance fees" or "solar punishment fees" by some of our project organizations, change capriciously at the whim of the utility. The utilities do this under the pretense of "protecting" ratepayers from the insidious dangers of solar eroding the pool for sharing fixed costs. Since I've discussed this already, I'll only add a few additional comments.

Intentional organizational incompetence seems to be the design principle behind Duke Energy's "customer-owned generation" division (an organizational unit and euphemism Duke uses to put solar owners into a disadvantaged position). The North Carolina nonprofit organization, NC WARN,[162] coined the term "slow walking" to describe this lazy, inefficient utility interconnection process. However, based on AIRE's first hand experiences, a more apt description would be "long term parking." Anthropologist David Graeber coined the term "total bureaucratization" intent on highlighting the "all encompassing" and repressive nature of bureaucracy.[163]

Max Weber, the German sociologist, used the term "bureaucracy" to describe a cold, rational and efficient form of organization. These organizational forms are mostly thought of as government bureaucracies. This is not my perspective here. AIRE's experience (struggles) in

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[160] Nathan Schneider. *Everything for Everyone: The Radical Transition that is Shaping the Next Economy*. Nation Books. 2018. p.173-176.

[161] Joe Smyth. Clean Cooperative. Tri-State policy change discourages battery projects in rural Colorado and New Mexico. 12-14-18. https://www.cleancooperative.com/news/tri-state-policy-change-discourages-battery-projects-in-rural-colorado-and-new-mexico

[162] Do New Solar Rules for NC Allow for Slow-Walking Contracts?-- Public News Service. NC WARN. January 5, 2015. https://www.ncwarn.org/?s=slow+walking (viewed 12-3-18).

[163] David Graeber. *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy*. p. 18.

developing solar projects aligns more closely with the social theorist, Michel Foucault, viewing bureaucracy as means of power and control.

Large utility-scale solar developers and small community-oriented nonprofits like AIRE have not escaped the reach of Foucault's IOU bureaucracy.

Ultimately, what is the aim with large IOUs? Resistance of some sort is necessary, whether it be in fuel supply chains, management's choice of generation sources, or breaking monopoly strangleholds. Questions about public benefit should be paramount in terms of both climate, equity and choice. Sweeney and others think they should be socialized, made public in order to serve the public interest. That is, they should be taken over by the public entities that regulate them (states) and be mandated to work in the public interest, not as executive and shareholder wealth accumulation corporations, and not as planet wrecking unaccountable industries. At a minimum, the many monopoly protections that prop up IOUs need to be withdrawn so that the public has choices in its power supply.

Sweeney made the case for socialization years ago. It seems that some traction is finally gaining with this energy democracy discourse, with it being a concept some grassroots groups now openly advocate. Arguments for public money being invested in utilities (and services like free education, healthcare and other public goods) are being put forth now. After all the Federal Reserve is a monopoly that can legally create money. As long as it is invested in productive uses, it will not be inflationary, as the critics surely argue. As we argue for energy democracy, I suggest it is important to be clear on what energy democracy means to us, to sharpen our critique of the energy landscape, and to locate our efforts accordingly. To illustrate the various paths that socializing the large IOUs could take, California, always a leader, is instructive. There are now open demands for the state to take over Pacific Gas & Electric (PG&E) amidst what can only be a connect-the-dots, systems consequence of climate change. The state has suffered megafires for the past few years, and the most recent, the Camp Fire, has pulled PG&E deeper into the drama. Downed or malfunctioning power lines, a result of alleged maintenance neglect, sparked some of the fires. As a result, the company is facing the prospects of some $12 billion in liability in civil lawsuits by 800 separate cases from the previous years fires.[164] Citigroup estimates the damage exposure at $15 billion and another $15 billion from the Camp Fire. These are staggering numbers, much greater than insurance would recover, or about $1.4 billion.[165] The utility cut dividends a year ago and now, the public utilities commission, is considering yet another bailout. This is familiar pattern; the public pays for corporate negligence and yet the corporation profits at the public's expense. PG&E plans to file for Chapter 11 bankruptcy by the end of January 2019 and the dominos will fall.[166] For imaginative advocates of

[164] PG&E: Don't break it up. Take it over. The Next Systems Project. https://thenextsystem.org/learn/stories/pge-dont-break-it-take-it-over?mc_cid=c7f912c1d3&mc_eid=ff7221b5e9

[165] Ivan Penn and Peter Evis. California Utility Customers May Be On Hook for Billions in Wildfire Damage. New York Times. 11-14-18. https://www.nytimes.com/2018/11/14/business/energy-environment/california-fire-utilities.html.

