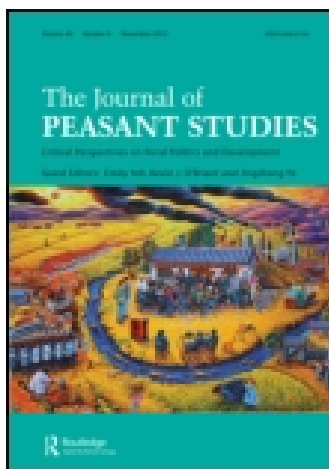


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Cause and response: vulnerability and climate in the Anthropocene

Jesse Ribot

Causal analysis of vulnerability aims to identify root causes of crises so that transformative solutions might be found. Yet root-cause analysis is absent from most climate response assessments. Framings for climate-change risk analysis often locate causality in hazards while attributing some causal weight to proximate social variables such as poverty or lack of capacity. They rarely ask why capacity is lacking, assets are inadequate or social protections are absent or fail. This contribution frames vulnerability and security as matters of access to assets and social protections. Assets and social protections each have their own context-contingent causal chains. A key recursive element in those causal chains is the ability – means and powers – of vulnerable people to influence the political economy that shapes their assets and social protections. Vulnerability is, as Sen rightly observed, linked to the lack of freedom – the freedom to influence the political economy that shapes these entitlements. In the Anthropocene, human causes of climate hazard must also now be accounted for in etiologies of disaster. However, attention to anthropogenic climate change should not occlude social causes of (and responsibility for) vulnerability – vulnerability is still produced in and by society.

Keywords: access; adaptation; Anthropocene; climate change; emancipation; representation; risk; vulnerability

Introduction

Efforts to reduce suffering have habitually focused on control and repair of individual bodies. The social origins of suffering and distress, including poverty and discrimination, even if fleetingly recognized, are set aside. (Margaret Lock, 'Displacing suffering', in Fassin 2012, 21)

In the Anthropocene, climate events and associated suffering can no longer be cast as acts of God or nature. They are now at least partly linked to human agency and responsibility. Of course, causes of climate-related disaster have always been social. Vulnerability is, by definition, the social precarity found on the ground when hazards arrive. It does not fall from the sky. While there is no disaster without hazard, without vulnerability, hazard is nil (Blaikie *et al.* 1994). The conditions of precarity have first to be in place. Vulnerability analysis identifies the causes of this precarity.

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As we enter the Anthropocene, climate disasters are being attributed to anthropogenic climate change (Hayes 2009, IPCC 2013, Myers and Kulish 2013, 1, 10). Yet to what degree is this attribution appropriate or complete? What generates the pre-existing vulnerabilities? Ironically, while some responsibility for stressors may now travel through the sky, the renewed focus on climate hazard is clouding attention to the grounded social causes of precarity that expose and sensitize people to hazard. Both vulnerability and at least part of climate are now anthropogenic. A bifurcated analysis of social cause is needed that keeps underlying generative structures of vulnerability in frame.

Peasant studies has a long history of explaining the marginality and flexibility, vulnerability and security of peasant households through their embeddedness, as an economy within an economy, in layered social and political-economic relations (e.g. Shanin 1971, Scott 1976, Wolf 1981, Watts 1983a, Deere and deJanvry 1984, Blaikie 1985, Bernstein 1996). Understanding rural vulnerability – including food insecurity – requires and has used the same kind of multi-scale analytics (O’Keefe *et al.* 1976, Wisner 1976, Chambers 1989, Swift 1989, Agarwal 1993, Watts and Bohle 1993, Blaikie *et al.* 1994). Such analyses explain why peasants have limited assets and inadequate protections, as well as what enables them to cope with stress under conditions of exploitation, subordination to landlords, dependencies, skewed market access and policies ranging from conscription and *corvée* to taxation, unequal exchange or skewed access to social services.

Grounded social-science research does not explain the precarity of the peasant household or its security and ability to withdraw into subsistence as a mere proximate relation between a household and the environment or hazard. Precarity and security are explained by locating the individual in the household, community, polity, market, nation and a differentiated global political economy. They are explained by people’s political leverage to shape these contexts. This applies to any social analysis of precarity – of the peasant, the young, the old, the disenfranchised – including climate-related vulnerability analysis (Sen 1981, Drèze and Sen 1989, Watts and Bohle 1993, Blaikie *et al.* 1994).

In the Anthropocene, some causal analysis must trace stressors to greenhouse gas effluents, explaining how these effluents are enabled and how their regulation and mitigation are products of a complex social and political-economic history. These are the causes of stressors in the sky. They are distinct from underlying vulnerability. This contribution focuses on the vulnerability line of the now bifurcated analysis of social cause. The paper links vulnerability analysis with the burgeoning adaptation and resilience approaches to climate response through ‘capacity’ by including causal explanation of capacity, ability and capability. As Downing and Patwardhan (2005), Cardona *et al.* (2012) and Manyena (2006) suggest, vulnerability analysis is a necessary complement to adaptation planning. Capacity and its causes are part of a complete evaluation of vulnerability.

The framing in this contribution starts with entitlements theory (Sen 1981, Drèze and Sen 1989), places it in a broader political economy and empowerment approach (Watts 1983a, Watts and Bohle 1993) and links it to more recent capacities and capabilities thinking (Sen 1984, 1999, Bebbington 1999, Yohe and Tol 2002). Bringing together various readings of causality, the framing also outlines recursive¹ elements of vulnerability analysis by exploring ways in which those at risk shape the political economy that shapes their precarity and security (Watts 1991). Emancipatory recursive elements, which are most in need of development, include representation (Sen 1981, 1999, Watts and Bohle 1993, Appadurai 1984, Lappé 2013), structural relations (Polanyi 2001 [1944], Scott 1976, Swift 1989,

¹By ‘recursive’ I mean looping back, iterative or producing feedback.

Watts 1991, Moore 1997, Pelling 2003) and discursive effects (à la Beck 1992, Rose 1996, Butler, 1997, 2009, Fraser 2000, Luhmann 2002, Agrawal 2005, Wolford 2007, Wilkinson 2010, Connolly 2013). Causal chains (Blaikie 1985) and access theory (Ribot and Peluso 2003) frame the empirical starting point for explaining assets, social protections and relations of emancipation.

The ability of vulnerable people to shape the political economy that shapes their securities and vulnerabilities – that is, emancipation – remains under-researched. In calls for a recursive relation in causal structures of vulnerability, Appadurai (1984) brought ‘enfranchisement’ into famine studies, Drèze and Sen (1989) evoked the role of a free media in supporting food entitlements (the food people could obtain), and Watts (1991) brought in empowerment, where empowerment is the ability to influence the political economy that shapes those entitlements. Lappé (2013) sees populist democracy as the path to security. These are calls for democracy – public means to discipline government to respond to demands (à la Manin *et al.* 1999). Democracy must be integrated into any full analysis of causality. Indeed, to equip public debate and demands to undertake ‘transformative solutions’, democracy must be informed by analyses of cause – that reveal underlying ‘generative frameworks’ (Fraser 2008, 28). An informed polity brings government back in, letting God and natural hazards take a rest.

The next section of the paper, ‘Hazards of occlusion’, explores the links between cause, responsibility and the visibility of vulnerability as a social-historical product. ‘Climate and society’ outlines tensions between hazards analysis and socially rooted analysis within human-climate theory while exploring capacity as a point of integration. ‘Vulnerability analysis’ sketches the causal theories of climate-related vulnerability in two parts – foundational framings of causality, and recursive elements of representation, structure and discourse. Before concluding, the last section outlines an agenda for ‘Causal research’. The review and framing are neither attempting to be complete nor theoretically consistent. The objective is to evoke a range of models to start building a repertoire of potential causal relations that any researcher should be consciously attempting to identify and test.

Hazards of occlusion: cause and blame in the Anthropocene

... no one person suffers a lack of shelter without a social failure to organize shelter in such a way that it is accessible to each and every person. And no one person suffers unemployment without a system or a political economy that fails to safeguard against that possibility. (Judith Butler, ‘For and against precarity’ 2011)

Blaming nature can, of course, be very consoling and comforting. It can be of great use especially to those in positions of power and responsibility. Comfortable inaction is, however, typically purchased at a very heavy price – a price that is paid by others, often with their lives. (Drèze and Sen, *Hunger and public action* 1989, 47)

The vast majority of policy-oriented and scholarly publications on climate-related vulnerability and adaptation attend to response rather than causality (Bassett and Fogelman 2013, 47). They seek to identify *who* is vulnerable rather than *why*, indicators rather than explanation, fixes rather than causes – as if cause were not part of redressing vulnerability and its production. Some occlude causes of vulnerability and crisis behind hazards, nature or God – as acts that need no further explanation.² Many stop with convenient proximate explanations

²On roles of God, including distraction, see Schipper 2010.

such as assets or poverty – without asking how these are produced. Others, from adaptation and resilience schools, cordon off causality in capacities – like adaptive capacity or the capacity to bounce back (Manyena 2006). These approaches focus attention on ‘innate’ characteristics of the individual, household or group – the unit at risk (Gaillard 2010, 220).³ Capacity is now a common explanatory factor in most risk and vulnerability frameworks (Yohe and Tol 2002, Manyena 2006, Folke *et al.* 2010, Cardona *et al.* 2012, 72).⁴ But capacity as cause is not enough – it begs us to ask what shapes capacity.⁵ So, even while these analyses point inward, it is still hard to escape that causality ultimately points outward to a broader set of social, political-economic and structural variables. Indeed, all that enables or disables people’s abilities to maintain their security is part of vulnerability’s causal structure.

Occlusion of cause is no surprise. Causality is theoretically, ethically and politically contentious – as are the transformative solutions to which causal analysis may point (Pelling 2011, O’Brien 2012, 670–1). We must take a structured look back to evaluate how and why societies place and leave certain categories of people at risk (e.g. O’Keefe *et al.* 1976, Wisner 1976, Watts 1983a, Swift 1989, Watts and Bohle 1993, Blaikie *et al.* 1994, Wisner *et al.* 2004, Somers 2008). Yet, while such understanding of causality is a necessary element of response (see Somers 2008, Miller *et al.* 2010), explanation quickly generates conflict – of theory, method, interpretation, but also, and more fundamentally, over implication and interest. Causality is a contentious category of mind. Cause indicates blame, responsibility and liability, linking damages to social organization and human agency. Causal analyses and the transformations they imply present deep challenges to the status quo (also see O’Brien 2012, 668). The tracing of causality from any instance of crisis is a threat to those who might have played a role – of ignorance, negligence, intent, hubris or greed – in the production of pain. It is a threat to those who benefit, passively or actively, from unacceptable but everyday relations of production, exchange and consumption. It is no surprise indeed that analyses of climate focus on *who* is vulnerable rather than *why*. *Why* is socially and politically contentious. Yet contention should not stop us. It should be fodder for public debate – enabling democratic process around risk and response.

Thirty years ago, Appadurai (1984, 491) divided explanations of famine into ‘... evolutionary approaches which stress adaptation and function, and historical approaches, which stress causality and contingencies’. Similar divisions persist in climate risk studies (Adger 2006, Fussler and Klein 2006, 305). Yet these views are not so separable. As Somers (2008, 10) observes in her analysis of post-Katrina New Orleans, ‘we cannot look forward until we look

³This is akin to Rose’s (1996) point that states produce risk subjects pointing cause inward toward the individual and group so as to make them responsible for their own sins – blaming the victim and asking the victim to blame her or himself. While there are such ‘internal’ characteristics (à la Chambers 1989), they still must be understood in the broader political economy that produces them.

⁴Folke (2006, 253) takes the social into account in his model of interplay as including ‘social processes like, social learning and social memory, mental models and knowledge-system integration, visioning and scenario building, leadership, agents and actor groups, social networks, institutional and organizational inertia and change, adaptive capacity, transformability and systems of adaptive governance’. These processes are all proximate (except the ill-defined ‘governance’).

