Design Ecologies, Creative Labor and Hybrid Ecological Democracy
Re-enchanting humanity to prepare for the Just Transition beyond Trump *and* End Times Ecology

DRAFT, DRAFT, DRAFT, ROUGH, ROUGH, ROUGH Comments and critiques most welcome.

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Thinking the Just Transition beyond Trump and End Times Ecology
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It could be argued that the project of ecological democracy that emerged from green political theory has been essentially concerned with finding ways to democratically regulate environmental limits. Conversely, theorizations of ecological democracy emerging out of political ecology, critical geography and STS have been rather more interested in finding ways to democratize the making of our hybrid social-natures. Each tradition of ecodemocratic thinking shares a desire to push back against eco-authoritarian ecologies that once had wide purchase on certain survivalist and apocalyptic ecologies of times past. But each tradition has had different foci of concerns generating a certain degree of disengagement and detachment. We find ourselves now in a context where the climate crisis continues, authoritarian populists are on the march and the project of ecological democracy seems ever more distant. The need for a just transition beyond fossil fuels becomes urgent, however an ecology of panic and hopelessness increasingly seems to pervade all manner of environmental discourse. In this paper I want to explore the role that emerging work in critical design studies might offer, in conjunction with emerging currents of labor focused political ecologies, to recharge the project of ecological democracy thus moving us beyond both end times ecology and Trump-ism. Some of the more interesting currents of critical eco-design studies are attempting to restore a dynamic agent centered focus on creative remaking, redirective practice, and re-insitutionalization to environmental discourse and transition thinking. Much of this work has productive points of resonance with research in historical ecology and ecological anthropology which has sought to move environmental analysis beyond generic stories of humans as environmental degraders. It is also, I will suggest, work which compliments the return to labor in political ecology and the growing interest in foregrounding creative labor in political theory. The value of this work is that it potentially opens up the workplace and everyday life as key spaces for ecodemocratic transition. It also directly tries to address the crisis of political agency that has long bedeviled green political thought and increasingly looms in transition thinking. However, I will also argue that critical design studies and work in labor focused political ecology is marked by certain limitations with regard to how it connects the workplace and everyday life to struggle for transition occurring in formal political arenas. I will suggest critical design studies and labor focused political ecology may have something to earn from older literatures on ecological democracy emerging out of green political theory.

Ecological Democracy after the Trumpocalyse

Ecological democracy came to define much progressive thinking in green political thought in the 1990s and the 2000s. This project of course was not singular and stretched from the project of greening deliberative democracy and greening citizenship to the many local experiments with ecologically inspired forms of democratic experimentalism; from libertarian municipalism, to the parliament of things, and the diverse discussions of how to build a liberal democratic green state. Despite many significant differences, one can mark a common desire in most of these currents to push back against the range of illiberal traditions in ecologism - from the 1970s eco-authoritarians to the more technocratic end of ecomodernization - that all entertained, to varying degrees, post-democratic visions of a sustainable future. How might we judge the status of this project today?

Twenty years and more after many of the classics of eco-democratic thinking were written an (often technocratic) ecological modernism has set the backdrop horizon for much environmental policy making in Northern European countries and this has allowed for innovation across the fields of environmental policy making from which there is much to learn. But we also know that there is no environmental or green state in the OECD that does not function without significant amounts of environmental displacement and ecological uneven exchange (York, Rosa, and 2003; Jorgenson and Rice, 2005; Jorgenson 2006; Jorgenson and Clark 2009; Jorgenson and Kuykendall, 2008; Iddri & Piketty, 2015). Admirable and important experiments in deliberative and participatory democracy have taken place in all manner of sites: from traditions of participatory budgeting emerging out of Brazil to the Danish traditions of consensus conferences; from Occupy to Rojava. Growing evidence suggests that elite enthusiasm for "public consultation" and deliberative fora can stand alongside neo-liberal policy agendas that gut and filet the public sphere, public goods and public spaces (Baiocchi and Ganuza, 2016). Moreover, we have yet to see emerge from the multitude of democratic experiments a durable new eco-democratic institutional settlement that is able resist the on-going

centralization of wealth and power in the OECD (Piketty, 2014) or oligarchic capture of the liberal polity (Gilens and Page, 2014), let alone the waves of xenophobia, austerity, expulsions and anti-politics that now threaten to overwhelm liberal democracies everywhere (Swyngedouw, 2010; Sassen, 2014; Streeck, 2016). Democratic pressure from social movements has often played a decisive role in moderating the worst and nudging certain international agreements – particularly recent climate negotiations -towards better outcomes (Ciplet, Roberts, and Khan, 2015, Dryzek and Pickering, 2017), but these gains are fragile. And now we have the moment of Trump[1].

Evaluating the project of ecological democracy in the age of Trump and Brexit, Tayyip Erdogan's Turkey or Viktor Orban's Hungary gives much of the ecodemocratic literature a kind of Philip K. Dick sci-fi parallel universe quality. Far from finding ourselves in worlds slowly transitioning to a state of sustainability guided by reflexive environmental governance, democratic experimentalism and deliberative public reason or democratic agonism, the climate and biodiversity crisis have hit (another) critical tipping point (Jordan 2013; Anderson and Bows, 2014; Head, 2015): organized eco-skepticism from the US to Australia has arguably never been more powerful or emboldened. All manner of authoritarian populists, mafia dictatorships and even fascists swirl around faltering liberal democracies (Diamond, 2015; Streeck, 2014; 2016)[2]. The need for a just transition beyond fossil capitalism and market fundamentalism is more pressing than ever, however an ecology of panic and hopelessness would now seem to be pervading all manner of environmental discourse (see Hamilton, 2010).

