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From vulnerability to resilience: Hans-Georg Bohle's scholarship and contemporary political ecology¹

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Abstract

Resilience as a concept, along with its siblings security and risk, has emerged as a crucial aspect of the technologies of contemporary governance and neoliberal rule. Building resilient persons, communities and institutions is the sine qua non of twenty-first century forms of liberalism. Resilience provides an indispensable roadmap by which all of us are purportedly able to anticipate and tolerate the disturbances, dangers and radical contingencies of inhabiting a complex world in which, to quote the President of the Rockefeller Foundation in its new resilience manifesto, "we cannot predict where the next major shock to our well-being will manifest". Resilience thinking has made use of, and incorporated, the notion of vulnerability developed by Hans-Georg Bohle and other political ecologists. But in doing so the body of work which links socio-ecological complexity, resilience thinking and risk management, has deprived critical political ecology (and concepts like vulnerability) of their critical edge. My focus will be on issues of food, famine and climate – topics of great interest to Hans-Georg Bohle and indeed on which he published extensively – and what resilience theory may, or may not, have to offer in light of the vulnerability analyses of the sort developed by Bohle and others.

Zusammenfassung

Das Konzept der Resilienz hat sich, neben den verwandten Begriffen 'Sicherheit' und 'Risiko', zu einem der entscheidenden Aspekte der Vorgehensweise gegenwärtiger Governance und neoliberaler Herrschaft entwickelt. Die Schaffung resilienter Personen, Gemeinschaften und Institutionen ist zu einer *Conditio sine qua non* des Liberalismus des 21. Jahrhunderts geworden. Resilienz liefert einen unverzichtbaren Fahrplan, mit Hilfe dessen wir alle angeblich in der Lage sind, die Störungen, Gefahren und radikalen Eventualitäten des Lebens in einer komplexen Welt vorherzusehen und zu ertragen, in einer Welt, um die Präsidentin der Rockefeller Foundation aus deren neuem Resilienz-Manifest zu zitieren, in der „wir nicht vorhersagen können, was sich als nächster größerer Schock für unser Wohlergehen erweist“. Das Resilienz-Denken hat dabei Gebrauch gemacht von dem Begriff der Vulnerabilität, den *Hans-Georg Bohle* und andere Vertreter der Politischen Ökologie entwickelt haben, und hat diesen für sich vereinnahmt. Aber auf diesem Weg haben die Arbeiten, die sozial-ökologische Komplexität, Resilienz-Denken und Risikomanagement miteinander verbinden, die Kritische Politische Ökologie (und Begriffe wie z.B. Vulnerabilität) ihrer kritischen Schärfe beraubt. Im Zentrum meiner Ausführungen stehen Fragen der Ernährung, des Hungers und des Klimawandels – Themen, die für *Hans-Georg Bohle* von großem Interesse waren und über die er umfangreich publizierte, und es geht um die Frage, was die Resilienz-Theorie uns anbieten kann – oder nicht anbieten kann – im Licht der Betrachtung der Vulnerabilitätsstudien, wie sie *Bohle* und andere entwickelt haben.

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Geographies of vulnerability can ... be conceived as complex social spaces, as geographically and historically specific networks of entitlement and power relations ... The geographies of vulnerability to violence are therefore social maps that represent dynamic patterns of social and economic, political and military, institutional and cultural practices that are constantly adjusted and readjusted to shifting logics of violence.

Hans-Georg Bohle, Geographies of Violence and Vulnerability

The motto of neoliberalism is: Live dangerously.