⁵For Cardona *et al.* (2012, 76), ‘Drivers of capacity include: an integrated economy; urbanization; information technology; attention to human rights; agricultural capacity; strong international institutions; access to insurance; class structure; life expectancy, health, and well-being; degree of urbanization; access to public health facilities; community organizations; existing planning regulations at national and local levels; institutional and decisionmaking frameworks; existing warning and protection from natural hazards; and good governance’. Through these variables capacity can be understood as an outcome of social stratification in a broader political economy.

back to learn how we came to be who we are and until we know what we have lost, or gained'. Social-historical vulnerability analysis is a necessary complement of adaptation planning (Downing and Patwardhan 2005). Rather than looking back in time, however, most practitioners of adaptation, resilience and disaster relief still start by attributing climate-related disasters to acts of nature, or, in the Anthropocene, to anthropogenic climate change (see Gaillard 2010, Bassett and Fogelman 2013). In so doing, rather than seeking causality in social history, they continue to locate risk within the hazard to which people adjust, implicitly attributing pain and suffering to droughts, floods, and storms (Gaillard 2010, 223 – who observes this hazards frame 'regaining ground'). Rather than explaining vulnerability, they continue to frame disaster as a direct impact of climatic events. Nevertheless, many climate-risk theorists and analysts bring social causality into integrated models, locating it in the 'capacity' to adjust, withstand or re-establish. But such snapshot proximate analyses tell only part of the story.

Climate disasters, by definition, occur at the intersection of hazard and vulnerability. Without climate hazards there is no risk of climate disaster, and there are no disasters without vulnerability (Blaikie *et al.* 1994, 49). Blaikie *et al.* (1994), working on disasters before and since climate change, placed analyses of causality and of options for redress entirely on the vulnerability side of the risk equation. For them, the hazard side of the problem is to model and predict probability – to produce imaginary risk futures (à la Beck 1992). Hazards are probabilistic events that, while expected, are not subject to local manipulation. Hence, Blaikie *et al.*'s analysis of causality and disaster prevention focuses on vulnerability assessment and reduction while taking hazard to be a condition outside of the equation of redress. In this frame, the hazard cannot be removed but the vulnerability can be reduced. Today, while mitigation could change climate hazards, it is still true that climate is beyond local manipulation. Against this backdrop of external hazard, Wisner (1976), O'Keefe *et al.* (1976), Chambers (1989), Swift (1989), Watts and Bohle (1993), and Blaikie *et al.* (1994 reprinted in Wisner *et al.* 2004) brought social causal analysis of vulnerability to the center of the social study of disaster risk reduction.

While triggered by climate stress, it is well documented that crises are historical, social and political-economic products. The 1943 West Bengal famine was caused by well-functioning markets, not drought or absolute shortage (Sen 1981). The 1959–1960 famine in China was produced by administration, not drought (Jisheng 2012). The 2011 Somali famine was produced by 'interplay of livelihoods, clan and politics', not drought (Majid and McDowell 2012, 37). The 1300 fatalities in New Orleans in 2005 resulted from government negligence, not hurricane Katrina (White House 2006, Hayes 2009, also see Somers 2008). Conversely, the 150-fold reduction in fatalities in Bangladesh (from over 500,000 to 3406 deaths) between the comparable cyclones Bohla and Sidr was due to planning reforms (Bern *et al.* 1993, CEDMHA 2007, Batha 2008, Government of Bangladesh 2008, Ministry of Food and Disaster Management of Bangladesh 2008). The inability to sustain stresses is produced by on-the-ground processes of social differentiation, unequal access to resources, poverty, poor infrastructure, lack of representation and inadequate systems of social security, early warning and planning (Ribot 1995, 2010). These factors translate climate vagaries into suffering and loss.

Today, in the Anthropocene, we face a new dilemma in explaining causes of climate-related disaster. Nature has become more-recognizably cultured. Some part of climate is anthropogenic. The hazards themselves, climate events, are no longer natural and blameless.⁶ It seems 'natural' that cause and blame be turned back toward the hazard, that

⁶Cardona *et al.* (2012, 69) call these 'socio-natural hazards'.

disasters be attributed to climate change – and traced to the perpetrators driving SUVs in New Jersey. Such blame and responsibility has long been debated in climate negotiations.⁷ More and more global institutions, through agreements with the United Nations Framework Convention on Climate Change (UNFCCC), are, at least implicitly, taking responsibility for climate change by aiming adaptation funds to support people to avoid the ‘additional’ stress that climate change is projected to produce. Developing countries are also calling for redress, as occurred after super-cyclone Haiyan in the Philippines (Khan and Roberts 2013, Myers and Kulish 2013, 1, 10).

Yet, under UNFCCC, adaptation funds are earmarked to redress only the damages of the *additional stress* that climate change might cause. Article 4.4 ‘refers to assistance to be given by developed country Parties in meeting the costs of adaptation that arises from climate change impacts’ (Khan and Roberts 2013, 182). This additionality stance, along with calls for ‘polluter-pays’ positions and the UNFCCC ‘agenda of loss and damage’, implicitly acknowledges that climate change is anthropogenic and that the responsible parties should fund adaptation (Khan and Roberts 2013).⁸ But additionality also implies non-responsibility for the preexisting precarity of those at risk – most of whom were vulnerable in the face of climate stress well before climate change was on the horizon (Khan and Roberts 2013, 182). The **additional** stance is laying down a cut-off for vulnerability additionality redress. It only acknowledges the increment of suffering associated with added stress – despite that suffering is still attributable to the underlying conditions that turn *any* climate stress, anthropogenic or not, into crisis.⁹

The targeting of adaptation funds toward the anthropogenic increment of climate change accepts that nature has been cultured, but, paradoxically, requires that the pre-existing misery of precarity be naturalized – as a background condition. Disaster management schools share this tendency to aim to return disaster-stricken groups to ‘normal’, naturalizing their pre-disaster state (Manyena 2006, 438). The populations most affected or made worse off by climate change, however, are already the most vulnerable in the face of ordinary climate extremes (Drèze and Sen 1989, 60, Ribot *et al.* 1996, Cannon *et al.* 2004, 5, Anderson *et al.* 2010, Heltberg *et al.* 2010, Figueiredo and Perkins 2012, 192, IPCC 2012, 76, European Commission 2013, 5). Pre-existing poverty remains the most salient of the conditions that shape climate-related vulnerability (Sen 1999, 171–2, Yohe and Tol 2002, 29, Prowse 2003, 3, Pelling 2003, 52, Cannon *et al.* 2004, 5, Anderson *et al.* 2010, Heltberg *et al.* 2010, Cardona *et al.* 2012, 67). The poor, least able to buffer themselves against and rebound from stress, live in a state of precarity. But their pre-existing precarity in the additionality frame is the ‘normal’ condition – no longer framed as

⁷The Alliance of Small Island States, China and the Group of 77 pointed to liability and compensation for climate change as early as the 1990s (Khan and Roberts 2013, 175).

⁸Framing of adaptation as restitution was supported by the G77 but rejected by the Annex I countries, but then, later, the inclusion of an ‘agenda of loss and damage’ in COP (Conference of the Parties) 16 in 2010 and in Doha at COP18 in 2012 seems to show some acceptance by the developed nations (Khan and Roberts 2013, 184).

⁹Khan and Roberts (2013, 182) make the point that ‘this global premise of adaptation as an additional burden for development in the particularly vulnerable countries presents “risks” from climate change due to a biophysical change in the atmosphere, rather than factors that make people vulnerable to these changes’. They connect these factors to ‘existing development needs and contexts’, continuing, ‘on the basis of this consideration, developed countries argue that their responsibility in supporting adaptation should be limited to the problem itself, i.e., adaptation action in addition to the baseline, that the developing countries would undertake in absence of climate change; so the responsibility part for the wealthy nations relates only to damages attributable to human-caused climate change’.

anthropogenic. Paradoxically, then, in its welcomed emphasis on human agency, response to anthropogenic climate change has the effect of naturalizing and thus obscuring pre-existing anthropogenic vulnerability.

This pre-existing precarity that climate change finds in place is produced within the same global political economy that enables climate change – Rodney (1973), Wallerstein (1974) and many others have long since established these global connections. In the face of the anthropogenic increment, the international community appears to be mobilizing anew to take responsibility – yet they are simultaneously transmuting pre-existing vulnerability to natural – blaming no one. Such aid requires a natural baseline beyond which the producers of climate change are no longer responsible. It cordons off liability. Together, additionality and proximate adaptation analyses occlude social cause, erase history and extractive relations, masking the structural violence that created the poor's systemic climate- and non-climate-related vulnerabilities, across multiple axes, geographies and histories.¹⁰

While naturalizing misery, the logic of additionality also turns attention back to hazards. Social grounded causality is doubly obscured, framing hazards as culpable and existing precarity as natural. How do we square cultured nature with un-natural socially generated vulnerability? Now that nature is cultured, we can indeed trace the social causes of stress through climate change. Yet despite that hazards are now socially produced, an anthropogenic climate does not mean that the cause of vulnerability shifts to the hazard. Because the biophysical events are partly anthropogenic, the causal explanation of the hazard must, of course, now account for human will, intentionality, negligence and interest, and, of course, people, courts and governments are appropriately blaming society for climate events (Hayes 2009 on Katrina, Myers and Kulish 2013, 1, 10 on Haiyan). Social attribution becomes even more acute with the advent of intentional monkeying with climate through geo-engineering (Klein 2012). Even if disasters were never acts of God or nature (O'Keefe *et al.* 1976, Drèze and Sen 1989, 46, Smith 2006), climate events, which were viewed as external to the social world, are now traceable to social systems and agents (Arthur 2002, Jones and Edwards 2009). These new liabilities still, however, reside in society, not in the sky. They don't add to or erase the causes of vulnerability. Rather, they add to the hazardscape, which, when combined with vulnerability, is responsible for disaster. Causal chains behind hazard and vulnerability remain distinct – while also overlapping and interacting (Leichenko and O'Brien 2008),¹¹ and perhaps sharing root causes.

Responsibility in the Anthropocene is now bifurcated. Hazards and vulnerabilities have social cause. God and nature can no longer absolve us. Of course, it is not as if society could ever – with or without anthropogenic climate change, with or without God – have washed its hands of the production of vulnerability. Vulnerability on the ground is (and always has been) as much a product of far-away social forces as are the changes we now see in the skies. Stress articulates through climate events due to protected actions of real people in real places who, without direct liability through the rules, structures and subjectivities of

¹⁰I owe Erin Collins for this insight and wording.

¹¹O'Brien and Leichenko (2003) and Leichenko and O'Brien (2008) speak of 'double exposure' – to climate and globalization. This split is not analogous. They look at both as parallel and interacting stresses to which people are exposed. In a climate-vulnerability analysis, climate is the stress people are exposed to. Vulnerability remains in society, and globalization is, of course, a part of its the causal structure, explaining why people are exposed. Also see Shackelton and Shackelton (2012) for a model that places social factors as parallel to climate stressors, casting the vulnerable populations as 'exposed' to these multiple stressors – among which climate is one.

differentiation, shape patterns of inclusion and exclusion that externalize the cost of their desires and their profit on others far away. The structure of vulnerability remains social. The differentiated causes of vulnerability in a given place must still be traced from that place through the social relations of production, exchange, domination, subordination, governance and subjectivity. They still have to be analyzed and understood starting from the instance of crisis in a real place and real time. While acknowledged anthropogenic climate change provides a new pathway for attributing social causality, and therefore responsibility and blame – as well as claims for redress and compensation (Jones and Edwards 2009, Hyvarinen 2012) – vulnerability remains a social condition of the exposed.

Being anthropogenic profoundly changes the meaning of climate events. Humans are now demonstrably (to non-deniers) responsible – not only for the vulnerability on the ground, but also for the stressors that arc across the sky. Indeed, anthropogenesis adds a new dimension to a global connectivity that has long been apparent to historians and to social and political-economic theorists (e.g. Wallerstein 1974, Wolf 1981). Social causes of place-based vulnerability *and* of stressors in the sky – the two chains of cause and blame – are interlinked. Unequal access to the opportunities that produce climate-changing greenhouse gasses is partly responsible for the poverty and marginality that places some people in secure standing and others at risk. Those who can consume well beyond subsistence are less vulnerable than those who cannot (see Sen 1981, Watts 1983b, Agarwal and Narain 1991). Unfettered access to resources and goods – protected through a differentiated global political economy with rules and social relations that protect some actors and subordinate others – enables the excess consumption that is changing the climate and increasing the stresses on those at risk. The social stratifications that create unequal patterns of vulnerability on the ground simultaneously contribute to stress articulated through a changing climate system. This is one direction human-environment integrated modeling needs to go – away from the myopically direct human-nature interface where people meet the elements.