But still, we must press on.

In this paper I will argue that despite all the forces ranged against this project, we must ratchet up the claim that an ecological democratic sensibility must guide the *just transition* (Swilling and Annecke 2012; Newell and Mulvaney 2013; Stevis & Felli 2015; Wilhite 2016). However, I will suggest, in order to have a hope of achieving this and moving beyond authoritarian populism, end times ecology and technocratic ecomodernism[3] will require a vision of transition that is rather more agent centered, friendly to attempts to re-conceptualize labor and nature in more hybrid terms (Wark, 2016; White, Rudy and Gareau, 2016; Moore, 2016; Battistoni, 2016) and more open to the fields of critical and social design studies than many classic currents of environmental thought have been.

There has long been a profound tension in late twentieth century green political theory between the desire on the one hand to announce that we face unprecedented planetary crisis and on the other hand, the tendency to spend a great deal of time and effort downgrading the possibility for creative and productive agencies that can transform our socio-ecological relations in more optimal ways[4]. The core intuition of this paper is that this tension between crisis and agency has become a major problem for encouraging the movement towards sane, sustainable futures. Rapid adaptation and rapid mitigation must occur on a radically warming and irreducibly hybrid world at a speed and scale that has no historical precedent. I will argue that in this context a just transition that aspires to build broad and thick coalitions for change by necessity is a politics that must acknowledge the central role that hybrid labor mixing with hybrid natures will play in *designing*, *making* and *co-creating* survivable futures. I will use the tensions and potentialities that are emerging in critical design studies as one important emerging site where some of these issues can be productively explored and worked through further. This is not because the emerging field of critical design offers straightforward solutions to our dilemmas. As we shall see, this is a field that comes with a very mixed bag of insights and problems. Critical design will not save us. Neither will a political ecology refocused around a hybrid vision of labor. However, I will argue that what might emerge from these moves is the space for a creative and reconstructive political ecology which could possibly provide a productive mediation point between state and civil society driven visions of transition. These discussions may allow us to build bridges back to green political theory and political ecology allowing us to think more effectively about the need for multiple levels of redirective practice for transition. Let us begin though by mapping the field of ecodemocratic discussions.

Political-Institutional, Epistemological and Ontological traditions of Ecodemocratic thinking

Speaking about a "project" of ecological democracy within the environmental social sciences is complicated because it becomes immediately clear that we can identify rather different visions and understandings of eco-democratic futures running between and across different disciplines and ideological fields. Moreover, these discussions of eco-democratic futures have often developed with modest degrees of engagement. One way of demarcating the range of discussions occurring around ecodemocracy over the last two decades and more is through recognizing that whilst all modes of ecodemocratic thinking are informed by ontological, epistemological and political-institutional commitments, different disciplines and modes of inquiry have tended to place greater emphasis on one field of inquiry over another as of particular importance.

It could be observed the project of ecological democracy emerging out of green political theory has tended to be explicitly focused on achieving concrete political-institutional reforms in the affluent liberal democracies that could open up ecodemocratic outcomes. This project has been heavily influenced by the understanding of limits, crisis, ecology and society-nature relations generated by foundational environmental literatures that informed the environmental movements of the US, the UK, Germany and Australia (see Dryzek, 1987; 1995; 1996; 2000; Dobson, 1990; Eckersley, 1992; 2004; Barry, 1999). The vision of ecological deliberative democracy focused on by some of most influential forms of this project has often advocated a talk-centric (Chambers, 2003; Dryzek, 2016) and listening-centric (Dobson, 2014) vision of ecological democracy. The conclusions of the settled knowledge of the environmental sciences, as well as the insights of environmental social movements which have often been presented in this literature as potential carriers of communicative rationality that can in some senses speak for nature (see Dryzek, 1995), has often been identified as providing a basis for thinking about how we move forward. Following this, the focus has been to consider democratic mechanisms, institutional forms, or modes of ethical and political practice that might enable actual existing liberal democracies in the West to constrain, contain and limit the encroachment of the social into the realm of the natural and/or embodying certain bottom line green ethical sensibilities into democratic institutions and decision making, modes of citizenship or constitutional arrangements.

In contrast, discussions of possible ecodemocratic futures emerging out of political ecology in anthropology, development studies and feminist/post-colonial studies have often started from the proposition that environmental knowledges generated by "Northern environmental social movements" are neither innocent nor best thought of as representative of communicative/ecological rationality (Agrawal, 2005; Blaikie and Brookfeld, 1987; Blaikie, 1994; Fairhead and Leach, 1996; 1998; Forsyth, 2003; Leach and Mearns, 1996; Goldman, 2005; Perreault, Bridge, and McCarthy, 2015). It has been further argued that the continued influence of technocratic, a-social and Malthusian currents in many manifestations of global environmental science similarly means that we have to acknowledge that these discourses offer particular ways of framing environmental problems which may not grasp all perspectives (Harvey, 1974; Silliman and King. 1999; Forsyth, 2003). Emerging out of the convergence of cultural ecology, political economy and empirical research around soil erosion, land management issues and disputes around resource extraction in the global South (Blaikie and Brookfeld, 1987; Blaikie, 1994), political ecology has plotted a rather different vision of democracy compared to the classic writings on democracy in green political theory. Much research has started from the observation that the homeostatic understandings of ecology, declenionist environmental histories, and ecoromantic visions of wilderness that have been foundational for much Northern environmental discourse are actually poorly grounded in the contemporary environmental sciences. Indeed, political ecologists have argued that "green" understandings of complex socio-ecological problems operating at many levels can go badly wrong if one does not attend to the dynamic and non-equilibrium nature of socio-ecological change (Zimmerer, 1994; Scoones, 1999), the expansive histories of anthropogenic land transformation mapped by contemporary historical ecology (Heckenberger and Neves, 1990; Denevan, 1992. Erikson, 2000; Engel-Di Mauro, 2014; Head, 2015), or the situated knowledge of diverse pastoral, rural, indigenous or other marginalized communities in the global South (Agrawal, 2005; Blaikie and Brookfeld, 1987; Blaikie, 1994; Fairhead and Leach, 1996; 1998; Silliman and King. 1999; Forsyth, 2003; Leach and Mearns, 1996; Goldman, 2005). Since political ecology as a field, compared to green political theory, has been particularly preoccupied with mapping the imposition of modes of green governmentality (Agrawal, 2005) on