Michel Foucault, The Birth of Biopolitics

One of the great pleasures of working with *Hans-Georg Bohle* – I was the beneficiary of a sabbatical visit that he made to Berkeley in 1993 – is that he thought visually and pictorially. In our discussions of what distinguished particular forms of vulnerability among say rural peasantries in the Sahel or marginalized communities in Sri Lanka, *Hans-Georg* would typically resort to a picture or a sketch of a set of social relations or processes. He possessed the great ability to capture something important graphically, and indeed this was how our paper on vulnerability published in *Progress in Human Geography* in 1993 (*Watts and Bohle* 1993) came to take shape and substance. I am struck by the degree to which many of his contributions are examples of what one could call geographical pictography. His important article on geographies of violence in *Erdkunde* in 2007 (*Bohle* 2007) from which I have taken a quotation is a compelling case in point. Picturing and representing is, of course, fundamental to social science and I emphasize these qualities in *Hans-Georg's* work because it is central to the way in which he conceived of vulnerability in social systems, and I think, too, is key to how he thought conceptually, not the least of which was the linking of particular concepts and processes – for example networks of entitlement and power, or social maps of complex processes (economic, political, cultural, institutional) that intersect with logics of violence. In a word, I would say that *Hans-Georg* thought dialectically.

My emphasis on *Bohle's* distinctive approach to vulnerability is related to the arc of my broad concern in this contribution, namely how vulnerability has since his writings on the topic in the early 1990s become attached to three other keywords – or concepts – in novel ways that dominate both current analytical and prescriptive work across many domains from global poverty to conflict to urban governance to global pandemics and financial crashes: namely security, resilience and risk. Take for example, the new book by the President of the Rockefeller Foundation, *Judith Rodin*, entitled 'The resilience dividend'. She has, according to the blurb on the back cover, recalibrated the foundation to address the disruptions, shocks and stresses associated with our interconnected world. In this age of complexity, says *Rodin*, the ability to quickly and effectively bounce back is an urgent social and economic issue. The five characteristics of resilience (*Rodin* 2014: 14) – awareness, diversity, integration, self-regulation and adaptiveness – provide the building blocks of the "adaptive cycle" – a four-phase model integrating the ideas of *Brian Holling* ("resilience"), *Jay Forrester* ("systems thinking") and *Joseph Schumpeter* ("creative destruction"). *Rodin* is of course not alone. In our times, resilience has become a keyword (*Williams* 1985) for understanding the challenges of inhabiting and living with the consequences of the Anthropocene (*Schoon* 2006).

In this sense one might say that resilience as a concept (along with its siblings security and risk) has become a powerful technology of contemporary governance and neoliberal rule². Building resilient persons, communities and institutions is the *sine qua non* of twenty-first century forms of liberalism. Resilience provides an indispensable road-map by which all of us are purportedly able to anticipate and tolerate the disturbances, dangers and radical contingencies of inhabiting a complex world in which, to again quote the President of the Rockefeller Foundation in its new resilience manifesto, "we cannot predict where the next major shock to our well-being will manifest" (The Rockefeller Foundation 2013: 1). The argument I want to make is that in incorporating vulnerability into what is now a rather major academic industry operating under the sign of socio-ecological complexity, resilience thinking and risk management, much of the critical edge – the dialectical quality – of *Bohle's*

work has been lost. My focus will be on issues of food, famine and climate – topics of great interest to *Hans-Georg* and indeed on which he published extensively – and what resilience theory may, or may not, have to offer in light of the vulnerability analyses of the sort developed by *Bohle* and others.

Thinking through resilience

“Knowing when and how to exploit uncertainty to invent a new and better future is *equally a prominent feature of the adaptable, flexible and enterprising subject of resilience*” (*O'Malley* 2010: 505-506, my emphasis).

Discursively and practically, climate change represents, in today's security argot, a planetary emergency: it encompasses, and has direct consequences for, two of the most basic human provisioning systems: food and energy. The climate-energy-food nexus mobilizes powerful actors around the threat of massive, catastrophic risks and uncertainties – that is to say, it confirms and endorses the prescriptive need for biosecurity broadly construed. Central to contemporary iterations of security – and how concepts like vulnerability are deployed – is a construal of the nature of life itself, drawing upon the molecular and digital sciences, namely complexity, networks and information, which shapes the nature of what is to be governed and how (the latter, as we shall see, entails a construal of both the liberal security state and of neoliberal political economy). If life is constituted through complex and continual adaptation and emergence it rests upon a sense of radical uncertainty in which danger and security form an unstable present, what *Dillon and Reid* (2009: 85) call “the emergency of its emergence”, or a life “continuously becoming dangerous” (see also *Lentsoz and Rose* 2009; *Collier* 2008). *Ash Amin* sees this as the condition of calamity, or catastrophism: “The recurrence, spread, severity and mutability of the world's natural and social hazards are considered as symptomatic of this state (of permanent risk), and its latent conditions are understood to be too volatile or random and non-linear to permit accurate prediction and evasive action. In the apocalyptic imaginary, hazard and risk erupt as unanticipated emergencies, disarming in every manifestation and in every way” (*Amin* 2012: 138).