The remainder of this contribution explores elements of a grounded causal analysis of vulnerability and insecurity – so that anthropogenic climate change cannot be added to the repertoire of obfuscations already occluding the multi-scale causes and responsibilities for climate disasters. While causal analysis may now be bifurcated, the analysis in this essay is not. The paper does not examine causal structures of anthropogenic climate change. These are already partly covered, in a most-proximate causal sense, as functions of effluents (see IPCC 2013 for a proximate technical analysis). Of course, a full generative social and political-economic analysis of those effluents and attribution of responsibility is needed (à la Agarwal and Narain 1991, Sachs 2008). A multi-scale, multi-stranded causal analysis of specific vulnerabilities can point to the multiple social scales at which solutions may reside. Responses must then be forged in the crucible of politics.

Climate and society: theories of vulnerability

... To call the frame into question is to show that the frame never quite contained the scene it was meant to limn, that something was already outside, which made the very sense of the inside possible, recognizable. (Judith Butler, *Frames of war* 2009, 9)

Vulnerability is driven by inadvertent or deliberate human action that reinforces self-interest and the distribution of power in addition to interacting with physical and ecological systems. (Adger 2006, 270)

Vulnerability analysis is often polarized into what are called risk-hazard and social constructivist frameworks (Füssel and Klein 2006, 305, also see Adger 2006, O'Brien *et al.* 2007, 76, Cardona *et al.* 2012, 70).¹² Risk-hazard is characterized as the *positivist* (or *realist*) school while the entitlements and livelihoods approaches are lumped together as *constructivist*. This 'social constructivist' label is a misnomer as neither entitlements nor livelihoods approaches are founded on constructivist tenets.¹³

For the positivists, 'risk ... is a tangible by-product of actually occurring natural and social processes. It can be mapped and measured by knowledgeable experts, and within limits, controlled' (Jasanoff 1999, 137). 'In social constructivist views, risks do not directly reflect natural reality but are refracted in every society through lenses shaped by history, politics and culture' (Jasanoff 1999, 139). The climate-vulnerability literature falsely contrasts the positivism or 'realism' of the natural sciences to the social constructivism of the social sciences. Moreover, many social scientists focused on climate seem to have accepted these misleading categories (e.g. Ribot 1995, Adger 2006, Fussel and Klein 2006, O'Brien *et al.* 2007, 76).

It should be evident to any social scientists, however, that both the risk-hazards and the entitlements and livelihoods approaches can be positivist (à la Jasanoff 1999). Both kinds of analysis can also be subject to, or can incorporate, a social constructivist view. If one distinguishes between a constructivist *ontology*, referring to the nature of things, and a constructivist *methodology*, a way of understanding situated knowledge, constructivism need not suggest that the conditions and causes of vulnerability are not 'real' (Leach 2008, 7). Such a methodology would respect the phenomenology of vulnerability – understanding its material and affective effects. Further, it is perfectly positivist to assert that the socially constructed meanings that emerge from differently positioned actors shape causality (see Rebotier 2012). In short, we need to discard this false dichotomy, which serves only to discredit social-science analyses by contrasting them with the 'real'.¹⁴ Forsyth's (2001) critical realist view, for example, accomplishes this goal by acknowledging the possibility of using constructivist approaches to produce better and more broadly relevant science (also see Beck 2007, 89 on 'reflexive realism').

There still remain two distinct primary schools of thought concerning climate's relation to risk. The ostensibly 'natural-science' risk-hazards model tends to evaluate the multiple outcomes (or 'impacts') of a single climate event (see Figure 1), while the entitlements

¹²Prowse and Scott (2008) label these behaviorist and structuralist approaches. Miller *et al.* (2010) places resilience into the 'systems' (meaning systems theory) camp and puts vulnerability with adaptation into an 'actors' category. They seem to have no place for 'structure'.

¹³Cardona *et al.* (2012) use the term differently, simply referring to the idea that vulnerability is a social 'product', hence it is 'constructed' in the sense of manufactured or produced. But this is not the social science use of the term 'constructed' (see Douglas and Wildavsky 1982).

¹⁴There is no positivist reasoning that would prevent analysis of interpretation and positionality as being part of the analytics of causality – since difference and struggles over meaning and interpretation are part and parcel of causality. In addition, discourse is no less 'real' than a tree or a storm system. The causes of decisions that shape security and damage are the results of discursive battles for domination, for authority, for decision-making power and ultimately for policy and practice. Positionality shapes people's behavior and is therefore part of the material political-economic structure of causality. These are not trivial observations of categorization. The very placing of the social-science analyses into 'social constructivist' and non-'realist' categories is a means of delegitimizing these perspectives as if social, discursive, constructivist factors are not part of the 'real' causal structure of vulnerability. Indeed, they are essential to it. Of course, any 'realist' who does not understand that interpretation is multi-faceted and meaning is attributed misses the point that these observations do not deny the materiality of their 'science'.

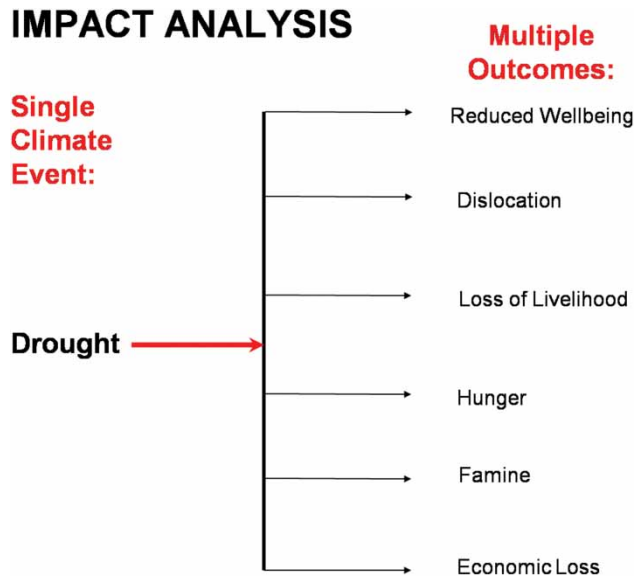


Figure 1. Impact analysis.

and livelihoods approaches characterize the multiple causes of single outcomes (Figure 2) (Ribot 1995, Adger 2006). Both approaches, of course, could be conducted using positivist, constructivist or, more powerfully, combined analytics. A key difference between them is that the risk-hazards approach traces a linear causal relation back to the environmental hazard itself while the entitlements and livelihoods approaches tend to trace cause to multiple social and political-economic factors. The entitlements-livelihoods approach locates

VULNERABILITY ANALYSIS

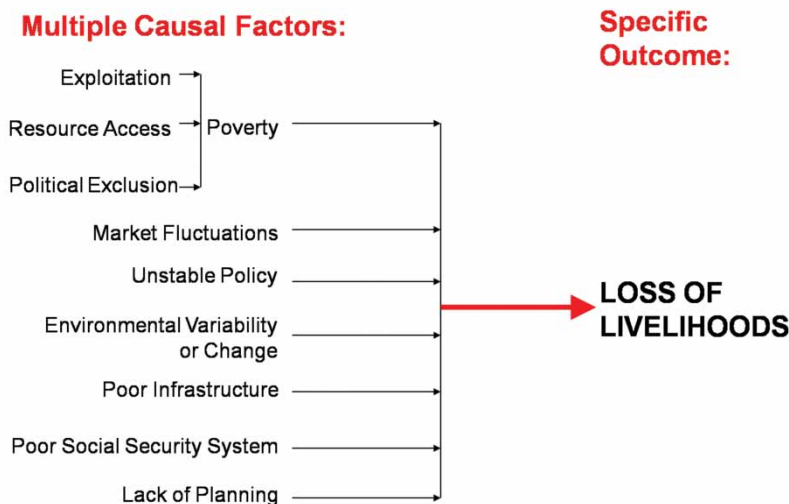


Figure 2. Vulnerability analysis.

causality in society and hence tends to see natural phenomena as playing a role but not as having ‘caused’ the risk or damage in the face of an event.¹⁵

The risk-hazard approach, which defines vulnerability as a ‘dose-response relation between an exogenous hazard to a system and its adverse effects’ (Füssel and Klein 2006, 305; also see Bassett and Fogelman 2013), is concerned with predicting the ‘impact’ of a given climate event or stress, and estimating the increment of damage caused by an intensification from ‘normal’ climatic conditions to the conditions expected under climate-change scenarios.¹⁶ This approach, which views people as vulnerable to *hazards*, locates risk in the hazard itself and, as scholars have argued, inadequately incorporates the social dimensions of risk (Watts and Bohle 1993, Ribot 1995, Adger 2006, 270, also see Cannon 2000). This approach also enables the ‘additionality’ views common in climate policy circles, which are based on the imaginary (or ‘constructed’) notion that the effects of climate change are separable from underlying social conditions.

By contrast, the entitlements and livelihoods schools are concerned with the chains of events that lead to vulnerability. They consider people to be vulnerable to *undesirable outcomes* such as the loss of a valued asset. They are also concerned with the likely aftermath of a climate event or trend. While these approaches view the risk of disaster and suffering as social, they view climate itself as an external phenomenon. Externalizing hazards places the burden of explanation – for vulnerability and ensuing disaster – within the social system. Adger (2006, 270) has described this school as depicting ‘vulnerability as lack of entitlements’ or a lack of sufficient means to protect or sustain oneself in the face of climate events, where risk is shaped by society’s provision of food, productive assets and social protection arrangements. While some scholars have suggested that entitlements and livelihoods approaches ignore biophysical factors, as Blaikie and others argue, this school of thought does explicitly link vulnerability to biophysical hazards by acknowledging that hazards change the resources available to a household and can thereby intensify vulnerability (Blaikie 1985, 110, cf. Blaikie *et al.* 1994, 21–2, Shackelton and Shackelton 2012, 275). This is a simple but strong analytical relation between biophysical events and social vulnerability. This framing still attends to the question of why that household is so close to the thresholds of risk, the condition that renders a resource change so critical.

Integrative frameworks link the two views. They tend to be risk-hazard-based with borrowings from entitlements and livelihoods models. The social-biophysical integration remains uncomfortable and runs into boundary problems. Integrative frameworks view vulnerability as depending on both biophysical and human factors. Many characterize vulnerability as having ‘an external dimension, which is represented ... by the “exposure” of a system to climate variations, as well as an internal dimension, which comprises its “sensitivity” and its “adaptive capacity” to these stressors’ (Füssel and Klein 2006, 306; see

¹⁵By locating environment, including climate, within a social framework, the environment may appear to become marginalized – set as one among many factors affecting and affected by production, reproduction and development (also see Brooks 2003, 8). This seems to be one more reason for resistance to vulnerability analyses from the climate science side. But this does not diminish the importance of environmental variability and change. Indeed, it strengthens environmental arguments by making it clear *how* important – in degree and manner – the quality of and access to natural resources or natural insults are to social wellbeing. Of course, it also points us to the least costly ways to reduce the problem we are ultimately trying to solve – damage.

¹⁶O’Brien *et al.* (2007, 75–6) label the entitlement-livelihoods perspective as ‘starting-point’ and risk-hazards as ‘end-point’ vulnerabilities: the prior starting with the threatened attribute of value and the latter starting at the end point of the analysis, with the hazard itself. I find this language confusing.

Chambers 1989, 1). These notions of external and internal, however, are entirely contingent on how one draws the boundaries of the system under analysis. Linked approaches also draw on resilience theories (Gunderson and Holling 2002). These all tend to integrate the social into systems theory approaches in ways that do not account for social theory of political or economic change and history. Resilience and systems theories are still struggling to integrate social theory and to expand their boundary conditions (Brooks 2003, Manyena 2006, Duit *et al.* 2010, Miller *et al.* 2010, Beymer-Farris and Bassett 2012). To date most (save Beymer-Farris and Bassett 2012) come across as hopped-up hazards models – with extra social bells and whistles.