indigenous, rural and pastoral people in the global South (often through various forms of coercive conservation projects, land removal, accumulation by dispossession, coercive family planning and the like), a much greater emphasis has been placed on the need for modes of environmental governance to explicitly be grounded in epistemological democracy. Political ecology has remained relatively agnostic though – compared to green political theory – with regard to the appropriate institutional forms that might bring this vision of democracy about.

Finally, it could be argued that if we shift our lens away from green political theory and political ecology traditions in development studies, we can see a rather different vision of ecological democracy emerge out of the writings of Bruno Latour, Donna Haraway, Isabelle Stenger (Haraway, 1991; 1997; 2008; Latour, 1993; 2004; Latour and Weibel, 2005; Stengers 2010; 2011; Morton, 2010) - positioned variously in STS, feminist science studies, continental philosophy and literary studies - as well as the writings of critical eco-Marxist geographers working out of the production of nature tradition: from Neil Smith to Jason Moore, Noel Castree to Erik Swyngedowu (Smith, 1998; Braun and Castree, 1998; Swyngedouw, 1996; 2010; White and Wilbert, 2009; Moore, 2015). Increasingly these literatures -whilst sometimes sharing the call for epistemological democracy - have often been more focused on ontological questions. The key first maneuver of all these currents have been to argue that environmental discourses premised on strong environment-society distinctions have become much less compelling as there has been a slow realization that we live in an irreducibly noisy, hybrid world stuffed full of lively cyborgs, hyper-objects, companion species, socio-technological and socio-ecological actor networks. Following this logic then it has been argued that a democratic politics for a hybrid political ecology must accent that we are irreducibly involved in the making, doing, production or co-creation of socio-natural and socio-technological worlds to come at a magnitude well beyond anything envisaged by the "limits imaginaries" of green political theory or the localist imaginaries of much southern political ecology. A "parliament of things" (Latour, 1993;2004), cosmopolitics (Stenger, 2010) or the democratic production of nature (Smith, 1998; Swyngedouw, 1996) is going to have to bring a much broader cast of actors, networks, processes and the like into democratic reflection than much classic green political thinking or even classic political ecology has anticipated.

It is of course easy to overdraw the distinctions between eco-democratic projects based on the static ideal-type scheme that I have proposed above. Understandings of the appropriate relations between lay and expert environmental science emerging out of political science literatures on green political theory and environmental governance has clearly been influenced and transformed over the last decade by engagements with civic environmentalism, citizens' science, popular epistemology, public ecology and the like (Bäckstrand, 2003; Christoff, 2016). The connections between green political theory and political ecology may still be generally thin but scholarship and activism in environmental/climate justice has played an important role in building bridges between the fields (Schlosberg, 2007; 2013). The continued power of industry-backed environmental misinformation campaigns and modes of contrarian denialism in the affluent world has somewhat moderated the skeptical critiques of "environmental orthodoxies" (Forsyth, 2003 cf. Lövbrand et al 2015) that were once central to southern political ecology. Exploding Anthropocene debates reaching across the natural and social sciences (Lövbrand et al 2015) as well as growing acknowledgement of the scale of anthropogenic transformations of pre-colonial landscapes and ecosystems (Heckenberger and Neves, 1990; Denevan, 1992. Erikson, 2000; Engel-Di Mauro, 2014; Head, 2015) have left Latour and Haraway's claims that we live in irreducible hybrid world much less controversial than they might have been seen a decade ago (White, Rudy and Gareau, 2016).

So, whilst the field of ecodemocracy is marked by sharp differences, these debates are fluid and clearly opportunities exist for more synthetic perspectives. The admirable attention to institutional dynamics, concrete discursive designs and desire for prefigurative scenarios for sustainable futures that defines green political theory, could potentially compliment the call for epistemological reflexivity in political ecology and the hybrid ontologies of Latour and Haraway, which often have much less concrete and defined understandings of ecodemocratic futures. Opportunities exist then for realignment and engagement. I want to

explore here some particular possibilities that may open up for grounding eco-democratic discourse through shifts occurring in the field of design and critical design studies.

Critical Design Studies, the dignity of creative labor and the Project of Ecological Democracy

Design and ecology have been intimately related in the environmental movement since the rise of the alternative technology movement in the 1970s, and the partial continuation and mainstreaming of this traditions through research programs in industrial ecology, renewable energy, the circular economy and discussions about product systems services and dematerialization that grew in many industrial, policy and research settings across the 1990s and beyond (White, Rudy and Gareau, 2016). As the fields of Eco-technology, eco-design and ecological urbanism have grown there has been a significant disarticulation between material making and forms of critical theoretical reflection. If the alternative technology movement in the late 1960s and early 1970s often drew from relatively sophisticated modes of socio-political analysis to inform its critical making (eg: Bookchin, 1971), the mainstreaming of environmental design and technology in the 1990s and beyond increasingly saw ecotech and green design turn to innovation theory, business theory and management studies to underpin their projects. The result was the emergence of projects like *Natural Capitalism* (Hawken, Lovins, and Lovins, 1999) and *Cradle to Cradle* (McDonough and Braungart, 2002). These books offer important "bright green" interventions in design to be sure and are full of important reconstructive proposals that will have to be part of any conceivable sustainable future. But they are also texts where the relationship between the environmental social sciences has almost entirely broken down. Rather they tend towards a synthesis of design proposals with a pallid post-political ecomodernism (see White, Rudy and Gareau, 2016).