[166] Brian Eckhouse. Not Even U.S. Government Can Escape Fallout of PG&E's Crisis. *Bloomberg*. 1-18-19.

democratic energy, this case is one to watch play out. Why? From a systems perspective, it only takes a small change at the right place– a point of high leverage– to create a system change.

Places to build the "next" community renewables project

This is where all of the "places" (above) come together. In other words, this is bottom-up change where people in the places that matter to them take control of their energy future. But these local projects don't and can't exist in isolation and expect to contribute to change. Therefore, I don't want to imply that localism is an exclusive answer. In the introduction to this paper I wrote that our efforts to develop small solar projects had conditional value. If we take seriously that a project really means "projects as experiments as praxis" I do believe projects continue to matter. Institutions from faith communities to schools to community social service agencies continue to exhibit a desire for solar at their respective facilities. This holds true for many municipalities as well. As I've made clear, developing these types of projects can be very difficult, discouraging, and from a numbers perspective, a miniscule contribution to the zero carbon goal.

However, I suggest that each new project or subsequent phase of an existing project is a vital piece in a quiltwork of energy transition. Boyer's commons-making phase of "spaces" applies here insomuch as project development entails planning, design, dialogue and interface with community and adversarial actors responsible for the barriers. Such experiences give us crucial pedagogical benefits that illuminate the many barriers to energy transition and the power of incumbent utilities. Such experience reveals in painful detail just how nuanced and deeply embedded these barriers are. But there are also more positive and useful outcomes. A project can become a cluster, with subsequent phases of project development designed to increase local energy generation, with an ultimate outcome of becoming a self-reliant micro grid. Around cluster development can follow value chain design, where many of the accompanying roles of local energy development can become import substitution community wealth-building strategies. Anchor institution development could be a key piece in that strategy. Key to the success of linking projects to the larger goals of decarbonizing and democracy are assuring that projects are networked.

In terms of "next" projects, how might we scale them within their local communities? I think linking projects and outreach is a next step in learning beyond a single project. AIRE's initial demonstration project 10 years ago, contemplated this sort of thing by promoting the idea of a "green light district" in our hometown of Boone, NC. That project never materialized but now may be an appropriate time to pursue it. One excellent example of this which brings together local policy, leadership and grassroots work can be found in Iowa. What began with one county is now a multi-county "energy district that has been successful in institutionalizing the support and growth of renewable energy.[167]

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https://www.bloomberg.com/news/articles/2019-01-18/not-even-the-u-s-government-can-escape-fallout-of-pg-e-s-crisis.

[167] Winneshiek Energy District is a nonprofit organization that offers services typical of other nonprofits (e.g. energy audits, etc.). However, they have taken a page from Soil and Water Conservation Districts, and applied it to local energy. They appear to have been successful at spreading efficiency and renewables across a multi-county area and are increasing the density of renewables adoption. See their

Wolsink, in theorizing socially constructed smart grids cautions that not enough is known about the social construction of them, given that most of the work has been on the technical, and that more research is needed.[168] This is no doubt correct, when the IPCC tells us we have only 12 years to rein in the carboniferous economy, we need to rethink what we consider to be research.[169]

Here, I am explicitly stating that, the work we do (and have done) *is* theory-making and knowledge producing even though it has as its primary goal the development of renewable energy systems and occurs outside of scholarly settings. For me, this raises the value of small project to what we should see as experiments that further our advancement of the primary goal. What value was AIRE's first project[170] of 2.4kW solar in terms of carbon reduction is less important that it's value in advancing our knowledge in ways that enhance solar adoption for others. With each successive solar development project, we can choose to see it as an insignificant event too small in scale or scope to have impact (i.e. the glass is half empty), or we can understand it as one of many experiments occuring in the space of energy transition where there are key learnings to be captured about important social construction questions. In fact, Wolsink recognizes the need for praxis and uses the praxis-like term "adaptive governance"[171] in microgrids as central to innovation. As the popular educator Myles Horton told Bill Moyers in the classic *The Radical Hillbilly* interview, "People say you learn from experience but that ain't right. You only learn from the experiences you learn from."[172] His point in a clever and humorous way is simply that praxis matters. I suggest that experiential learning is vital, but we have to reflect and learn on the move.