The analytic approach outlined in this contribution builds on Blaikie 1985 and Watts and Bohle 1993 (cf. Turner *et al.* 2003a, 2003b, 8074–5) to get around these boundary problems.¹⁷ These authors have adopted a socially-rooted entitlements-livelihoods approach that empirically traces the causes of vulnerability from specific instances of crisis – explaining why a given individual, household, group, nation or region was at risk of a particular set of damages (see Figure 2). By tracing causality out from each affected unit, their model views the entire system as a whole. It accounts for all factors – biophysical and social – that lead to crisis of the unit of concern (Kasperson *et al.* 2005, 159–61).¹⁸ It allows for multi-scale, multi-factor analyses of vulnerability. It traces causal chains outward toward whatever factors – material, social, political, discursive – are found to shape vulnerability. Where climate is part of that constellation, say as a trigger of crisis, it emerges as being significant – a significance that still requires social explanation of vulnerability. This sociological and political-economic ‘progressive contextualization’ (coined by Vayda 1983, who applied it in an a-theoretical manner) or the political ecology framing (Watts and Bohle 1993, Ribot 1995) or new ‘network political-ecology’ approach to vulnerability analysis (Birkenholtz 2011) focuses attention on the full array of causes, thus enabling the analyst to identify the multiple causes of undesirable outcomes.¹⁹

Two other schools are commonly summoned to assess climate-society relations. The climate ‘adaptation’ and ‘resilience’ literatures are primarily concerned with vulnerability reduction – engineering and managing of change. They often proceed, however, without applying a broad vulnerability analytic to understand root causes of risk. They often take

¹⁷Blaikie *et al.*’s (1994) ‘pressure-release model’ also adopts this causal-chains approach. They view at-risk people as being pressed between hazard and vulnerability, with vulnerability as the locus of cause and therefore treatment – pressure is relived by reducing vulnerability (updated in Wisner *et al.* 2004). A similar approach, differentiated by the new language of ‘network political ecology’, is described by Birkenholtz (2011, 10), who explains: ‘For network political ecology, this means a focus on both vertical (hierarchical) and horizontal (non-hierarchical) connectivity in places experiencing a common effect of climate change, understood through their connections to other processes’. In practice, this ‘network’ approach, despite the appearance of a new Latourian approach, works much like the methods other theorists have been using for decades.

¹⁸This unbounded view does not collapse the categories of ‘internal’ and ‘external’ vulnerability often used in the literature (see Chambers 1989, Brooks 2003, Fussler 2007, 158). Rather, it leads us to acknowledge the hazard as a stress or trigger of events, which are still explained as outcomes of the social (or internal) aspects of the system. We can see the roles hazards play, but those roles remain socially shaped (as does the very term ‘hazard’ which is meaningless without vulnerability).

¹⁹Birkenholtz (2011) uses language of ‘effect of climate change’. This looks like a kind of slippage into hazards language. It may also be a result of his use of Latour – whose flat ontology makes objects into actors (with troubling anti-humanist implications). The flat-ontology approach contrasts with the one used in this contribution. However, Birkenholtz’s article, despite Latour, retains the focus on the social and uses ‘effect’ to indicate that climate produces action and re-action recursively – both of which are within society. The action then remains with humans, so Latour can be dumped.

a hazards approach while parking vulnerability in the term ‘capacity’ – resulting in anodyne prescriptions for ‘capacity building’.²⁰ Nevertheless, this term ‘capacity’ – the capacity to adapt, resist or rebound – provides an opening for causal analysis.²¹ Some approaches, such as ‘adaptive capacity’ as framed by Yohe and Tol (2002), provide a partial converse of vulnerability (Brooks 2003, Ribot 2011).²² The question of what causes vulnerability is partly answered by asking why a given individual or household does not have adaptive, resistive or rebounding capacities. The causes of this lack are among the causes of vulnerability. A thorough analysis of capacity, however, would require a causal-chain, progressive-contextualization analysis of causes of capacity – rather than just viewing capacity as explanation. This analysis of causes of capacity would then also have to be complemented by an analysis of the social and political-economic context of such variables as social protections, which may fall outside of the definition of capacities. Social protections can form a tradeoff with capacities if, for example, security is framed as capacities (abilities, capabilities) of individuals and groups plus the social security arrangements that can complement and supplement individual and group resources.

Capacity, then, still needs to be placed in the broader structural political economy that stratifies society, enabling some while disabling others, providing for some while excluding others. As will be developed later, capacity analysis would also need to be completed by the recursive relations made up of the very capacity, or ability, to influence the governing political system – shaping both the basis of capacity, e.g. endowments and assets, as well as social protections (this link is made by Sen 1984, 1999, Bebbington 1999, Prowse and Scott 2008).²³ Here, vulnerability analysis, which has interrogated and theorized micro-macro relations of differentiation and access to resources and power, can inform adaptation and resilience studies to steer their analyses toward generative structures, preventing them from remaining internally oriented, proximate, ahistorical or atheoretical. Tracing out the chains that cause and disable capacity is then one productive entry point into a fuller analysis of vulnerability – and a necessary foundation for any adaptation or resilience program.

²⁰Dill (2013, 13–5) argues that capacity is often a dead-end explanation of development failures – pointing toward analytics that deal with the institutional and cultural arenas, while pointing out that these explanations often fail to have historical depth. The same is true when applied to climate adaptation and resilience. Ribot (2004) also makes the point that lack of ‘capacity’ is often evoked as an excuse not to empower people, despite that they would gain capacity were they empowered to act (a kind of ‘catch 22’). Without capacity they cannot be entrusted with power. Without power they cannot gain capacity.

²¹Resilience schools focus on capacity to resist or bounce back (Manyena 2006, Gaillard 2010, or Beymer-Farris *et al.* 2012 who add differentiated valuation and access to resilience models).

²²Yohe and Tol (2002, 27–8) frame capacity as having causes that are location-specific and path-dependent, with micro and macro determinants. They then trace causality to (1) availability of technology plus (2) a set of factors, including resources, institutions, human capital, risk-spreading processes, information management and ‘attributing signals of change to their source’. Their model can capture some causality of the ‘capacity’ to adjust, but it still fails to explain the factors or ‘determinants’ they identify. It does not provide a root-causal analytic. They look at variables that correlate with disaster without explaining causal pathways or genesis. Their approach does not provide a map for generative solutions; rather, it indicates technical fixes and obstacles to their feasibility and implementation – a universal problem in this literature. In a more sophisticated approach, capacities (akin to abilities and capabilities) include the ability to influence politics.

²³Prowse and Scott (2008, 43) lump tangible and intangible ‘capitals’ into assets – physical and financial as well as human and social capitals. They attribute the ability to influence those who govern to only the intangible social capital. They bring in politics, but only as a product of social capita.

Causal analyses of vulnerability, including the entitlement and livelihoods approaches, are often classified as social constructivist, too complex or not relevant, and ignored by most climate-society modelers (Wisner *et al.* 2004, 61). These modelers continue to take the hazards stance while including the ‘social factors’ only as they interact directly with the landscape and hazard. The hazards stance, even where ‘social factors’ are included, continuously bends causality back to the interface between people and nature. But a truly integrated social model asks what caused people to be exposed to and damaged from the presence of hazard. In essence, a truly integrated analysis asks what made the hazard a hazard versus a mere event. The ability to transform hazards into events or events into hazards is social – without vulnerability there is no hazard (just as there is no disaster). For policy this is critical since it turns attention to the agencies (in all senses) and social configurations that generate crisis. Vulnerability analysis has to work hard to pull attention from the hazard back onto society. In the Anthropocene, this includes the physical production of events – the agency behind effluents and their effects on nature – as well as the social production of vulnerability that turns those events into hazard. Both need progressively contextualized explanation.

This section sketched some of the main models that relate climate events to the loss of valued attributes. The section highlights models that explain the root causes of loss – with an eye to stemming the production of risk and developing protections. A critical realist framing of vulnerability can build on positivist models, recognizing that science itself is socially constructed, while also acknowledging that framing and discourse shape action and have material consequence. We need to understand causes that can also lead to redress – by identifying causes that can be changed as well as the responsible structures and institutions. These causes, in a complete analysis, can be material, discursive and recursive. The next section expands an unbounded framing for vulnerability analysis. It is followed by a section outlining some of the recursive relations that shape the ability of people to shape the political economy that shapes wellbeing. These are relations of emancipation.

Vulnerability analysis – an unbounded access framing

No one would say that a lack of money in the world is the reason there are poor people; yet, many blithely suggest that a lack of food is the reason a billion go hungry. (Lappé 2013, 227)

Climate, ‘over-population’ and war, while potentially significant as proximate or trigger factors, have been substantially discredited as primary factors. (Watts 1991, 15)

The challenge today is to integrate agency and structure in examinations of the production of vulnerability, in specific places, whilst also acknowledging the importance of physical systems in generating hazard that can trigger disaster. (Pelling 2003, 47)

Two objectives of any policy-oriented vulnerability analysis for climate action are to identify who is vulnerable and how to assist them. Analysts need to ask: *where* should we spend public funds earmarked for vulnerability reduction or climate adaptation, and to preserve *what* values. The first question, how to target expenditures, requires identifying which regions and social groups (who) and the things of value to them that are at risk (what). The question of what we need to invest in, projects and policy reforms, requires an understanding of the characteristics of their vulnerability to understand the reasons (why) these people, and things are at risk, so we can assess the full range of means for reducing that vulnerability. *Who* and *what* are very different questions than *why*. Knowing *who* and *what* tells us how to target expenditures – this is the world of vulnerability indicators.

Knowing *why* tells us what to modify or improve in these targeted places and communities – this is the world of causal structure of vulnerability. *Why* also indicates the complexity and cost of short- and long-term solutions to vulnerabilities associated with climate variability and change – this is the world of causal analysis. Climate action should be guided by who, what and why. Much attention has been given to impact assessment, indicators, and mapping for targeting (see Downing 1991, Adger *et al.* 2004, Kasperson *et al.* 2005, 150, Deressa *et al.* 2008). This section trains attention on the material, recursive and discursive elements of an analysis of causal structures of vulnerability – elements of *why*. This is a starting point for generative reform.

Framing causality

Sen (1981, 1984; also see Drèze and Sen 1989) laid the groundwork for analyzing causes of vulnerability to hunger and famine with what he calls ‘entitlements’. Entitlements are the total set of rights and opportunities with which a household can command – or through which they are legally ‘entitled’ to obtain – different bundles of commodities. For example, a household’s food entitlement delineates the food that the household can command or obtain through production, exchange, or extra-legal legitimate conventions, such as reciprocal relations or kinship obligations (Drèze and Sen 1989). A household may have an endowment or set of assets that include productive means, stores of food or cash, and claims they can make on other households, patrons, chiefs or government (Swift 1989, 11; cf. Drèze and Sen 1989, Bebbington 1999). Assets buffer people against food shortage (Swift 1989, 11). They may be stocks of food or things people can use to make or obtain food. A person’s entitlements can fail ‘either because of a fall in her endowment (e.g. alienation of land, or loss of labour power due to ill health), or because of an unfavorable shift in her exchange entitlement (e.g. loss of employment, fall in wages, rise in food prices, drop in the price of goods or services she sells, decline in self-employed production)’ (Drèze and Sen 1989, 23).

The concept of ‘entitlements’, as I think Sen (1984, 1999) recognizes, is also part of the problem of exclusion – it is predicated on a strong justification of private property following Locke, Kant and Nozick (see Nozick 1974).²⁴ Entitlements are viewed as properties that are just if obtained in a ‘just acquisition’ – in ways recognized by a particular legal system. Sen (1981, 1984, 312) clearly shows that famines unfold in the face of legitimate (legally sanctioned) ownership and exchange. His observation brings the moral basis of the legal regime into question. If the procedure is legal-legitimate but the outcome unacceptable on moral grounds, then ‘rights’-based approaches are clearly inadequate. Sen (1984, 312), to move beyond entitlements, advocates for a limited ‘consequentialism’ or ‘consequence-sensitivity’ in which outcomes can be used to judge and to justify an override of legal procedure. Sen (1984, 313) notes, ‘Since it is implausible – indeed I believe incredible – to claim [by privileging just acquisition] that consequences in the form of life or death, starvation or nourishment, indeed pleasure or pain, are intrinsically matters of moral indifference, or have only very weak intrinsic moral relevance, it is not easy to see why history-based rules of procedure should be so invulnerable to the facts of their consequences’.

Here is where consequentialism brings us back to causal analysis. It requires an analysis of cause and effect – consequence is a consequence of something – that can include as cause legally legitimate rules and procedures, among other things. My objective is to flip Sen’s

²⁴See also Gasper (1993) for an analysis of limits of Sen’s entitlements approach.

brilliant insight into an empirical inquiry – to ask what causes different observed outcomes. This accomplished, one can interrogate the moral tradeoffs between procedure and consequence with the causal chain weighing into the moral judgment. By exposing causalities, the moral judgment can be a matter of public debate. Further, by understanding cause, such public debate can be extended to the weighing of the role of individual or public agency or interest behind cause. In this manner responsibility can also be attributed.²⁵ The consequence Sen is most concerned with is ‘freedom’ – freedom from and freedom to; in particular the freedom from poverty and the freedom to ‘be’ and ‘do’, to ‘function’, to achieve desirable outcomes (Sen 1984). These freedoms require food entitlements as a necessary condition – as laws and markets shape access to these necessities. Broader desired outcomes also, of course, require freedom from oppressive regimes, social stigmas, skewed cultural norms and petty theft, as well as state and structural violence.