Two things can be said about this state of emergency (see *Agamben* 1998). First, while there remain impor-

tant differences across different domains of life, there are nevertheless close family resemblances between the climate change/energy/food nexus and how traditional biosecurity threats – bio-terrorism, emerging illnesses and trans-species epidemics – are configured and enacted. For *Melinda Cooper* (2008) these commonalities share deeper state-led entanglements that conflate and draw together molecular research and the informational sciences, speculative finance and war. As a particular ontology, catastrophism and a life of radical precarity has produced a distinctive (perhaps a distinctively new) culture of risk and risk (and fear) management. This ontology is what *Laurent Berlant* (2007) calls an “actuarial imaginary”, an assemblage made up of the institutions, technologies, techniques and ethics the goal of which is to maximize security, profitability and well-being. These wide-ranging threats are potentially catastrophic, often vague and spectral but always promising the prospect of an imminent disaster (*Anderson* 2010: 779-780). Climate and food for example are all stitched together into a new security fabric common to all threats and dangers, inevitably shaped and framed by the events of September 11th, by global US military mobilization, what *Dillon and Reid* (2009) call the “liberal way of war”, and the hegemony of the marketplace. In all such disaster talk, the threat is already present, an incubus that can be discerned and visualized through a series of signs, early warnings and simulations (*Anderson* 2010).

And second, if disaster is imminent it is also indeterminate in a way that prioritizes what *Jane Guyer* (2009) calls the “near future”. Anticipatory actions become, as a result, the defining qualities of modern liberalism (everyone, *Donald Rumsfeld* famously said, needs to be proactive and not reactive, less bureaucratic and more like a venture capitalist). Preemption, precaution and preparation are its key deployments – or political technologies – through which a wide range of crises and challenges are to be confronted (*Anderson* 2010; *Amin* 2012). *Anderson* captures the matter brilliantly: The question is how to protect certain forms of valued life that revolve around a future – always uncertain, life-threatening and full of surprises – that diverges from both the past and present? What constitutes governance and action “in the here and now before the full occurrence of a threat or danger” (*Anderson* 2010: 780)?

The securitization of life (*Floyd* 2010; *Buzan and Wæver* 2009) is no less visible in the policy shift from climate change mitigation to adaptation in responses to the inexorable, if unpredictable perturbations and

threats associated with global warming (Adger et al. 2009; Adger 2006). In light of what is, in the short and medium term, an unassailable trend, the question is therefore how do governments, cities, societies and economies withstand and bounce back from the consequences of climate change? How is life expected not only to endure but also to return to some sort of normality? How are forms of life expected to reset themselves, bouncing back into orderly patterns and routines? Central to the way these questions are now framed – and to the potentially catastrophic consequences of climate change with all of its radical uncertainties – is the notion of resilience, understood analytically and normatively, in relation to the new and perhaps unprecedented vulnerabilities of inhabiting the Anthropocene. Resilience's lexicon customarily encompasses process, disturbance as opportunity, self-organization, adaptive capacity, acceptance of uncertainty, non-equilibrium dynamics, dynamic learning, flexibility, performance and stress absorption (see Bahadur et al. 2010).