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report, "A Geography of Change" at https://energydistrict.org/wp-content/uploads/2019/01/A-Geography-of-Change-full.pdf.

[168] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.235.

[169] For now I will leave it as an open question whether we might consider this to be action research, community-based research, or other conceptions for knowledge generation. Manzini (p.39) offers a research typology consisting of "research for design," "research on design" and "research through design." I plan to return to the question of knowledge production in another paper or forum.

[170] See John Farrell's Community Solar Power: Obstacles and Opportunities. Rev. 2010. Institute for Local Self-Reliance. The New Rules Project. Archived at AIRE. http://aire-nc.org/papers/.

[171] Maarten Wolsink. The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool resources. Renewable and Sustainable Energy Reviews. January 2012. p.235-236.

[172] Bill Moyers' Journal. Interview with Myles Horton. The Adventures of Radical Hillbilly- A Wisdom Teacher for Activism and Civic Engagement. https://www.youtube.com/watch?v=qSwW0zc-QBQ . This was a two-part interview on the 25th anniversary of the Highlander Folk School. Aired June 5 and June 11, 1981. See also, The Adventures of a Radical Hillbilly An Interview with Myles Horton. BILL MOYERS and Myles Horton. *Appalachian Journal*. Vol. 9, No. 4 (SUMMER 1982), pp. 248-285. Appalachian State University. Boone, NC.

Make the Road by Walking: From places to just and sustainable landscapes

Typically papers like this have a conclusion. However, my mind tells me that this is more of a beginning, with lots of questions to consider and discuss. It is both merciful and necessary though to at least pause for now, so I will wrap up. There are a few themes that emerge including limits, politics, mindset, new ways of imagining energy and society. And then there are the inevitable questions of what to do next; what is the next step on the road?

The theme of limits, both resource and temporal, and I also feel that social cohesion and kindness should be included in the idea of limits, run common throughout this paper and much of the literature I cite. From Reid and Taylor's foreseeing the two distinct scenarios a mere eight years ago to the IPCC warning of 12 years to avert a plus 2 degree C world. A functioning democracy and zero carbon imaginations (perhaps even negative carbon emissions) are pieces of the same system. And another timeline comes to mind. The classic, *Limits to Growth*, a study on consumption within a finite system, was published in 1972. In 2004, *Limits to Growth-30 Year Update* the was published. On the books back jacket, the economist Herman Daly wrote "Not everything bears repetition, but truth does—especially when that truth is both denied by entrenched interests and verified by new information."[173] Daly's diagnosis implicating denial, deferral and dismissal these 14 years ago is such an accurate portrait of today, and remind us that we are not winning. The Limits authors themselves lamented the wasting of time, reflecting in their 30 Year Update:

> Consequently, we are much more pessimistic about the global future than we were in 1972. It is a sad fact that humanity has largely squandered the past 30 years in futile debates and well-intentioned, but halfhearted, responses to the global ecological challenge. We do not have another 30 years to dither. Much will have to change if the ongoing overshoot is not to be followed by collapse during the twenty-first century.[174]

The only thing I would change about the above quote to adapt it looking forward, is that now, I hope our responses are not futile because we aimed and framed them appropriately this time around. That means we have to accept that there are certain non-negotiable limits that must be made explicit driving forces behind our actions. It also means that we have to look at the world in a way we are unaccustomed to in our "Western, modern world." Other worldviews exist as they have over time. Native ontologies around the world are being seen in juxtaposition with the dominant, extractive, destructive worldview disguised as development and progress– in the Amazon, Canadian tar sands, Standing Rock, just to name a few. They are also reasserting their claims to knowledge and worlds that have long since been subjugated by modern

[173] Meadows, Donella, Jørgen Randers, and Dennis Meadows. 2004. *Limits to growth: The 30-year update*. White River Junction, VT: Chelsea Green Publishing.
[174] Ibid. p. xvi.

development. The youth of today seem also to have a different worldview. I hope we are humble enough to let them teach us.