The notion of ‘entitlements’, if taken at face value (without consequence sensitivity), implicitly legitimizes any existing distribution of property while occluding non-legal, extra-legal and illegal forces. Nevertheless, the framing and process of analysis of entitlements failure gives us a strong basis for accounting for hunger. A broader empirical view would frame assets as depending on the ‘ability’ (as supported by rights *and* other structures or powers), rather than just the ‘right’, of the household to produce a surplus that it can store, invest in productive capacity and markets, and use in the maintenance of social relations (see Scott 1976, Berry 1993, Ribot 1998, Ribot and Peluso 2003). Rights-based approaches and rule of law are not everything. Access theory – explaining the ability of people to benefit from things – provides broader empirical (rather than just legal) analytic of what people are able to obtain and use (Ribot and Peluso 2003). Further, Sen’s model does not account for moral economy – the basis of expectations that people have on those who govern (Scott 1976, Swift 1989). Ability is also broader than capacity insofar as it is not about innate characteristics of those at risk, but rather about all that enables and disables – since access theory focuses on the ability to benefit from things tangible and intangible: including material assets, knowledge, ideologies, discourses, doxas, habitus, social relations, social status, social structures, legal and political structures, stealth and violence (Ribot and Peluso 2003).

Vulnerability in an entitlements framework is the risk that the household’s alternative commodity bundles will fail to buffer them against hunger, famine, dislocation or other losses. This is risk of ‘entitlements failure’ to Sen or ‘access failure’ (failure to access, or enjoy benefits of, these alternative commodity bundles) in an access framing. Vulnerability is a relative measure of the household’s proneness to such failure (Downing 1991; also see Downing 1992, Watts and Bohle 1993, 46, and Chambers 1989, 1). By starting with the ‘entitlement’ framing’s components (that is, production, investments, stores and claims) of what enables households to maintain food consumption, an access framework allows us to analyze the causes of food crises. By analyzing chains of factors that produce household crises, a whole range of causes are revealed – hopefully signaling potential policies to reduce vulnerability (Blaikie 1985, Turner *et al.* 2003a, 2003b). This social model applied to instances where climate events are associated with food crisis replaces eco-centric models of natural hazards and environmental change (Watts 1983b). By showing a range of causes, legal, extra-legal or illegal environmental stresses are located among, and their

²⁵The reason to evaluate agency is to attribute responsibility. Similarly with interest. With or without agency, there are winners and losers for any outcome. These winners or losers may apply their agency to maintaining or changing that outcome (and procedures that created it), depending on where they stand in the stream of damage or benefit.

role explained within, other material and social conditions that shape household wellbeing. Hunger, for example, may occur during a drought because of privatization policies that limit pastoral mobility making pastoralists dependent on precarious rain-fed agriculture (Smucker and Wisner 2008; also see Leichenko and O'Brien 2008).

Household-based social models also illustrate how important it is that assets are sufficient to cope with or adjust to (as in buffer against) environmental variations and changes so that land-based production activities are not undermined by and do not undermine the natural resources they depend on (Blaikie 1985). Household models, however, often fail to account for intra-household gender and age differences in production, consumption and reproduction; so internal household struggles must be made an explicit part of any complete analysis. Gender-differentiated access to household food and assets, and to natural resources, jobs, markets, services and representation, is foundational to household and individual wellbeing (see Guyer and Peters 1987, Vaughan 1987, Carney 1988, Hart 1992, Agarwal 1993, Schroeder 1999, Turner 2000). If not fully theorized, the household models may also miss broader structural relations of production and exchange within markets and a globalized system that shape broader-scale distributions (Polanyi 1944, Leichenko and O'Brien 2008, Butler 2009, Fraser 2011). But all of these should be linked into chains of causality by a full causal analysis of access failures.

Leach *et al.*'s (1999) 'environmental entitlements' framework introduced the notion of a sub-component entitlement, a set of utilities that a particular resource or sector contributes to wellbeing – e.g. environment – allowing the analysis of inputs from particular livelihood arenas. Their framing, building on Swift (1989, 10, also see Chambers 1989), modulates Sen's concept of entitlements from the household to any social unit (or exposure unit in the case of climate related analyses), such as individuals, households, women, ethnic groups, fishers, farmers, organizations, communities, nations or regions. (Drèze and Sen 1989, 30 also indicate groupings as units of study, with a focus on occupational groups, emphasizing a more disaggregated view than offered by class analysis.) Leach *et al.* (1999) also expand the idea of rights such that things may be 'claimed' rather than just legally 'owned' (on claims, also see Swift 1989). In this framing, claims may be contested – something Sen fails to capture by missing non-legal forms of contestation and legal pluralisms. Hence, endowments such as natural resources can still be accessed through social relations that may introduce cooperation, competition or conflict mediated by systems of legitimization other than or contesting state law (see Lund 2008, 2013, Lund and Boone 2013). They introduce a plural notion of rights (à la von Benda-Beckman 1981, Griffiths 1986), which Sen takes as singular and static. Claims in this framing are based on multiple, potentially conflicting, social and political-economic relations of access (à la Blaikie 1985, Ribot and Peluso 2003).

Many causal chains have been identified that shape household assets and entitlements beyond Sen (1980, 1984, 1999) (also see Moser's 2007 neoclassical approach to assets).²⁶

²⁶Moser shifts the focus from entitlements and livelihoods toward accumulation and attention to means of accumulation (Moser 2007). Instead of maintaining livelihoods or social protections, her model calls for social policy that promotes asset accumulation (see Prowse and Scott 2008, 48–9). Her model's objective is to improve returns to assets through improving infrastructure and competition within markets – as if well-functioning markets were not part of the problem (Prowse and Scott 2008, 48 – citing Moser and Dani 2008; also see Sen 1981). This neoclassical accumulation approach does not take into account that under a certain income threshold, called the Micawber threshold, many households cannot limit consumption sufficiently to accumulate (Prowse and Scott 2008, 48–9; for a nuanced threshold analysis, see Luers *et al.* 2003). Prowse and Scott (2008, 49)

Deere and deJanvry (1984) identify extractive mechanisms that market and institutional models do not attend to – to explain why households have insufficient surplus to invest in their own wellbeing and development. These include tax in cash, kind and labor (corvée), labor exploitation and unequal terms of trade. These processes siphon off household wealth – with the systematic support of governments and policies. Scott (1976, also see Alavi 1965, Berry 1993) also shows how peasant households' assets are drained through sharecropping and corvée in exchange for uncertain security. Isakson (2013) shows how financialization of agricultural markets is moving further down the supply and demand chains, diminishing profits retained by farmers. Ribot and Peluso (2003) show how complementarities of factors of production and exchange shape people's ability to form assets. Land without labor or labor without land or products without market access – contingent on identity or access to government to get permits or licenses for market access – can add up to failed asset formation or destitution. Controlling both elements of profit – property in land and labor – makes the land rights more lucrative (deJanvry *et al.* 2001, 5). Blaikie (1985) shows how assets are a function of people's identities within a larger political economy. These identities shape access to resources, credit, markets, jobs, rights and social services that are the basis of asset formation. Many of these factors are products of policy – that is, like markets, they are products of, or they can be enabled or disabled by, policy. These are not 'natural' self-regulating social systems with invisible hands (see Polanyi 1944).

Agrawal (2010) provides another important causal pathway to vulnerability and security by showing how rural institutions (public, civic and private organizations) enable or disable collective action in risk pooling. Rural populations protect themselves by risk pooling via storage (over time), migration (over space), sharing assets (among households) and diversification (across assets). In his model, exchange (via markets) can substitute for any of these risk-pooling responses. Rural institutions/organizations play different roles in enabling each of these risk-reducing practices. Building on Agrawal's research, a fuller causal analysis would also ask three other important questions: what in addition to institutions (e.g. moral economy, assets, the political and regulatory environment) enables (or even necessitates) people to engage in risk pooling; what resources and legitimation regimes enable these institutions to play supportive roles; and what shapes people's access to various institutions? Cardona *et al.* (2012, 85) adds, 'expanding the institutional domain to include political economy ... and different modes of production – feudal, capitalist, socialist ... – raises questions about the vulnerability of institutions and the vulnerability caused by institutions (including government)'. The individual and household ability to engage with institutions is partly addressed by other authors above. The landscape of institutions, the mix of institutions in it, the forces that enable and disable institutions, are not well explained (for a framing see Ribot *et al.* 2008).

Policy, policy making and the politics of influence, are, of course, always part of the causal structure of vulnerability and security – and part of many of the political, economic, institutional and structural relations discussed above. Policies, including the politics that create, foster or undermine local institutional landscapes, shape people's freedoms and

then argue that social services are required; acknowledging a need for an assets approach, a need to understand quality and role of assets required to affect a pro-poor adaptation strategy and a need to offer a floor (the Micawber threshold) below which 'pro-poor adaptation' must support households – reminiscent of 'means-tested entitlements'. Their very neoclassical accumulation model depends entirely on access to assets and the decisions they make about asset use (Pelling 2003, 58). Its author, Moser (2007), takes a conservative negative view of government intervention – claiming it is ineffective.

people's assets, capabilities and freedoms are always part of their ability to shape those policies. Understanding the authorities that produce them as well as their effects on authorities at different scales is part of vulnerability's causal chain. Policies for reducing vulnerability, as well as other laws and regulations, will have some intended effects while also having damaging effects and ancillary benefits (Burton *et al.* 2002, Turner *et al.* 2003b, Moser and Satterthwaite 2010, Beymer-Farris and Bassett 2012, Marino and Ribot 2012). Policies can also be damaging or emancipatory by reshaping the authorities they work through, thus reconfiguring representation and rights (Ribot *et al.* 2008, Osborne 2011, 875, Poteete and Ribot 2011, Beymer-Farris and Bassett 2012). Policy is the formal expression of the intended structuring of the larger political economy. Its formation and effects are key elements of causal analysis.

A full analysis of the causes of access must follow all chains outward to explain the state of assets and entitlements – including the landscape of extended entitlements or social protections. It must include a full analysis of the structure of people's access to goods and services. Starting with a limited entitlements framing, theorists have outlined a larger set of material and discursive factors that shape people's assets, social protections and entitlements sets. Concepts such as capacity or policy must find their place in causal chains, rather than being mere endpoints of explanation. The next sub-section explores the recursive relations between those at risk and the authorities that govern – channels through which broader relations of policy and practice are shaped.

Recursive elements – representation and emancipation

If famine is the socially differentiated lack of command over food, it is naturally about power, politics and rights broadly understood, all of which are embedded in a multiplicity of areas from the domestic (patriarchal politics) to the national/state (how ruling classes and subaltern groups acquire and defend certain rights). (Watts, 'Entitlements or empowerment?' 1991, 21)

From the standpoint of any sophisticated economic theory, an individual's command over public resources forms part of his [sic] private resources. Someone who has power to influence public decisions about the quality of the air he or she breathes, for example, is richer than someone who does not. So an overall theory of equality must find a means of integrating private resources and political power. (Dworkin, 'What is equality?' 2013, 283)

Representation and citizenship

While providing a buffer against stress and shocks (à la Swift 1989), assets are also a necessary ingredient for influencing the rights, recourse and representation required to shape the political economy that in turn shapes both accumulation and social protections (Watts and Bohle 1993, Bebbington 1999, 2022).^{27,28} Surplus assets – time and resources – enable people to make demands and apply pressures to the systems that govern them. Freedom from risk, then, is enabled by surplus in its double role of enabling people to adjust on their own and enabling them to turn society toward transformative

²⁷As Leach *et al.* (1998, in Bebbington 1999, 2033) suggest, it is 'important to invest in people's capabilities to control and defend assets'.

²⁸Moser and Norton (2001, xi), in their market-oriented approach, argue for accumulation as a central means for security. They also argue that democracy and human rights frameworks are a resource that empowers people to make claims for government accountability in providing basic necessities and social securities. In the context of vulnerability, they (2001, x) view mobilization to claim basic rights as an important means for poor people to shape the larger political economy.

restructurings that serve their needs and aspirations. This emancipatory power is a central part of the recursive relation between individuals, households or communities and the regimes that govern them. The recursive relation with the larger political economy links back to wellbeing by shaping both private assets and public social protections – together assets and social protections form the basis of security or insecurity (Sen 1981, Drèze and Sen 1989).