However, over the last decade we have seen a number of important shifts in the field. Design has become increasingly less object centered as its remit has expanded to strategy, services, logistics, planning, community development, social innovation, prototyping and running democratic experiments. The field has become increasingly more interdisciplinary as designers have turn to anthropology, critical theory, organization theory, sociology, systems theory and ecology – amongst other fields for inspiration (Manzini, 2015; Ehn, Nilsson, and Topgaard. 2014). There has in turn been a growing acknowledgment by social theorists in the centrality of this more expanded sense of design to life in the Anthropocene (White, Rudy and Gareau, 2016). Bruno Latour possibly provides the clearest account yet of how a more socialized and politicized understanding of design might open up different visions of possible socio-ecological futures. He has argued that our socio-natural and socio-ecological worlds marked as they are by all manner of cyborg bodies, hybrid objects and socio-natural assemblages, reveal a new *ubiquity to design*. Design has grown in 'comprehension' and 'extension'" (Latour, 2008:2). What was once seen as an activity that involved a shallow concern with "relooking" and what we might think of as styling has radically "grown in comprehension – it has eaten up more and more elements of what a thing is". Indeed, Latour suggests "….design has been spreading continuously so that it increasingly matters to the very substance of production and life. What is more, design has been extended from the details of daily objects to cities, landscapes, nations, cultures, bodies, genes, and, as I will argue, to nature itself – which is in great need of being re-designed". Designing as Latour suggests making it hard to distinguish between "what has been designed from what has been planned, calculated, arrayed, arranged, packed, packaged, defined, projected, tinkered, written down in code, disposed of and so on".

Following these developments, there has been the rise of design theorists attempting to develop critical (eco)design studies as something more than a side bar of art history as well as rigorously intellectually inclined markers, with serious levels of competency in philosophy, critical theory *and* design which is slowly transforming the field. Critical design, speculative design, transition design, and a broader milieu of critical design studies have made some significant contributions to rethinking socio-ecological praxis in the age of the Anthropocene. Now a significant wave of this reemergence of speculative and critical design has positioned itself as producing modes of design-art installations or modes of critical futuring which act as either agit prop or almost blur the boundaries with critical art practice (see Dunne and Raby, 2013). Following much critical

art practice, the foci of this work are material-artistic-design interventions which pose critical questions to contemporary society about our possible futures, but much like Latour's work, are rather ambiguous about the possible solutions such interventions might imply. Here, I am rather more interested in modes of critical design studies that position themselves as redirective practice. Similarly, I am interested in transition design, emerging from the writings and practice of theorists like Tony Fry, Ezio Manzini, Cameron Tonkinwise, Gideon Kossoff and Terry Irvin more in the traditions of prefigurative politics that can be located in all manner of socialist and anarchist precursors – from Buber to Kropotkin (see Manzini, 2012; 2015; Tonkinwise, 2003, 2014, 2015; Fry, 2009; 2011; Kossoff, Tonkinwise and Irwin, 2015).

In *Design Futuring* (2009) and *Design as Politics* (2011)*,* Tony Fry makes a bold case that a re-conceptualized and expanded understanding of design as a socio-material, socio-ecological and socio-technical form of *redirective practice* needs to become a central driver for reconfiguring socio-environmental politics writ large. Much like Latour, it is acknowledged that our starting point for a new environmental politics that is centrally informed by design must embrace the fact that we live in a made world, indeed a designed world and that this is a world where "Nature alone cannot sustain us: we are too many, we have done too much ecological damage and we have become too dependent on the artificial worlds that we have designed, fabricated and occupied" (Fry, 2009:3). An ecopolitical imaginary then must render our designed world visible rather than retreat into the dualist worldview of romantic environmentalism. But in contrast to Latour's rather confused anthropomorphic view of agency, Fry centers the idea of design as the act of making and remaking. Design for Fry "….names our ability to prefigure what we create before the act of creation". This move allows Fry to think about design as naming a process of making and remaking from the intimate sphere, to gardening and agriculture, it can allow us to think about broader material interventions in terms of the conventional field of design to building and architecture, to planning. Indeed, design is presented across Fry's body of work as one of the fundamental characteristics that make us human' (Fry, 2009:2). It is nothing less than a 'world shaping force' (Fry, 2009:3). In a fashion not dissimilar to Marx, for Fry humans are a self-designing species, and that design has played a role for millennia in shaping our species' being.

Design then is central to the constitution of our species being but it is of course fundamentally *Janus faced*. In its dominant, commercial, capitalist configuration, design is suffused with instrumental rationality and has become central to the current de-futuring project (defuturing meaning the propagation of systems of production, consumption and lifestyles which, through their environmentally destructive forms, are literally stealing the future from the present). The professional field of design has largely failed to recognize this and failed to acknowledge its complicity in building and sustaining the hyper consumer economy. There has been a fundamental failure across the worlds of design to not only acknowledge how much it is implicated in defuturing but the extent to which design takes on a life of its own since "designed things go on designing (be they designed to do so or not)". This inability to think in structural terms has also generated a failure to see that unsustainability or defuturing is ontologically structured not simply into the political economies we have made but into the very designed 'habitus' we have come to occupy.