Nowhere is this resilience talk more visible than in the space – both geographical and discursive – in which poverty in the Global South meets up with global climate change, and nowhere is this meeting point more salient than in sub-Saharan African and especially the semi-arid Sahel where survival in drought-prone environments is the central existential challenge. Almost a quarter of a billion Africans suffer from hunger and malnutrition. Nobody seriously expects that the Millennium Development Goal (United Nations 2012) of halving the number of hungry people between 1990 and 2015 will be met in Africa – or indeed globally. The incidence of famine – and famine mortalities – has probably declined since the 1960s, leading some like Cormac Ó'Gráda (2009: 278) in 'Famine: a short history' to refer to contemporary food crises as "small-scale famines". Yet Africa, and Sahelian Africa in particular, remains a striking outlier. In 2011 some 10 million people were drawn into the clutches of the terrible food crisis in Somalia, Kenya and Ethiopia. In 2012 the UN called for a massive food-aid mobilization in view of a looming subsistence crisis in the Sahel; according to the World Food Program over 8 million people will require "life-saving food assistance". The Sahel, now seen geopolitically as a new front in the prosecution of a counter-insurgency against radical Islam, is one of the regions on which, according to the Intergovernmental Panel on Climate Change, the deadweight of global warming is about to fall. From quite different political vantage points –

Christian Parenti (2011) from the left, United States Department of Defense (2011) on the right – this new conjuncture of violence, poverty, food shortage and climate change defines the coming apocalypse, the 'tropic of chaos' as Parenti calls it. The Sahel is a prime exemplar of catastrophism cutting across the ideological spectrum (Lilley et al. 2012).

This current Sahelian food and environmental crisis on its face seems to be a tragic replay of the terrible famines that captured the world's headlines four decades ago. Indeed one of the signal lessons to have been learned from the serial failures to improve food security and life chances in the arid-lands of West Africa, is that the boundary lines between mass starvation and the *longue durée* of permanent hunger and undernourishment are porous and flimsy. Existentially, what we are witnessing is something close to slow death, a death by attrition: "The phrase slow death refers to the physical wearing out of a population and the deterioration of people in that population that is very nearly a defining condition of their experience and historical existence" (Berlant 2007: 754). In the Sahel, slow death and the radical reduction of human existence to bare life (Agamben 1998) is the deepest expressions of what Mike Davis (2000) in 'Late Victorian holocausts' properly called the war over the right to existence.

In short, in a world of new risks, uncertainties, vulnerabilities, turbulence and surprise, how is life to be made secure among some of the poorest and most vulnerable communities on the face of the earth? In place of the managed environmentalism of the 1970s and the neo-Malthusian models when drought was central to the analysis of the great Sahelian famines of the late 1960s and early 1970s, is a new language turning on resiliency and adaptive community institutions linked through market governance (WRI 2008; Gubbels 2011). Gone is the older language of overpopulation, incomplete markets, poor transportation and local management deficits; gone too is any lingering sense of state welfare. The radical (if unpredictable) and life-threatening effects of global climate change – global climate change models are robust on system dynamics but weak on local predictions – is antithetical to the sort of predictive modeling exercises practiced by the Club of Rome four decades earlier. The old modes of calculation – the insurance-based logic of calculable risks assessed through probabilities – are replaced with modalities that can still render the uncertain future thinkable, an imaginary that can be prepared for, pre-empted, remediated. It is at

this point that culture – especially institutions, many of which are indigenous or hybrids of local custom and post-colonial development institutions – meets up with resilience and theories of complex adaptive systems. Its function is to incorporate social and economic systems in an overarching complex science of ‘socio-ecological resilience’ rooted in civil society (Adger et al. 2009; Holling 1986, 2001; Folke et al. 2005). Local knowledge and practice, notions of vulnerability and exposure have been grafted onto a new turbo-charged systems theory, derived in particular from the work of ecologist C.S. Holling (1973) and his associates, and have been brought together in a highly influential think tank called the Stockholm Resilience Center. Resilience is a risk-management tool – adaptive co-management is the term of art – for African development (Mitchell and Harriss 2012) and for a vulnerable and crisis-prone Sahel crisis (see Gubbels 2011). African communities can now be fine-tuned, paradoxically building on their traditional strengths (for example, the social capital of village communities or city slums) yet supplemented by the expertise of development and state practitioners (Adger 2006).