If design is emergent, and if change emerges out of periods of disruption, my sense is that there is a moment of opportunity in this emergency frame. However, owing to the temporal theme here, it is prudent to heed the eco-theologian Thomas Berry's reflection on the 21st century and new millennium, warning that dithering has consequences:

> We are now experiencing a moment of significance far beyond what any of us can imagine… The distorted dream of an industrial technological paradise is being replaced by the more viable dream of a mutually enhancing human presence within an ever-renewing organic-based Earth community. The dream drives the action...But even as we make our transition into this new century we must note that moments of grace are transient moments. The transformation must take place within a brief period.[175]

Whether or not Berry would still see the Great Work of transition to an Ecozoic Era[176] as possible I don't know, but his warning that opportunity for action is limited is one that is shared by many, as I've pointed out. The very definition of the emergency we're now in makes this warning more urgent than ever. There are scales of time and space that I'm convinced we simply need to learn how to see. Boiled down, we have on the one hand "geologic time" and on the other, a more recent, human-invented "industrial time." Wolfgang Sachs[177] wrote a decade ago about the collision of these timescales:

> [e]very year, the industrial system burns as much fossil fuel as the earth has stored up in a period of nearly a million years. Within a second, in terms of geological time, the planet's reserves are about to vanish in the fireworks of the industrial age. It is obvious that the rate of exploitation of non-renewable resources is infinitely faster than the processes of sedimentation and melting in the earth's crust. Industrial time is squarely at odds with geological time.[178]

Henry Giroux observes that even time itself has been privatized, with an ill effect on our vision and cultural resources to resist and create better worlds:

> Under neoliberalism, time presents itself as a form of tyranny, an unquestioned necessity, and in speeding up the flows of work, leisure, knowledge, and

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[175] Thomas Berry. The Great Work: Our Way Into The Future. 1999. p.201.
[176] Ibid. p.3. Thomas Berry envisioned the "Great Work" a "transition from a period of human devastation of the Earth to a period when humans would be present to the planet in a mutually beneficial manner
[177] Wolfgang Sachs. Speed Limits, in Planet Dialectics: explorations in environment & development. Zed Books. New York. 1999. p.187-196.
[178] Ibid. p.189. Also, John Byrne, Noah Toly and Young-Doo Wang. 2006. Introduction: Modern Energy and Modern Society. In *Transforming Power: Energy, Environment, and Society in Conflict*, edited by J. Byrne, N. Toly and L. Glover. New Brunswick, NJ: Transaction Publishers. p.viii. cite Dukes saying that "Modern societies have consumed 12 million years of decayed biomass in 300 years and now have no natural feasible replacement." J.S. Dukes. Burning Buried Sunshine: Human Consumption of Ancient Solar Energy. *Climatic Change* (61).31-44.

> everyday life it spawns a new kind of violence in which the flow of money replaces the flow of thoughtfulness, atomization replaces a notion of shared solidarity, spectacle undermines historical memory, privatization seeks to erase all notions of the public good, and preventable precarity replaces any sense of security and long-term planning.[179]

The underlying capitalist system which requires ever-expanding accumulation and consumption is the antithesis to the theme of time and limits. It's not specifically what I intended to think about when I began writing my thoughts down for this working paper. It just doesn't seem like the trajectory of capitalism is compatible with life and living worlds. To those for which that seems radical, and likely undiscussable, I ask where do we go at such a conjuncture? Simply imagining a better, more desired alternative is almost unimaginable, so I think one first step is to pay attention to those places where imagination exists or is more evolved.[180] Beyond that, we can at least work toward reigning in some of the excesses of capitalist energy system and create more just and democratic energy regimes. Holding "our" power company accountable for transparency and for delivering clean renewable energy is one tangible action. Beyond that, we can work for energy democracy in its various manifestations– socializing the national grid, or our more regional and local ones, including producers. We can experiment with projects that disempower incumbent utilities such as non-corporate microgrids and other local power production modes that are autonomous, democratically owned and governed.