Means by which people shape the political economy that shapes their entitlements, or by which they influence those who govern them, have long been seen as a critical part of durable wellbeing, food security and policy formation. Appadurai (1984, 481), building on Sen's (1981) treatment of 'entitlements', called for attention to 'enfranchisement', 'the degree to which an individual or group can legitimately participate in the decisions of a given society *about* entitlement'.²⁹ Drèze and Sen (1989, 263) observed the role of certain types of political enfranchisement in reducing vulnerability, specifically the role of media in creating crises of legitimacy in democracies. Adding 'empowerment', Watts (1991), Watts and Bohle (1993) placed vulnerability in a multi-scale political economy, arguing that vulnerability is configured by the mutually constituted triad of entitlements, empowerment and political economy – where empowerment is the ability to influence the political economy that shapes entitlements. Sen (1999) later included public dialogue in the context of elections and party politics. Watts and Bohle's (1993) empowerment stance, however, more broadly implies that protests, resistance, class struggle, social movements, union, civil-society pressures and direct representation all shape policy and political processes or the broader political economy that shapes household entitlements. Their framing incorporates the politics of the production as well as the contestation of marginalization processes (also see Swift 1989 based on Watts 1983a).

Taking another approach to wellbeing, Sen (1999, 75) defines capabilities as the set of 'functionings' that an individual has the freedoms to achieve (also see Sen 1984). Functionings are made up of 'beings' and 'doings' that individuals have reason to value. Hence, capabilities are the set of desired outcomes people are *able* to achieve – whether or not they choose to. Food entitlements, discussed earlier, describe the alternative bundles of food people can obtain. Capabilities describe the alternative bundles of achievements people are able to attain. Being consequentialist, capabilities are broader than food entitlements, since they include all outcomes (not just access to food) to which a person is entitled. Capabilities expand 'assets' by taking into account the individual's characteristics in addition to the assets they command. Entitlements and capabilities are similar insofar as they are based on legal legitimate forms of production and exchange. Among the functionings that Sen recognizes are 'their direct relevance to well-being and freedom of people', 'their indirect role through influencing economic production' and 'their indirect role through influencing social change' (Sen 1984). Capabilities are in effect the ensemble of outcomes to which individuals have access given their personal characteristics plus the ensemble of resources and rights that enable them to act. Capabilities outline the substantive freedoms of the individual within a social-political-administrative-legal regime – including the ability to shape that regime.

In essence, capabilities are the alternative set of outcomes to which a person or group has access (the ability to enjoy) – whether or not they use that access. Hence, given the emphasis on what people 'can' do rather than what they 'do', Sen (1984, 1997, 1999) characterizes these potential outcomes as their substantive freedoms. The capabilities

²⁹Italics in original.

approach helps Sen (1984) move from a pure procedural-utilitarian framing toward one that is consequence-sensitive that can account for the moral acceptability of outcomes. This move enables a judgment of laws when those laws produce unacceptable results – hunger, famine or any form of deprivation. In his framing, legally legitimate ‘just exchange’ does not justify outcomes whereby some people have insufficient assets to survive. In this sense, capabilities theory, without dismantling the notion of procedural justice, provides a moral basis for expanding freedoms such that everyone has at least the capability to survive, and hopefully to also lead desired lives.

Sen (1999) defines development in terms of the freedom capabilities enable. Sen (1999, 152–3, 178) attributes increased capabilities and freedoms partly to democracy, which he defines as free media, regular elections and opposition parties.³⁰ These must be complemented by public dialogue/deliberation and by citizen engagement predicated on civic virtue. Political and civil rights include the allowing and encouraging of ‘open discussion and debates, participatory politic and unpersecuted opposition’ (Sen 1999, 158). Norms and values that mobilize people to engage are formed by such public discussion. These debates and discussions are enabled by political freedoms and civil rights and they shape the very values expressed when there are such political freedoms (Sen 1999, 158). Sen’s capabilities represent a brilliant move into a world where freedoms that enable wellbeing – including the ability to influence social change – become a matter of human rights.

One of the powers of Sen’s capabilities framing is its attention to consequence – the potential achievements that add up to freedoms. The framework, however, needs to be complemented by an empirical explanatory method that traces causality from outcomes. In particular, when attending to climate-related vulnerability, we are interested in explaining two phenomena: (1) entitlement (or access) security or failure (i.e. sufficiency of assets and social protections) and (2) the ability to influence those who govern and the broader political economy. How these are attained is an empirical question to which access theory applies – by asking what enables or disables access to assets and influence? Like entitlements theory, Sen’s capabilities framing remains legalistic even while bringing law into question. Bringing attention back to assets, the material basis of both subsistence security and influence, and to social protections which shape assets required for survival and freedom, access theory would ask how access to security (assets and social protections) and influence are structured. Sen attributes this structuring to law and the ways law is influenced – by moral argument and public opinion within democracy. Access theory attends to a broader set of factors, including legal, illegal, extra-legal, identity, structural and discursive causal relations (Ribot and Peluso 2003). It asks: what enables the freedoms needed to avoid risk and to influence those who govern and the broader political economic system? To what means must individuals and groups have access? Access-based causal analysis starts with entitlement theory and traces the causal chains outward to and beyond law and market operations, including structural and discursive spheres.

Whether one buys that Sen’s idea of liberal democracy is the only means of influence, his capabilities framing provides democracy as a loop back to possible changes in the broader political economy. However, this loop can exist whether or not there are legal rights or elections, whether or not there is real electoral competition, whether or not

³⁰Sen’s approach to capabilities is limited by the same legalist approach used in entitlements theory and critiqued by legal pluralists and access theory (Leach *et al.* 1999, Ribot and Peluso 2003).

protest and criticism are permitted, whether or not government has the means to respond. People struggle for change using their surplus assets and other public means even in non-democratic settings – surplus assets and public means are two key elements in the capability to engage. Access to surplus assets is one element that must be evaluated to understand engagement. The legal-political enabling environment (whether procedural democracy à la Sen, or otherwise) must also be evaluated, but separately. While imbricated, their analysis needs to be disaggregated – being merged in capabilities theory. So, capabilities, like Watts and Bohle's (1993) empowerment, expand the vocabulary around security's link to engagement. The means to act is a basic element of freedom and influence. Separating the legal environment from assets opens us to a broader set of analytic pathways – this way we can take the assets part of capabilities as a starting point (as do Sen 1981, Watts and Bohle 1993, Bebbington 1999), but without limiting the enabling context to Sen's idealized democracy. This is not to say that liberal democracy is not the ideal means of influencing those who govern and the larger political economy, but to say for the completeness of analysis that it is not the only one.

Building on Sen, Bebbington (1999, 2022) places assets at the center of the link between capabilities and emancipation, arguing that in addition to allowing people to survive, adapt and escape poverty, assets '... are also the basis of agent's *power* to act and reproduce, challenge or change the rules that govern the control, use and transformation of resources ...'. He sees assets as essential to 'making a living', 'making living meaningful', and to 'emancipatory action (challenging the structures under which one makes a living)'. Bebbington (1999) casts assets as 'capitals' and influence as a matter of investment in social capital. Access theory would place influence in a larger material and structural context. The capabilities framing, including that based on 'capitals', roots explanation of assets and influence in law and legal production and exchange. In lieu of social capitals, Ribot and Peluso (2003) use the language of identities, social status and social relations as a key part of 'access' to government or the ability to derive benefits (including changes in laws and practices) from influence of the state. These work in conjunction with material resources, finance, knowledge, ideology, voice, collective action, sabotage, protest, stealth and violence as means that are used to shape conditions that shape an access regime. The access approach provides an empirical method for explaining what enables gain or loss by mapping the causal chains in any instance where a benefit is attained or lost – including changes in assets, social protections or in the regime of asset and protection formation.

The critical relation between people and government is recognized as important but still vague in the vulnerability literature (Appadurai 1984, Drèze and Sen 1989, Watts and Bohle 1993, Leach *et al.* 1998, Bebbington 1999, Sen 1999, Lappé 2013). Representation can be substantively defined as responsiveness of authority to people's needs and aspirations. It is called democratic when driven by means of sanction or accountability (Manin *et al.* 1999). Mirroring representation, citizenship can be substantively defined as the ability to influence those who govern – an ability to hold government accountable via sanction (Isin and Turner 2002, 4, Ribot *et al.* 2008, cf. Somers 2008). This definition of citizenship is the substantive opposite of 'subject' – a condition intentionally produced by those who dominate (see Mamdani 1996). Substantive citizenship is the part of capabilities that constitutes the ability to affect structural change – representation, democratic or not, is often part of the structure being changed and producing change. Surplus assets enable valued functionings beyond subsistence, including citizenship. Frameworks of capabilities and empowerment need to expand from notions of political accountability through media or social movements to a much broader array of accountability means or what Agrawal and

Ribot (1999) called ‘counter-powers’ (also see Agrawal and Ribot 2012, Ribot 2001, 2004).

Climate interventions, like all policy interventions, shape representation and citizenship through the local institutions they support (Ribot 2001, Marino and Ribot 2012).³¹ Different institutions have different forms of belonging (residency, identity or interest based; inclusive or exclusive) and of accountability (upward, downward; narrow or broad based) (Ribot *et al.* 2008). These characteristics imply different degrees of representation and democracy, hence it matters which institutions policy interventions support. Agrawal (2010) found that civic organizations support risk pooling more often than local governments. The implication seems to be that supporting civics would be preferable for vulnerability reduction. But why are civics able while elected authorities are unable to serve local needs, and what are the implications for long-term representation and security? Manor (2005) shows that central governments and aid institutions overfunded self-appointed or externally created non-governmental organizations (NGOs) while underfunding elected local governments – making formal local representation less able and less relevant. Similarly, participatory processes or indigenous leaders are often favored by central governments and external donors over elected local government in ways that undermine representation (Mansuri and Rao 2003, 2012, Swyngedouw 2005, Ribot and Mearns 2008, Burga Cahuana 2013, Mbeche forthcoming). Such favoring of non-representative local institutions at the expense of formal representation are examples of what Swyngedouw (2005) critiques as horizontally organized ‘governance-beyond-the-state’ – which undermines formal representation and democracy.

The social actions and protections that local institutions can and do support are part of a larger political economy behind the strategic production of institutions (Bates 1981, Ribot 2007, Ribot *et al.* 2008). As Majid and McDowell (2012) show, famine relief to Ethiopia in 2011 was withheld in order to prevent it from supporting or legitimating insurgent organizations. Institutions are not just there to be chosen by local risk-poolers. They do not just organically or ‘naturally’ emerge from the polycentric ether (à la Ostrom 2009). Institutions and the forms of representation or service that they afford are products of local histories embedded in higher-level political decisions (Ribot 2007). As Bates (1981) argued, governments choose policy options based on political utility. Governments and international organizations cultivate local authorities and institutions along similar lines, creating or fostering local authorities to support their external objectives (Ribot 2007, Ribot *et al.* 2008). When higher-level institutions shape local institutions and authority structures, they are shaping the ability of people to sustain themselves, to be represented, and to shape the policies they are subject to.

In sum, two causal chains are required for vulnerability analysis – one concerning what shapes access to assets and another concerning access to influence within the political economy that shapes entitlements. These chains are recursively linked. Assets enable engagement and are a productive starting point for the analysis of freedom.

³¹Note that responsiveness is based on those who are governing having the powers to respond. Without power government cannot respond. Hence, structural adjustment programs that weaken governments can undermine their ability to respond even if accountability mechanisms are in place. Accountability without empowered government is tantamount to giving people the ability to beat a dead horse – not an uncommon phenomenon in local government (Ribot 2004). It is not democracy. Also see Gaillard and Mercer (2013, 108) who call for accountability in climate adaptation.