It is no accident that the operations of the humanitarian international – most particularly in disaster management, in adapting to climate change, and in the field of famine relief – have shifted their gaze from vulnerability (the identification of vulnerable populations and how to target them) to resilience (Grove 2014). That is to say vulnerability is now rolled into a more embracing analysis of how resilient socio-ecological systems function. Confronting budget cuts and an increase in disaster costs, the multilaterals are not only concerned to identify vulnerable classes – that is to say victims, solidarity and state assistance – but also self-reliance, participation and community and popular capacities to confront crises (Reghezza-Zitt et al. 2012). Resilience is propounded as a more flexible strategy than either prevention or mitigation; it is validated through the capacities of individuals, organizations, households and communities to self-organize and adapt. The UN Office for Disaster Risk reduction (UNISDR) in its foundational report ‘Living with risk’ (2004) rescued the notion of adaptation to “hazards that can affect anyone, anywhere”. A policy of resilience, they say, demands a consideration of almost every physical phenomenon on the planet. Resilience is nothing if it is not capacious in its remit.

The UN Resilience Framework powerfully illuminates the pre-requisites and normative expectations for re-

silience, understood as a set of practices and as a normative goal, to be achieved. Uncertainty is an opportunity and a challenge; it is central to life itself (to all living systems as the Resilience Alliance would have it). Exploiting the omnipresent threat of shocks permits and encourages the invention of a new and better future, of a more adaptable, flexible, robust and enterprising subject. It promotes the notion of managing one’s own risks, incubating innovation, personal responsibility and empowerment. In decentralizing authority and resources to promote local-level disaster risk reduction, the UN demands that “citizens, including indigenous communities and other vulnerable populations [who] *must participate, be actively informed, and take individual responsibility*” (UNISDR 2012, emphasis added). Resilience training enables everyone – the capitalist, the poor farmer, the troubled teen, the military grunt – to “live freely and with confidence in a world of potential risks” (Lentzos and Rose 2009: 243). As Pat O’Malley (2011) puts it, in a magnificent turn of phrase, “uncertainty makes us free”.

What is so striking about the climate change-food security talk as a form of catastrophism is that the concept of vulnerability is attached to the language of adaptation and its cognates: adaptive capacity, adaptive strategies, adaptive governance. Since the first IPCC report in 1991, adaptation – defined by IPCC (2014) as “the process of adjustment to actual or expected climate and its effects” – has emerged as the lodestar of public and development policy coincident with the realization that mitigation has receded into a distant future. ‘Adapt now’ is the rallying cry of the moment (or one might say, ‘adapt or die’). Bassett and Fogelman (2013) show how pervasive is the adaptation lexicon not just within IPCC but in the citational world of key research journals. It is a term that has ‘gone viral’ (Ribot 2011). IPCC has worked with a conceptual understanding of adaptation as adjustment that actually harkens back to 1960s cultural ecology. The focus is on proximate rather than structural processes regarding adaptation in social systems, and on passive, reactive or anticipatory adjustments. In the latest IPCC report there is talk of climate-resilient pathways, of the “limits to adaptation”, and the need for “transformational adaptation” (Summary, IPCC 2014: 24-25) but nothing here challenges Bassett and Fogelman’s overall assessment that IPCC operates with a pedestrian, and in many respects, old-fashioned notion of adaptation as “adjustment to climate stimuli” (2014: 49). Adaptation’s revival and rehabilitation, after a long period in which it fell from grace, is seemingly not in question.

It constitutes a hegemonic discourse, anchored now in equally powerful discourses of security, risk management and resilient social systems.