What is to be done then? Fry argues that design is also a social and cultural praxis that is enacted by many more people than professional designers acknowledge. It is a practice concerned with material things and it is absolutely critical to the resolution of socio-ecological questions. What is of central importance then is to (i) slow the rate of defuturing and (ii) redirect ourselves towards more sustainable modes of planetary inhabitance (Fry, 2009:6). We need to embrace and embark on nothing less than a systematic project of retrofitting and redirecting our personal *habitus,* our homes, our cities and our broader socio-ecological systems to reclaim the future – what Fry calls a politics of 're-directive practices'. This will need to move from considering the different ways in which we might live better and more sustainably through new modes of care of the self to new material interventions at much more comprehensive levels. We are talking about a politics that is concerned with the material, social, political and ecological assembling of our material culture.

In *Design Futurism* Fry starts to suggest a range of ways in which relationally interconnected modes of redirective practices could contribute to a serious shift to a futuring society. At a certain level, this requires

incorporating and updating some of the visions of a closed loop quality and new modes of product service design – themes that have long run through industrial ecology and product systems/services design literatures and practice reaching their popular apogee in *Natural Capitalism* (Hawken, Lovins and Lovins, 1999) and more recent discussions of the circular economy. But Fry's vision is more interesting and more encompassing than the green managerialism of Hawken, Lovins and Lovins. Design needs to involve not just making but *unmaking*. We will need to practice eliminative design. There are vast amounts of goods, products, services that will have to be rendered sustainable but many more that will have to be literally designed out of existence. In the light of climate change and the likelihood that vast numbers of people will be unsettled and on the move, we need dynamic, adaptive and pro-active modes of design. So, for example, we need to think about how we might have to "metrofit" cities, possibly abandon urban forms or rebuild them elsewhere. More generally, there is much more attention given to refuturing as a hegemonic intellectual project: designers need to be made aware '…all that design brings into being remains in process' (Fry, 2009:30) and that we need more generally to realize amongst publics a new design intelligence,' a mode of literacy acquired by every educated person' that would 'deliver the means to make crucial judgments about actions that would increase or decrease future potential'.

The work of Ezio Manzini (2012; 2015) dovetails closely with Fry's vision of redirective practice if slightly less apocalyptic in form. In *Design Where Everybody Designs* (2015) the argument made is that design as a generalizable human attribute will be central to building survivable futures. But once again like Fry, Manzini is interested in design beyond object centered design. Specifically, he demonstrates how we might draw on past traditions of participatory design to bring publics directly into the process of co-creating and redesign systems, services and new institutions and building forms of social and ecological innovation that meet diverse human needs in more sustainable ways. Manzini's writings are marked by a sense that existing modes of capitalism and liberal democracy are moving us towards a profound social and ecological crisis. From healthcare to eldercare, food cultivation and provisioning to social solidarity all current institutional forms are under profound stress and will have to change rapidly. Yet, he also argues, that social life is continually throwing up potential prefigurative socio-institutional forms: from the neighborhood restaurant to the tool library, the elder people's home that offers free accommodation to students for services, to the explosion of various forms of service design that could open up post materialist possibilities. The explosion of digital devices and digital networks indeed has greatly expanded the possibilities for building peer-to peer networks and peer to peer commons in a fashion that was simply not possible in the 1960s. Manzini maintain this may allow us to reopen discussion of post capitalist possibilities. Manzini acknowledges that none of the schemes he proposes are without problems and complexities but they provide glimpses of ways in which we might start to re-institutionalize ourselves and rebuild a kind of collective fabric in the light of environmental change.

Manzini argues that even beyond our climate, environmental and social crises, broader forces such as de-traditionalization and individualization, demographic shifts towards an older population and a fragmenting welfare settlement are all forcing conditions where "…everybody constantly has to design and redesign their existence, whether they wish to or not" (Manzini, 2015: 1). This will require then forms of active institution and culture building, the building of new services and facilities which are co-created, agile and adaptive to new contexts. Professional designers can play a critically important role here then – not as master builders – but acting as conduits through which design tools can facilitate contexts that can unleash the context of citizen designers. Games, community mapping, prompts, video sketches, citizen storytelling, solution cards, scenario building and even prototyping can all be used to discover untapped community resources, build on existing community resources, develop collaborative communities and open up citizen based visions of possible futures. The broader aim of design for social innovation is experimental in its orientation with the aim of allowing multiple modes of social innovation projects from local fabrication labs to slow food projects, car-pool systems to neighborhood tool libraries and community mapping exercises etc.) to aggregate up, to create a new commons or infrastructures for "sustaining multiple connected initiatives". One needs to move from one-off events to sustained and cumulative forms of social innovation.

The kinds of socio-ecological imaginaries that are advocated by Fry and Manzini have been rendered more programmatic, systematic and political still in the emerging fields of transition design. Drawing inspiration from social design currents as well as systems theory and critical theory, transition design argues that more attention needs to be given to ways in which design can think in more inter-linked ways and how public and community orientated design at scale might be possible. Forms of critical ecological urbanism are attempting to continue this discussion by thinking about ways in which design and urban planning might contribute to the construction of green urbanscapes and modes of multi-functioning ecological infrastructure and popular planning which is attentive to problems of urban inequality and green gentrification. Attempts to develop democratic experiments in landscape ecology, urban conservation, and agro-ecology which often use design methodologies to draw the knowledge of participants into a material political engagement can all be seen as attempts to expand this rapidly evolving field.

Critical ecological design and its limits.