Structural recursive – Scott, Polanyi, Fraser and social protections

Other recursive relations of influence between people and authority, beyond formal democracy, also need to be taken into account to explain the political economy that shapes well-being. Scott (1976) shows that peasants rebel and assert demands on a moral basis when patrons fail to provide food. This ethic of reciprocity and moral expectation can be eroded away by commodification (Watts 1983a, 1991, 22, McElwee 2007, 81–96). There are parallel dynamics shaping urban demands and riots (e.g. Harvey's 2008 'right to the city'). Swift (1989, 12) remarks that 'the growth of commodity production and market relations has strengthened food security in some aspects, but has also undermined the redistributive guarantees [moral economy] of the pre-colonial economy, replacing them with an uncertain market mechanism' (also see Polanyi 2001[1944], Stiglitz 2001, and Pelling 2003, 53). Swift (1989, 12) also notes reciprocal expectations between government and people in which taxation generates the moral expectation of support (also see Moore 1997).

Polanyi (1944, 187–200) addresses how social protections (as well as environmental protections) are mobilized by society. He argues that social protections are an artifact of a double movement of capitalism. The first movement is capitalism's tendency to destroy both labor (life itself) and land (writ nature or environment), because, as 'fictive commodities' that are neither produced by nor for the market, labor and land are undervalued and overexploited.³² In response, a second movement emerges within society to protect labor and land. Such protections find support in the enlightened self-interest of capitalists. Hence capitalism's destructive forces provoke a protective social response. Fraser (2011) sees both movements as mediated by a third movement of emancipation. Markets in Fraser's view are emancipatory and destructive. So are protective policies (see Marino and Ribot 2012). Hence, society demands that both markets and protections be subject to public scrutiny. This scrutiny is called for and, in her sense of right, must be subject to the criteria of participatory parity – a judgment based on equal access to representation. These movements form another set of potential loops constituting people's relation to government, connecting security to a wider political economy.

Polanyi's (1944) fictive commodities offer another chain of relations linking the larger political economy and vulnerability. Risk – as in the probability of stressors – is a product of nature (storms, quakes) and a byproduct of markets (effluents, toxins). It is not intentionally generated nor produced for the market. Risk appears to be another fictive commodity – whose commodification causes a dysfunctional production of risk itself through quantifying, packaging and sale of this abstract derivative of circumstance. In this case, rather than destroying a positive market input (land or labor), the market enhances this destructive force as a source of profit – e.g. moral hazard generated by insurance and disaster aid, which rely on risk as their object of intervention. Indeed, the profitability of risk is complemented by what Rose (1996) called the production of risk subjects – where through governmentality, individuals internalize the explanations of risk as if it were produced by their behavior and not by broader social and political-economic forces. In this manner, risk, and the demand for protection, is turned into demand for insurance. By blaming themselves for the risk, risk subjects take on the burden of self-protection rather than seeking social protection. This is a causal link that dampens government accountability and demand for

³²His third fictive commodity is finance, not addressed here as it is tangential to micro-notions of security. At a macro level, of course, such fictive commodities as derivatives undermine everyone's security.

response (dampening representation à la Manin *et al.* 1999) – making the commodification and packaging of risk a causal link in the recursive relation of government and subjects.

A further Polanyian twist on risk production comes from viewing nature through the lens that Polanyi (1944) viewed the social history of markets. Markets served people during the period of merchant capital. In the transition to industrial capitalism, however, people were transformed into labor to serve markets (generating the industrial revolution's 'Satanic mills'). As labor, people became inputs to markets, rather than the market being an input to human production and reproduction – an input to people's lives. Nature, similarly, once served people. More and more people now serve nature – as a way of serving markets to which nature is subordinated as an ever-scarcer input. Sato (2013) shows that 'governance of environment goes hand in hand with the governance of people'. He shows how, in Thailand, natural resources play a role in state-society formation at societal margins – integrating hill people and others into society through extractive resource relations. With commodification of nature, people are subordinated to serving nature's extraction and reproduction (through exploitation and management). In the process nature and labor are commodified with no mechanisms to reflect the costs of their reproduction. As margins are incorporated, people transition from using nature to live to being used for (subordinated to) nature's economic production. This great human-environment transformation inverts agrarian people's relation to nature – from being served to serving. In the process they are also excluded from its bounty while their labor is commodified and exploited. This transformation is part and parcel of marginalization. This marginality is a foundation of vulnerability. It begs the Polanyian-Frasierian question: under what conditions does such vulnerability foment a second movement demanding social protection and a third toward emancipation, and how are these movements seen in practice?

Discursive recursive in representation and emancipation

Discursive relations form another recursive link between government and people. Discourse is a different form of 'representation' that systematically affects – is a causal element in – material insecurity (see earlier governmentality example from Rose 1996). Discourse shapes individual and group expectations and behaviors and all scales of politics (shaping virtue à la Sen 1999, 158; public sphere of Sen 1999, 158 and Habermas 1991; the governmentalities/environmentalities of Agrawal 2005 and Rose 1996, à la Foucault; the doxa and habitus of Bourdieu 1977). Rebotier (2012) develops a risk analysis framework for understanding the iterative biophysical and social production of risk. He examines how discourse, the naming of a place, a community, a geographical area of a city as 'risky', creates its own outcomes and can have the effect of a self-fulfilling prophecy. Rebotier also shows that interpretation of risk is always stratified by the differentiated relation of individuals and groups to physical risks and to the discourses about it. In this sense, he shows how risk is also always political – its interpretations imply actions that differently serve people with different social identities and means.

Rebotier also shows that once risk is identified and translated into meaning – that is, interpreted – it becomes performative and instrumental. The identification of risk, the words we use to describe it and its inscription in place imply actions and interventions with consequences for the control and use of spaces. He observes, 'territories are spaces in which meanings are inscribed, and in addition to the physical transformation of territories that risk may imply, risk is itself one of the meanings inscribed within these spaces, shaping the relationships as well as the actions carried out by their occupants, including those who govern' (2012, 392). In this sense, Rebotier's 'territorialization-of-risk framework' requires

us to take a holistic view that bridges the gap between material fact and representations – placing both in the political space of risk apprehension and assessment. Here, through its performative nature, insult becomes injury – deepening material marginality through its perlocutionary effects (Butler, 1997).

In another perlocutionary manner, risk is inscribed in land reforms in Brazil. Wolford (2007) shows how land insecurity can be traced to common beliefs of both the right and left. While the neoliberals blame the state and populists blame the market for land inefficiencies, they both presume that rights to property are rooted in labor investments (à la Locke 1823). The result is that from both sides the farmer is pushed to demonstrate evidence of productivity in order to secure and maintain their property rights. Land reform beneficiaries who have won access to land based on a labor theory of property find it difficult to feel secure in their ownership – unless they use land in ways that are consistent with collective social norms regarding productivity and productive-ness. (2007, 552). She shows that those norms corral farmers into self- and mutual surveillance of land use, producing ownership insecurities that lead to land-use conforming with government programs – whether or not those produce greater land-use efficiency. The analysis calls for attention toward the framing of land reforms, forms of land title and the community norms of land use as means to soften the insecurities and peer pressures that reform discourses are producing.

Vulnerability is also established discursively at a much higher scale of social organization. The very framing of the ‘third’ or ‘developing’ world as far away and other produces otherness. As Butler (2009, 25) states, ‘... those whose lives are not ‘regarded’ as potentially grievable, and hence valuable, are made to bear the burden of starvation, underemployment, legal disenfranchisement, and differential exposure to violence and death’. Butler goes on to note that it is impossible to distinguish whether the ‘regard’ leads to the ‘material reality’ or it is the material differences that shape ill regard (cf. Taylor 1994, Fraser 2000, and Kymlicka, 2002 on directionality in effects of recognition and redistribution). The key point is that the categories themselves are perpetually crafting the material world. In short, perception has a material effect. Framings matter.³³

More work has been done in science and technology studies, sociology and anthropology on the politicization of risk (including the opening or closing of debate), its definitions, its identification, its communication, its perception, its judgment, its discursive effects on individuals and politics, its very nature as deviation from normal (e.g. Beck 1992, Demeritt 2001, Luhmann 2002, Wilkinson 2010, Fassin 2012, Connolly 2013). More work needs to be done on how science and politics occlude causal analyses, favoring hazard framings and turning blame and responsibility away from society. These are beyond the scope of this contribution, which focuses on causal analysis of vulnerability – despite that such vulnerability and its causes may not even be visible or treatable in certain discursive, scientized and governmentalized circumstances. In short, a full analysis of vulnerability traces out chains of causality and the recursive relations between those chains, those at risk, and those analyzing and governing cause. When cause is occluded, those responsible and able to respond are shielded from blame

³³See also Forsyth (2003) and O’Brien (2011) on the importance of framing in environmental and climate analytics. See Jasanoff (2010) on how the view of earth and climate framed scientifically reconfigures people’s relations to nature their sensibilities concerning justice and rights to and around resources.

and responsibility, and without informed public discourse, representation is truncated and injustice facilitated. Any turn away from causality is a turn away from redress while serving to support the legitimacy and legal protection of regimes of theodized, naturalized, quick, slow and silent injustice.

Recursive integration

While vulnerability and hazard need separate analytics, climate change does reconfigure vulnerability. The causes of that change trace back to the social origins of effluents. The first level of integration of climate-human relations is where the causal chains of climate change and vulnerability converge in a global political economy that is partly responsible for the production of both. A second locus of integration is in the co-formation of hazard and crisis. Neither exists without the other. Increased climate stressors shift the threshold of vulnerability, increasing the required assets and protections to maintain security (see Luers *et al.* 2003 for an excellent threshold model). This threshold shift is the additionality for which international adaptation policy would like responsibility. It is perhaps measurable. But it is not the line that determines responsibility since the convergence of causes shows that there is no distinct line distinguishing the production of (or responsibility for) hazard from that of vulnerability. By tracing out causality for both hazard and vulnerability, we can see how these two elements are integrated at origin and in their co-production of crisis.

Climate change has a meta-recursive relation to democracy. The shift in the vulnerability threshold is also a shift in surplus deployment – a shift from its service of *freedom to be* and *do to freedom from* risk and deprivation. In this sense it represents a diminishing of positive freedoms, including the emancipatory freedom to shape the political economy that shapes assets and protections. These are the freedoms to shape the political economy in which causes of climate change and vulnerability converge. Observing the long arc of history, Chakrabarty (2009, 208) observed that cheap energy freed society, yet its effluents are diminishing that freedom. ‘In no discussion of freedom in the period since the Enlightenment was there ever any awareness of the geological agency that human beings were acquiring at the same time as and through processes closely linked to their acquisition of freedom’. If development is freedom (à la Sen 1999) then climate change raises the bar/threshold for its achievement. Freedom is at risk in the Anthropocene.

This section on the unbounded framing of vulnerability analysis provides some elements of a causal-chain analysis of instances of vulnerability. A causal analysis aims to explain why people do or do not have access to the essentials of security. Two key elements that need to be explained are assets and social protections along with the recursive relations by which individuals or groups shape the political economy that shapes these foundations of wellbeing. The next section briefly outlines a comparative research agenda on causal structures of vulnerability.

Causal research: toward reduced vulnerability

Overall, the promotion of resilient and adaptive societies requires a paradigm shift away from the primary focus on natural hazards and extreme weather events toward the identification, assessment, and ranking of vulnerability Therefore, understanding vulnerability is a prerequisite for understanding risk and the development of risk reduction and adaptation strategies to extreme events in the light of climate change Cardona *et al.* (2012, 72)

Vulnerability research generally seeks to understand the underlying causes of vulnerability ...
 ... resilience approaches aimed at securing future sustainability cannot be realized without
 understanding the socio-political processes that underpin the foundations of vulnerability.
 (Miller *et al.* 2010, 6–7)

Empirical analysis of climate-related vulnerability (1) starts by identifying exposure units that have lost valued attributes and the distribution of those losses across individuals, households and groups (who lost what); (2) links losses to specific asset and protection failures; (3) assesses the immediate causes of failed access to adequate assets and protections, and (4) maps these immediate causes to capacities, knowledge, identities, intra-household relations, local social and political hierarchies and production and exchange relations, and to the larger physical, social and political-economic relations in which the exposed unit is located (see Turner *et al.* 2003a, 8075, Blaikie 1985, Downing 1991, Watts and Bohle 1993, Fussel 2007). A full analysis then (5) evaluates the means and mechanisms by which exposed units can influence or are prevented from influencing structures they operate within and those who govern (Sen 1981, 1999, Watts and Bohle 1993, Bebbington 1999).