From the vantage point of the political ecology practiced by *Hans-Georg Bohle*, the 'adapt now' mentality is something of a paradox (see *Taylor 2015*). Climate change adaptation and resilience work is unequivocal in identifying the concept's origins in evolutionary biology but it was precisely the flaws of organic analogies that political ecology sought to address. Acknowledging that its definition is disputed and semantically slippery, climate adaptation refers to "processes, actions or outcomes in a system in order for the system to better cope with, manage or adjust to some changing condition" (*Smit and Wandel 2006: 282*). At the very least there are striking resemblances here to earlier research on natural hazards, and stimulus-response models. What appears to be on offer is a recycled version of adaptation thinking of the 1960s associated most closely with cultural ecology, ecological anthropology, cybernetics and systems theory. If the measure of adaptive fitness is now "success or survival of a culture" (*Smit and Wandel 2006: 282*), it has nevertheless been repurposed and rebooted with a new conceptual vocabulary: security, risk, vulnerability, exposure, resilience, adaptive management and governance (see *Adger 2006; Adger et al. 2009; Pelling 2011; Smit and Wandel 2006*). In this second generation adaptive theory, the properties of complex systems – characterized by signaling and information processing, complex collective behavior, non-linearity and a "thoughtful (but perhaps not brilliant) [adaptive] agent" (*Miller and Page 2007: 3*) – assure "continual adaptation and the emergence of cross-level organization" (*Folke 2006: 257*). Resilience provides both a normative and conceptual frame: adaptive capacity builds enhanced resilience. A four-phase "adaptive renewal cycle" (panarchy so-called) undergirds a capacious model of "socio-ecological systems analysis" drawing within its circumference, according to its in-house theoreticians, all that has gone before (*Smit and Wandel 2006; Gunderson and Holling 2002*). And yet it was precisely the limits of adaptation as a form of thought which constituted the very ground on which political ecology and concepts like exposure and vulnerability emerged during the 1970s and 1980s. Minimally one needs to ask, is this old wine in new bottles? How and in what ways does "adaptation 2.0" address the weaknesses of "adaptation 1.0"? And most especially how have concepts like vulnerability, that *Hans-Georg Bohle* did so much

to develop and promote, fared in their incorporation into resilience theory and adaptive governance?

The origins of the political ecology of vulnerability

Political ecology and its concern with vulnerability emerged in the late 1970s from a critique of prevailing cultural ecological and ecological analyses of adaptation (*Rappaport 1968; Vayda and Rappaport 1967*). Its conceptual toolkit was largely drawn from political economy. In particular the withering assaults by *Maurice Godelier (1972)* and *Jonathan Friedman (1974)* exposed not just the mechanistic and often Hegelian character of much of what passed as adaptation theory (the idea that regulation of the environment was happening behind the backs of the actors through cultural thermostats), but the difficulty of seeing how the adaptive structure of societies could be squared with not just the clear patterns of ecological destruction but the questions of power, class, property and access which were central to other theoretical approaches, most especially Marxian political economy. Central to this critique was a suspicion of organic analogies – subjecting social systems to an overriding logic of living systems or ecological rationality as *Godelier (1972)* called it – and the grave dangers of functionalism and a sort of inductive or crude materialism. Social systems seemed to operate like giant servo-mechanisms. As *Godelier* put it: "Here [in cultural ecology and ecological anthropology] we recognize empirical materialism, the 'economism' that reduces all social structures to nothing but epiphenomena of the economy which is itself reduced, through technique, to a function of adaptation to the environment ... a materialism like this is unable to explain the reasons why, the fundamental necessity of what exists, i.e. the reasons why the history of societies that are not always completely integrated totalities but totalities whose unity is the provisionally stable effect of a structural compatibility that enables different structures to reproduce themselves until they reach the point at which internal (and external) dynamics of these systems forbids this totality to go on existing as such" (*Godelier 1972: xxiv-xxv*).

As a number of commentators noted, this form of ecological materialism was innocent of any form of contradiction. *Sahlins* said that ecologic rationalities "exchange ... meaningful content for functional truth" (cited in *Rappaport 1968/84: 308*). *Levi-Strauss (1968: 13)* put it powerfully: "to say that a society

functions is a truism, but to say that everything in a society functions is an absurdity”.