Why should green political theorists take critical design thinking seriously? At least four issues surface from a potential engagement. (i) At a very elementary level, we might observe that critical design theory - with one foot in critical theory and one foot in conceptualizing, making, iterating, prototyping, building and strategic planning serves as a reminder that a sustainable society of the future is not simply one that will be brought into being only by constructing democratic institutions where we are involved in talking, listening and deliberating about environmental limits. The field draws our attention to the observation that the just transition towards a sustainable, post carbon, regenerative equitable and more democratic society is, in part, going to involve an historically unprecedented project of socio-technical making, remaking and co-creating of our socio-ecological relations. Bringing critical design studies into engagement with talk of "discursive designs" (Dryzek, 1990) potentially broadens the range of democratic modes of making and institutionalizing that need to be part of a sustainable future.

(ii) Secondly, and relatedly, critical design studies pose some interesting challenges to the way in which green political theory and ecodemocratic thinking has traditionally conceived the end state of a sustainable future. Green political theory, in particular here, has often derived its vision of the good eco-democratic society from the homeostatic and equilibrium visions of a world in balance (that were themselves often drawn from the reading of the lessons to be learned from scientific ecology emerging out of the counter-culture ecologies of the 1960s and 1970s). The limits-orientated injunction that often followed from this vision suggested we must do less and be less, live lightly on the land and dramatically shrink our footprint in all ways. But critical design suggests that a very different vision is now needed for a world that is going to warm by two degrees and perhaps three or more regardless of what we do. Notably, building survivable futures on a restless warming planet, are, as Fry and Tonkinwise observes, going to inevitably entail that we constantly and persistently iteratively make, remake and make the socio-ecological worlds we find ourselves occupying - again and again and again. The sustainable future and the sustainable transition is going to be *ongoing* and *iterative*. We are not going to settle into a comfortable sustainable society where we live within limits and in balance. We are going to be thrown into a restless, turbulent and warming world where we will have to constantly make use of strategies of iteration, experimentation, prototyping, failing and then starting again - or we will not survive (Fry, 2009; Tonkinwise, 2014).

(iii). Third, if design has learned anything from the failure of high modernism, it is that successful projects for socio-material remaking must carefully attend to the habits and social practices of "users." Manzini's proposals (Manzini, 2015) for modes of social and community design that folds users into its remit as competent citizen designers has much to recommend itself here. Additionally, critical design, more broadly, can provide important resources for pushing back against all manner of technocratic, ecomodernist ideas that are now circulating in elite circles (see . There are good reasons to believe that if we commit to such technocratic ecomodernist proposals (ie that we move as swiftly as possible to post-carbon energy sources, food systems, urban forms, modes of production, consumption and disposal etc.) *without* engaging with

publics in all their complexity and diversity, those proposals are very likely to produce all manner of rebound effects, pathologies, suboptimal outcomes and white elephant projects.

(iv) Finally, it could be said that in negotiating many of these tensions and issues, critical design could become a productive partner for eco-democratic theorizing for thinking about the critical question of how lay and expert knowledges can be brought together to collectively envisage, build and maintain the just transition. The debate has ranged in urban design circles for many years now as to how we can reconcile the tension between Jane Jacob's vision of a bottom up driven vision of an urban future and the vision of the master builder offered by Robert Moses. This debate seems to be gravitating towards the recognition that we need both – both top down and bottom up. Ecological projects to build new urban forms can learn from this - experts in city making need to be brought together with experts in city living (urban citizens) to build sustainable urban forms of the future. Democratic planning for transition will require similar elaborate new forms of discursive designs to help us here. Interesting potential exists for a convergence of more nuanced lay-expert relations in critical design studies with some of the proposals for layers of functional representation to have a role in sustainable future polities that have emerged out of green political theory.

What, though, are the limits of critical eco-design theory? Let me now draw out three issues here where green political theory, debates about ecological democracy and the green state and political theory and sociology could perhaps usefully inform this field.

First, it could be observed that a great deal of critical design recognizes the need for multi-level redirective practices, it is the level of everyday life and the local which are foregrounded as spaces for intervention. In part, this is a product of the fact that these spaces often provide the initial sites where much design is able to make an intervention. Of course there is some variation here between industrial design, service design, landscape design and urban/regional planning with the scales of engagement progressively changing. But the commitment of transition design to "cosmopolitican localism" (Kossoff, Tonkinwise and Irwin, 2015; Manzini, 2015) is also produced by ongoing ideological commitments on behalf of many critical design theorists to the critique of gigantism and the preference for decentralized and distributed socio-ecological design solutions advocated by figures like Schumacher, Bookchin, Leopold Kohr et al. The result of these kind of commitments is that the role that local, regional and federal/national/post-national state structures might play for facilitating the just transition is undertheorized.

Second, the overwhelming focus in design studies on civil society as the space of innovation has ensured that most currents of critical design have, to date, paid relatively modest attention to the political sociology of transition. In particular, the potential that might exist for the transition state and bureaucracy to act as potential partners for transition currents in civil society is undeveloped. The state has a very lose presence in Manzini's vision of a co-created commons. It has even less presence in Tony Fry's vision of redirective practice which increasingly argues, in an apocalyptic vein, that existing state forms are unlikely to survive in a radically warmed future, marked by social and ecological breakdown and mass people movement. A rather different and more compelling view here has been expressed by Lawrence Delina (2016) and Christian Parenti (2012) who have both argued in different contexts the democratic state – despite its many failings is likely to play a critical role in transition (c.f. Eckersley, 2004; Barry and Eckersley, 2005; Meadowcroft, 2005). It is the state that is the only institution large enough and powerful enough which has the power to: (a) face down the fossil fuel industry; (b) redirect trillions of dollars of finance and investment that will be required to fund climate mitigation and adaptation (c) enact continental scales of energy, green industrial and green infrastructure retrofitting; (d)redirect national research and development priorities towards ecological innovation; (e) embark on long range national democratic planning to facilitate optimal strategies for climate adaptation and resilience.