Analyzing the ‘chains of causality’ (Blaikie 1985) behind chronic deprivation or crisis, by showing how outcomes are produced by proximate factors that are in turn shaped by more distant events and processes,³⁴ can tell us what kinds of promotions or protections (Drèze and Sen 1989, 60) – to which I would add emancipations, restructurings and redistributions – might stem the production of vulnerability at what scales; and, where relevant, who should pay the costs of vulnerability reduction. As Drèze and Sen (1989, 15) note, the important thing is to ‘examine all causal influences on these matters’ (also see Sen 1999, 161, Miller *et al.* 2010, 6–7, Cardona *et al.* 2012, 72). These are the kinds of analyses that should precede and complement adaptation and mitigation planning. To make this kind of research robust, a large number of in-depth case studies would need to be developed and compared to identify the most salient causal factors at different social, political-economic and institutional scales (see Ribot 2013 for further discussion of comparative vulnerability research).

Any empirical analysis of vulnerability in the face of climate change will show climate’s roles. The event occurs, triggering disaster in a social landscape of underlying vulnerabilities. In past studies of climate disasters, social analysts took climate hazards as probabilistic events outside of social agency, requiring no explanation. Risk could only be reduced on the vulnerability side (Blaikie *et al.* 1994, Wisner *et al.* 2004, 49–55). Today that probability is anthropogenic and has a causal structure relevant to disaster reduction – insofar as (1) mitigation is a pathway to hazard control, (2) redressing inequalities that produce effluents may also serve to reduce vulnerabilities and (3) increased hazards shift the threshold of vulnerability and scope for freedom, potentially dampening recursive emancipatory loops. But it is still true that with no vulnerability there is no disaster. Hence, as long as hazards are in the sky, vulnerability and hazard causality remain bifurcated and vulnerability reduction remains a distinct solution. Full bifurcated coverage would include a vulnerability analysis *and* an analysis of the anthropogenic causes of hazard probabilities – right down to the effects of rights and representation or the commodification of risk on hazard generation and control.

³⁴See Swift 1989, 8 who distinguishes ‘between the *proximate or intermediate variables*, which are the direct links to famine, and the *indirect or primary factors*, which are the more general ecological, economic or political processes determining whether communities thrive or decline’ – italics in original.

Hazards are now anthropogenic and potentially treatable. The hazards framing, still used widely, cannot provide the full array of options for securing wellbeing. Their linear-causal impact stance sidelines the social causes and solutions of vulnerability. Of course, hazards views, like entitlement-livelihoods approaches, are logical and empirically demonstrable. Each framing trains attention on different observable variables and relations among them. It is not that one is wrong and the other is right. They are frames. Each frames different realities for different objectives with different implications. Researchers need to understand what those objectives are so we can choose framings that lead us to empirics that can illuminate pathways toward individual and collective aspirations – the reduction of pain and suffering and increase in human wellbeing and potential. Ontologies are not objective truth claims. They are chosen framings, chosen objectives. Researchers are not objective. They have objectives – frames they have built to make meaning of the world. Once framed within objectives and assumptions, it is the methods that must maintain the rigor and credibility of analysis.

‘No story can be told nor any theory proposed that is not responding to prior (implicit or explicit) questions, and our questions are always the products of our situated selves’ (Somers 2008, 10). I choose a vulnerability framing with an ontology that privileges humans and human values and I take a political stance that does so through representation. Humanism privileges human agency in our world, which can be nothing other than social. I choose to see human wellbeing as socially interconnected – through politics and through our anthropogenic sky. Our welfare is ineluctably social, as is our precarious interdependent being (Butler 2011). It is human agency, manifest in acts and in structures, that shapes what we are and what we have, and therefore what we can become and do. This position makes even the choice of a framing that places causality outside of human agency something that is chosen for purposes that are of human value and agency. The hazards framing is not wrong as the chosen frame it represents. Storms do result in damage. But we need to know what it does to choose this framing – what it reveals and occludes and who and what ends are served by that choice. The hazards approach is a snapshot that elides time. It accomplishes the occlusion of history and social cause. The lack of awareness of our ontologies renders them natural, occluding them from ourselves so we can believe they are not frames but the world itself.

Conclusion

... hunger is caused not by a scarcity of food but a scarcity of democracy ... (Francis Moore Lappé 2013, 230)

... democratization must remove the strait-jacket which stifles the peasantry, because any popular movement to transform political life must sever the hold that ruling classes exercise over rural producers. (Michael Watts, ‘Entitlements or empowerment?’ 1991, 25)

If the ability to maintain minimum nutritional needs is the distinction between rich and poor (Sen 1981, Appadurai 1984, 482), then those whose nutrition does not allow them the surplus energy required to engage in politics should be considered a class – the disenfranchised. Indeed, vulnerability, as Drèze and Sen (1989, 49) argue, is a state that weakens bargaining position – enabling, for example, labor exploitation. That bargaining position is also part of the material basis of citizenship and representation. Emancipation requires sufficient wealth beyond mere subsistence to enable the individual, household, group or community to walk away from daily labor long enough to engage in shaping the political

economy that shapes their entitlements. Substantive citizenship is that ability – the ability to influence those who govern. Substantive democracy is when that influence results in response. Many lack the knowledge (often occluded by design) and skills (withered by exclusion), as well as the time (subordinated to survival), needed to exercise influence.

Almost 40 years ago O’Keefe, Westgate and Wisner (1976) wrote ‘Taking the naturalness out of natural disasters’ (see Watts 1991, 231, Manyena 2006, 439–40). With the culturing out of nature, the sociality of wellbeing and crisis should even be more evident today. While one might think that calling our era the Anthropocene would turn attention from nature back to people, it oddly guides gazes back toward hazards. So, in the Anthropocene, the struggle is still to maintain attention on the social and political production and reproduction of risk. The framing outlined in this contribution presents an integrative analysis of the social and political-economic causes of vulnerability – with the hope of generating a socio-centric Anthropocene, so we can perhaps make it to the sociocene or democene. Whatever we call it, in climate analysis as in politics, it is always a struggle to represent the social. As the framing in this paper shows, we need to characterize and know of hazards, but we do not need to explain hazards – even if anthropogenic – to understand the origins of vulnerability, which is produced on the ground. Treating hazards can change outcomes. But mitigation is not vulnerability reduction – although it can help avert damages. Vulnerability resides in the pre-hazard precarity of people.

There are dozens of definitions of vulnerability (Manyena 2006, 440, Miller *et al.* 2010). Like adaptation and resilience, none are complete nor could they be. The definition is contingent on the object at risk and the values that one is hoping to preserve, restore or eliminate (see O’Brien 2011, 545). The choice of theory is itself social – aiming at some outcomes, preserving some values over others (Beymer-Farris *et al.* 2012). But once one is aware of what their objectives are – reduction of hunger and famine or sovereignty and security of agricultural systems – then it is important that they have a coherent analysis of causality. Causal analysis, problematic or not, theoretically singular or fragmented, is necessary. ‘The multiplicity of definitions is a reflection of the philosophical and methodological diversities that have emerged from disaster scholarship and research’ (Manyena 2006, 440).

Vulnerability reduction measures, of course, do not only derive from understanding causes. Indeed, some causes may be (or appear) immutable, others no longer active, transient or incidental. Redressing direct causes may not always be part of the most effective solutions (Drèze and Sen 1989, 34). The objective of vulnerability analysis is to identify the active processes of vulnerability production and then to identify which are amenable to redress. Other interventions can also be identified that are designed to counter conditions or symptoms of vulnerability without attending to their causes – such as support for risk-pooling strategies or targeted poverty-reduction disaster relief. All forms of available analysis should be used to identify the most equitable and effective means of vulnerability eradication.

The contribution of adaptation studies is to complement vulnerability analysis with a fuller picture of how innovations shape our world – and to hammer that knowledge into action. Climate-adaptation scholars are aware that ‘adaptations’ – an ecological term – are not the natural random work of Darwin’s evolution. As Arendt (1960, 460) points out, the miracles of evolution are authored by probability whereas we know the author of the even more frequent miracle of political change through women and men ‘... who because they have received the twofold gift of freedom and action can establish a reality of their own’. She places cause (and responsibility) for change and innovation within society. In this sense, ‘adaptive capacity’ becomes something that must be explained

socially. Like any contribution to vulnerability or wellbeing, innovation is socially enabled. It is part of the causal (and reparatory) chain of vulnerability.

The freedoms to act and to innovate follow from rights and representation. As we see vulnerability and adaptation analysts and agencies turning more and more toward 'rights-based' approaches to natural resource management and climate change (Roberts and Parks 2007, McDermott *et al.* 2012, Walsh-Dilley *et al.* 2013), it is important to keep in mind that the fundamental right is the right to influence those who govern and to engage in the making, scrutiny and implementation of rights. Somers (2008) considers the right to have rights the fundamental right that defines citizenship. But the right to shape rights is even more important – this is the right to the means and freedoms to influence those who govern. This is emancipation.

Representation is one means by which individuals, households and groups can shape the political economy that shapes their entitlements. Social movements are another (see Luhmann 2002, 138–41, Peet and Hartwick 2009, 286–7). The criterion Fraser (2008) calls for is participatory parity. This does not mean symbolic forms of participation without real influence over the projects in which people participate (Ribot 1996, Swyngedouw 2005, Mansuri and Rao 2012). The ability to influence authorities and the rules they make and implement produces the very entitlements that spell security and create the flexibility that enables people to buffer themselves against the unpredictable but expected stresses of life. Of course, to be functional, representation requires powers – representatives need discretionary authority, means and resources to respond to people's needs and aspirations; people must have resources and knowledge to act as citizens to influence those who govern (Ribot *et al.* 2008). Poverty is not only a basis of vulnerability but it is also disenfranchising – undermining the ability of the poor to influence those who govern.

To be represented is to be seen and responded to. To demand representation is to see the possibility of response. Making vulnerability legible is part of the process of understanding where those possibilities lie – the job of research and of voice. The legibility that churches and governments produce is matched with occlusions and illusions that divert attention. They do not want citizens to see what they see – they want to externalize causality so that citizens and victims displace their frustrations onto God and nature or turn them on themselves. Citizens must insist that government sees, and they must show that citizens know their rulers know. It is in this context where citizen sanctioning of government could result in response. To insist on security requires knowledge of vulnerability, its causes, and the channels of possible redress. It requires the material resources and time to analyse, organize and exercise the counter-power that translates voice into response. The obvious question, with no obvious answer, is 'how' to create such representation or parity given the asymmetries of power in society and the vesting of authority in science and expertise.³⁵

Polanyi (1944) described capitalism's double movement in which capital can destroy its very inputs – labour and land – but people respond to the risks and damages by demanding protections. Fraser (2011) sees a third, emancipatory, movement, demanding that both capitalism and social protections be subject to public scrutiny. Capitalism can be both damaging and emancipatory. The rules that guide it and its effects need to be disciplined and subject to public judgment. Social and environmental protections too provide shelter from the downsides of capitalism – e.g. the systems that generate and shroud risk. These social and environmental protections – social security systems, fortress conservation and

³⁵Thanks to Tim Forsyth for this pertinent query.

climate policies – also affect redistributions with negative and positive consequences. Rights of recourse and representation must constantly be asserted and re-asserted to make visible and to subject to public scrutiny the links between risk, cause, responsibility and blame as they shape the interdependence that makes sustainability of life possible (Butler 2009, 14, 23).

One of the two fabulous external reviewers for this contribution asked ‘how far can a climate process be expected to go in correcting all past wrongs’ and ‘must all climate researchers also be responsible for analyzing all underlying social issues’. My answer is that any environmental intervention can go very far, and ‘yes’ this is our responsibility. Without being aware of the past, as in all areas of endeavour, climate researchers are likely to reproduce and deepen past wrongs. Hence, a grasp of the past or serious partnership with vulnerability analysts is not optional. This reviewer continued, ‘The kinds of institutions, processes and forums that could enable the fundamental changes you call for do not yet exist’, and asked ‘What can your paper contribute to helping us imagine them into being?’ They do exist in some places at some times for some people. This essay is part of imagining them into broader being. ‘Society is positively transformed by showing, through criticism, what most needs changing and in which particular ways’ (Peet and Hartwick 1990, 282). If we, as analysts or activists, insist on requiring that all interventions enable democracy, and we insist this demand be enforced, we may help force the hand of practice – by mobilizing liability, sanction or exposure and shame. I do not want to act or be in a world that does not try. Democracy is an ongoing struggle. It is not a state to be arrived at. It will come and go in degrees. Trying is the struggle that produces emancipatory moments – however ephemeral they may be. The fleeting joy and creativity of freedom seem worth it.

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