Economic and cultural anthropologists and critical geographers provided a powerful critique of what they saw as functionalist (in their view largely descriptive) analysis. Drawing inspiration from new research on the political economy of peasant societies (in part propelled by the Vietnam war and a reconsideration of peasant radicalism and politics) and on the role of the state in post-colonial development, a generation of political ecologists was shaped by a renewed interest in agrarian political economy, or the so-called agrarian question. Defined by *Kautsky* (1899/1988), the agrarian question was concerned with the ways in which capital was taking hold of and transforming agriculture. Much of this political ecology addressed a post-colonial rural world in the throes of what *Karl Polanyi* (1944) called the ‘great transformation’. Central to political ecology was not systems ecology as such but political economy, and how it shaped or even produced the environments which were, or were not, managed by differing sorts of “land managers”.

Rather than examining the functional adequacy of culture or social structure, political ecology started with the relation of producers to the market, the commodification of land and labor, the forms of surplus extraction and the prismatic forms of social differentiation with peasant communities, the breakdown of the moral economy, emerging forms of class structure and the changing relations of production³. Rather than seeing environmental questions through the prism of society and nature or human response and biophysical trigger, political ecology, drawing on Marxist ideas of the labor process and notions of first and second nature, saw nature and society as dialectically constituted (*Smith* 1984). Environment was not some pre-given context, but was an object that could be construed in different ways by different communities and classes. Political ecology problematised what the environment meant and to whom – a central plank in *Piers Blaikie's* (1985) work on soil erosion for example. What this meant was that the planetary ecosystem was constructed out of “the contradictory unity of capital and nature” (*Harvey* 2014: 248), that capital is a working and evolving “ecological system” in which “nature and capital are constantly being produced and reproduced”. There is no transcendent adaptive or ecological order here, but an ecological system in which capital necessarily privatizes, commodifies, monetizes and commercializes every aspect of nature.

Political ecology constructed a theory upon a more-or-less Marxist analysis of political economy in which the social relations of production, access to and control over resources, and power relations rooted in state and capital figured centrally. The dynamics of specific historical forms of capitalist accumulation – whether in the Brazilian Amazon (e.g. *Susanna Hecht*) or the Himalayan foothills (e.g. *Piers Blaikie*) – were its central starting points. Its object of critique was not only adaptation as such, but also a dominant Malthusianism (‘population pressure’ on the environment) which the rise of ecosystem thinking did little to change. The birth of political ecology was, not unlike its predecessor cultural ecology, a transnational, multi-sited and trans-disciplinary enterprise (though Geography took pride of place). There were four geographically interconnected institutional settings each marked by the appearance of a sort of foundational text focused on field research in four different regions (Africa, Brazil, South Asia and Melanesia). What they all shared was a common engagement – in related but different ways – with the political economy of development and what *Harvey* (2014: 262) calls the “mindless extension of capital’s ecology into our lifeworld”. Systems of access to and control over resources, growing commodification of the resource base and social life, circuits of capital accumulation and the role of the state were absolutely central. Each of these four sites and their founding figures – ANU (*Harold Brookfield*), Berkeley (*Susanna Hecht* and immodestly myself), Clark University (*Ben Wisner*), and the University of East Anglia (*Piers Blaikie*) – questioned not just functionalism and adaptation as a form of thought but also the cost-benefit and behaviorist assumptions of much of the hazards research construed as human responses and adjustments to threats and stressors. Political ecology turned the flashlight inward toward commercialization of agrarian societies, to how communities were being torn asunder and radically reshaped by the twin processes of globalization and to how the exercise of power was indispensable to the understanding of the institutions of property, resource control and market dynamics (*Watts* 1983).

The confluence of differing trajectories that merged to become political ecology not surprisingly contained a number of different points of intellectual departure, reflecting important analytical and institutional differences among its founding figures. The ANU-Melanesia group reflected the sense that *Rappaport's* (1968) account described adaptation without evolution, or as *Harold Brookfield* (1973: 155) put it: eco-

logical function rather than sociological explanation. The sorts of adaptive functions imputed to pig cycles were not about the disposability of pigs but the reproduction of "a whole system of social relationships" rapidly being transformed by cattle, coffee and the advancing frontier of capital. As *Clarke* put it, describing the uplands in New Guinea, the communities were, in fact, at the "edge of a madhouse" (*Clarke* 1977: 372). *Brookfield* himself was drawn to studying the costs of what he called interdependent development and the forms of specialization and risk associated with "the course of development" (*Brookfield* 1973)⁴. In the ANU lineage, the death knell of adaptation was the appearance of *Larry Grossman's* book 'Peasants, subsistence ecology and development in the highlands of Papua New Guinea' (1984, and originally a 1979 ANU Ph.D. dissertation). *Grossman* identified his approach as cultural ecology yet his analysis saw the region through the lens of peasant theory and patterns of social differentiation, that is to say capital at work.