A reasonable response to calls for a robust transition state could make the observation that the conventional administrative state with its instrumental-analytic epistemology comes with limits and problems (Dryzek, 1987, 2005). As such, without a fully mobilized transition orientated civil society engaged in redirective

practice the transition state may well repeat the problems of the conventional state in being "all thumbs and no fingers" (Lindblom cited in Dryzek, 2005). But these are potentially reciprocal relations. It seems evident that successful transitions are unlikely without reworked relations between a democratic transition state and democratic transition currents in civil society.

Finally, a rather uncritical focus on the radical potential for redirective practice in civil society and everyday life in radical design thinking can ensure that power relations exercised within the sphere of everyday life, the corrosive impacts that free markets can have on social solidarity or the role that exclusions based on gender, class, race sexuality or general status competition plays in grassroots modes of social and ecological innovation are rarely explored in any depth. Notably, this means that critical design literatures rarely investigate the ways in which neo-liberal market forms can happily, co-op or co-exist with all manner of bottom up social design experiments and co-created institutions. We have already seen in the UK that conservative projects like David Cameron's Big Society can easily co-opt all manner of mutualist and bottom up enterprises and use them as arguments for unraveling the welfare state and state provision. What is generally missing in critical design discourse is serious thought about the ways in which smart policy making and revised bureaucratic institutions might be able to protect and augment the voices of civil society and its design experiments from below[5]. Co-creation of alternative institutions forms has many possibilities but without macro policy and institutional support for such policies (in the form of universal basic income schemes, maximum and minimum wages, guaranteed paid time off and provision of childcare and eldercare services), diverse modes of eco-design lead social innovation can merely end up giving voice and agency to the time rich and commitment light.

Creative Labor, Redirective Practice and Green Public Goods –
Building Multilevel Strategies and Imaginaries for the Just Transition

Over the last three decades, ecological crisis has generated a range of reflections on the deficits of Western political theory, with the observation commonly made that *the voices* of women, colonized, indigenous, and rural people, as well as *the presence* of diverse natures, ecologies, non-humans, companion species, and lively objects and technologies which continually intrude on political space more recently, technologies and objects have not been fully brought into view. Both Richard Sennett (2008) and the design historian John Heskett (2000) have observed that there are many currents in Western democratic thinking that have attempted to discuss participatory democracy whilst subordinating makers, crafters and laborers to secondary status. It is the citizen who has the freedom to discuss matters in the affairs of the day in the polis and it is women, craftsman, makers who service the needs of such citizens, who make the beds, builds the polis, constructs the city forms and maintains and cultivates the material culture and surrounding socio-ecological relations. Sennett has observed that Arendt's whole political ontology is premised on the need to separate craft, work and labor from the act of politics. It is human being as homo faber that is a figure of suspicion. Arendt essentially maintains that the mind engages when labor is done and makers cannot be the master of their own home, politics has to provide the guidance. Yet in *The Craftsman* Sennett argues, in compelling fashion, that this worldview, massively delimits our understanding of a possible politics of world making. In contrast he seeks to open up a different possibility, notably that "thinking and feeling are contained within the process of making" (Sennett, 2008: 7) and that there may well be modes of making, laboring and designing that contribute to, sustain and augment democratic cultures. Sennett, intimates in *The Craftsman* that his argument might have wider purchase for rethinking a political of ecology but the book never gets there. The project of ecodemocracy, though, can learn from Sennett.

Consider for example the ways in which much late twentieth century green political theory has been marked by a rather similar discomfort with labor, making, crafting and designing to the reactions Sennett describes in *The Craftsman*. For example, the backdrop historical narratives that have sustained much late twentieth century environmental discourse has often associated the exercise of human agency with environmental degradation. Such political theories then have often narrated this tale through the declenionist environmental histories of

the 1970s whilst avoiding the weight of research in historical ecology and related fields that suggest the history of anthropogenic transformation of ecologies and landscapes is much more extensive and rather more complicated in its socio-ecological outcomes and consequences than is often acknowledged. Similar bias can be found in the spaces and sites that are valued in the ecodemocracy project. It is the citizen's assembly and the consensus conference that are sites of interest for ecodemocratic transformation. The factory, the field and the farm, the call center and the office, the sweatshop are rarely, if ever, viewed as potential sites for ecodemocratic activism and transformation.

There are, however, good reasons to believe that these attitudes to creative labor, making and design have become enormously problematic for moving the ecodemocratic project forward in the age of the Anthropocene. Let us consider the task ahead of us. Today we must cut greenhouse emissions by up to 90 percent in thirty years while ensuring that upwards of nine billion people have access to respectable livelihoods. The task is gargantuan. It is a project of remaking and redesigning the world writ large without historical precedent. We will have to build new, continental-scale, post-carbon energy infrastructures and address energy poverty. But we must also develop new modes of resource extraction and recovery, transportation systems, processing techniques, consumer goods generation, and so on that are sustainable and just. Coastal areas, river valleys and the human settlements in proximity will have to be made more resilient and robust, repositioned, perhaps moved or abandoned. New climate resilience and multipurpose infrastructures will have to be built and/or retrofitted such that they are flexible and adaptable to changing weather patterns and social needs. Patterns of consumption premised on a cradle to grave model will have to be transcended by just and sustainable industrial ecologies that take us from more to better, from ownership to access, from built-in obsolescence to high-quality long-life cycle goods that can be easily disassembled, reused, and biodegraded. Strategies to build an equitable and participatory urbanism will have to provide desirable and sustainable public housing; exquisite public parks and gardens; new modes of sustainable mobility; sustainable food production and high quality shared green public goods and spaces that move us beyond the logic of the market and high-quality long-life cycle goods that can be easily disassembled, reused, and biodegraded (see White, 2016, White Rudy and Gareau, 2016).