Leaping from an understanding of time as a collision of timescale in this, this raises a question for those of us fully committed to working on energy transition as part of a broader social transition to just and sustainable worlds. How do we support such work financially, without being subverted or relegated more deeply into the insecure, precariat ourselves? What do funders think about this? What do donors, large and small think? Can foundation resources be redistributed so that there is a more diverse funding ecosystem rather than a large mono-crop of support going to a handful of "big greens"? Can organizations learn to share such resources and ideas rather than compete for them? The Worldwatch Institute's read on this in its State of the World 2014 edition was that the funding ecosystem was nowhere near diverse enough to in terms of strategy and structure. In other words, a few big foundations in concert, funded only a handful of elitist "big greens" working to pass federal cap and trade legislation and thus, reinforcing the capitalist, market-based, top-down legislation.[181] This leaves the grassroots, coalition alternatives significantly underfunded. If the aim is for distributed generation of renewable energy, isn't the culture one of diversification, and shouldn't it translate to funding as well?

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[179] Henry Giroux. America at War with Itself. Open Media Series|City Lights Books. 2017. p. 82-83.
[180] There are significant alternative imaginations of economics in scholarly and think/do organizations that are pushing those boundaries. I'll mention just a few here: J.K. Gibson-Graham. Post Capitalist Politics. University of Minnesota Press. 2006.; New Economics Foundation https://neweconomics.org/; New Economy Coalition https://neweconomy.net/. The Next System Project https://thenextsystem.org/.
[181] Petra Bartosiewicz and Marissa Miley. "The Too-Polite Revolution: Understanding the Failure to Pass U.S. Climate Legislation." Chapter 12. *State of the World 2014: Governing for Sustainability*. The Worldwatch Institute. Island Press. P.115- 128.

Funding is an area I suggest is relatively "undiscussable" among nonprofits and small enterprises working toward the goal of expanding renewables. The espoused ethic is one of cooperation while the actual behavior is often siloed, sometimes cut-throat competitive, a gaping dissonance disguised by its undiscussibility. Much more could be said about this. Although funding should drive good work; good work should also drive funding. Funders need to take risks since grassroots groups and the people behind them put themselves at risk in doing so.

There are other themes as well. Expanding the boundaries of what type of energy arrangement we want, critically examining and exposing the motives of incumbent utilities and the political ecology within which they operate is one such. Challenging their agency is vital. Better articulation, visioning and storytelling around the alternative worldviews, community and energy we want. Because we have been in defensive mode for so long, we are good at naming what we want to rid ourselves of, but not so good at describing what we actually want. In other words, what we want is not the same as the absence of a problem. We can rethink our relationship in terms of production and consumption of all material goods, since everything is energy.

In terms of solar and other renewables, we find plenty of evidence through our own work and through stories and networks, that people want it. Some even act on their values and desires to install solar, actually investing their own resources to do so. How can such efforts be woven more explicitly and purposefully into a transition quiltwork?

Another theme I've tried to develop is that change is an emergent project. In other words, using the ideas of design for social innovation, we may not initially formulate solutions, plans and answers to intractable problems and alternative visions. But we have an opportunity now; the emergency at least gives us that possibility.

Reflexively, for me and for AIRE as a practice, clear programmatic goals and the networked relations of design and creativity give us a vehicle. In light of the fact that developing single, one-off projects is so difficult right now, it seems clear that groups such as AIRE must add an element to its work, not double down solely as a project developer. That is, we need to become, in some fashion, "disclosers" as Escobar calls the role. We should expand our notion of what we do when we develop or consult on new solar projects. We should redefine that from an expertise of project development to a deep, organic praxis that involves helping groups develop projects but also helps make the larger, incumbent system more legible and less viable, while encouraging visions of a better system. Somewhere in the pages of this paper are the kernels of ideas that we could use if we could put them together as a cogent landscape.

Escobar gives me a place to mercifully pause, and to sum in a few words, what I've tried to detail in this paper:

> The propositions… have oscillated between a politics of the real and a politics of the possible… The politics of the real, as should be clear, redefines the politics of the possible, and vice versa...By adopting a perspective of radical relationality one not only multiplies the reals but *redraws the maps of what is possible*.[182] (emphasis added)

[182] Arturo Escobar, Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press. 2017. p.226.

Redraw the maps of what is possible. We can be working collectively in new and different ways to usher in a transformed energy and economic system. What's next, through a continuation of projects as experiments, is to develop a design lab space and coalition of some sort to help foster this transformation. More on this to follow.

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