A vision of the just transition in this context is unthinkable without reclaiming the potential creativity of labor and the democratic possibilities of a new vision of eco-design to move the transition state and transition modes of civil society forward here. Such a vision of labor, of course, cannot be understood in the traditional singular and masculine fashion that would take us back behind the gains and insights of feminist, queer, post-colonial political economy or political ecology. Our labor is always hybrid and queer in being simultaneously classed, gendered, racialized, bound up in the dichotomies of first/third world, able/disabled and other modes of social domination (Moore, 2015; Battistoni, 2016). A coherent accounting of labor in worlds torn between industrial and post industrial economies must acknowledge how it is material and immaterial, direct and affective, physical, cognitive and emotional. This hybrid labor moreover is always enmeshed with a hybrid nature. Our socio-natural reality is a product of constant hybrid organism-environment-interactions where all organisms, including humans are in a process of actively making their worlds (Harvey, 1996; Wark, 2016; White, Rudy and Gareau, 2016). Hybrid labor is constantly working through the web of life, to use Jason Moore's useful terms (2015). Humans fashion their worlds through design, work and labor but we must acknowledge that we design, all other kinds go on designing around us, augmenting and problematizing the best laid plans. Hybrid nature, in addition, provides all manner of "unpaid work" for labor (Moore, 2015; Battistoni, 2016) But nevertheless, design, labor, work and ultimately power must be foregrounded in thinking about the just transition.

Contemporary discussions of the sustainable transition have fail thus far though to develop a complex politics of labor that could provide the basis for building broader audiences and alliances. Not only is the suffering and exploitation of the laboring subject within existing unsustainable systems of extraction, production and disposal largely missing from a great deal of technocratic and managerial transition discussions but the potential creative role that the laboring subject might bring to bear on facilitating multiple modes of redirective practices, new institutional forms, new lay-expert modes of engagement that could allow us to

build entirely new design ecologies and green public goods is undeveloped. The proposition that industrial ecologies could be improved if the knowledge of working people contributed to the construction of closed loop systems of production, consumption and waste disposal is rarely entertained. There are reasons to believe that it is these gaps in the eco-political imaginary that have created all manner of opportunities for contrarians, eco-skeptics and authoritarian populists to construct political frames that seek to speak to "the forgotten men and women." Of course, neoliberal and corporate anti-environmental forces will ultimately do nothing for the disposed and the marginalized. However, if a vision of the sustainable transition is not developed that acknowledges the dignity of labor, the potential design energies of working people to reorganize their lives in more sustainable and fecund ways, and that offers ways in which we might democratize not simply the state but sustainable sites of green production and consumption, then perhaps the end times ecologists are right. All will be will be lost.

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[1]That ecodemocracy should encounter difficulties will be of no surprise to ecodemocratic theorists. Dryzek's *Rational Ecology* (1987:16-20) was one of the first texts to explicitly address the problem of environmental displacement. *Democracy in Capitalist Times* (1996) alongside Eckersley's *The Green State* (2005) and Barry's *Rethinking Green Political Theory* (1999) all explicitly foregrounded the problems posed to the ecodemocratic project by the veto power of capital and the growth imperative. Nevertheless, there was a widely shared view that despite such enormous challenges incremental progress was possible and was occurring.

[2] It is worth noting that many of the key ecodemocratic texts were written at a moment where formal liberal democracy were expanding everywhere. This process has clearly abated now. Diamond, for example, has argued that since 2006 we find ourselves in a context of democratic recession. From a rather different ideological vantage point, Wolfgang Stretch has argued of late that there is now not only overwhelming evidence of democratic recession but overwhelming evidence emerging that capitalism is finally overwhelming the democratic project.

[3] For extended elaborations and critiques of the fields of end times ecology and technocratic ecomodernism see White, Rudy and Gareau, 2015.

[4] This observation of a profound tension in all manner of modes of environmental thought between the declaration of "crisis" followed by the inability to ground a coherent vision of "agency" is an argument that has been made time and again by many different thinkers on Left and Right, pro-enviromental and contrarian over the last 40 years. It was central to Bookchin's critique of anti-humanist ecologies see (Bookchin, 1995); Frances Moore Lappe's seminal critiques of scarcity ecology and the general feminist political ecology critique of Malthusian environmentalism but it also emerges as a core plank of Julian Simon's The Ultimate Resource 1981. It is an observation that is expressly articulated as debates around the green state (Barry and Eckersley, 2005) resurfaces in Shellenberger and Nordhaus (2008) technocratic ecomodernist critique of US environmentalism. The concern lingers thereafter in the writings of Latour (2008) and Beck (2010) and then reaches into French critical theory via Zizek and Badiou (see Swyngedouw, 2010). Most recently, it is an observation that lingers in all manner of cosmopolitical writings but struggles to find any real resolution (see Whatmore, 2002; Head 2015). Wark's robust attempt in *Molecular Red* (2015) to recover a more positive vision of reconstructive agency through hybrid labor provides a refreshingly robust attempt to rethink the terms of the debate.

[5] For a rare reflection on the relationship between design and policy making see Junginger 2014.