A similar set of developments was reflected in work that linked the Universities of Michigan and Berkeley. *Bernard Nietschmann's* (1973) stimulating cultural ecological study of the Miskito communities on the Pacific coast of Nicaragua entitled 'Between land and water' proved to be a sort of limit case for cultural ecological analysis exposing the sorts of constrictions imposed by adaptation as a framework. By making use of *Marshall Sahlins's* (1972) account of *Marx's* commodity circuit (and implicitly *Karl Polanyi's* (1944) work on markets), *Nietschmann* showed how the central dynamics of Misikito fishing and subsistence systems were increasingly driven by broader market changes, in large measure the commercialization of the turtle industry. My own 1979 dissertation at Michigan – which appeared as a book called 'Silent violence' (*Watts* 1983) when I had relocated to Berkeley – certainly was influenced by these Polanyian insights into patterns of resource use and the politics of "fictitious commodities". But in examining the relations between drought and famine in West Africa I made use of structural Marxism and especially the so-called agrarian question. It was the intersection of markets (the role of merchant capital), patterns of social inequality and climatic perturbations that shaped what sorts of decision peasant households could make in relation to manage risks like drought as well as why the systems of which they were part might collapse (i.e. famines as crises of social reproduction). *Ben Wisner* – who completed his Ph.D. in 1977 working in eastern Africa – was exploring pre-

cisely these issues with students at Clark University, in a different part of the continent, as a way of upending the stimulus-response models of hazard research associated with the scholars at Chicago, Toronto and Clark itself⁵. It was rigorous political economy analysis that demonstrated how vulnerability and marginality (both ecological and socio-economic) was being produced by particular sorts of social and economic exposure rooted in the circuits of capital and in the operations of what passed as state policy.

There were two other settings that proved to be foundational to an emerging political ecology: one was Berkeley Geography, in particular *Susanna Hecht's* work on tropical deforestation in Brazil (1985), a frontier of land clearance and speculation propelled by a powerful logic of political alliances between landed elites and state derived rents and subsidies. The other, centred in the UK at the School of Development Studies at the University of East Anglia, centered on *Piers Blaikie* and his direct engagement with the political economy of development. *Blaikie's* hugely influential work (1985) emerged largely, but not exclusively, from South Asia on the subject of soil erosion and land management. Again adaptation was not the central concern so much as the chains of inter-dependency linking farmers, household, and communities to the state and the world market which shaped – and often undermined – the capacity to manage the land and soil resources.

None of this should infer a common theoretical point of reference among those political ecologists for whom adaptation seemed to confer a set of analytical blinders. For example, *Blaikie* and *Brookfield* were a mix of world systems theory, dependencia, and a very broadly defined (and not unequivocally Marxist) political economy. My own work drew heavily on Althusserian Marxism and the work of *Karl Kautsky*; *Larry Grossman's* book reflected the influence of peasant studies; *Hecht's* initial research on Brazil was shaped by Latin American theories of the state and rent seeking. Subsequent pathbreaking work – one thinks of *Nancy Peluso's* (1992) research on Indonesian forests – drew on social historians like *E.P. Thompson* as much as theories of the post-colonial state or of the peasantry. What they all shared, I think, was a common focus on patterns of accumulation, access to and control over resources, and changing class structure; political ecology could demonstrate that some individuals and households were rendered marginal (to their resource base) and made vulnerable to anti-

pated and unanticipated environmental processes in new ways. Small farmers might be degrading their environment because they had no choice (they were subject to a simple reproduction squeeze; see *Watts* 1983); forests were destroyed in a desperate attempt to establish property rights in areas where the rule of law was lacking; peasants worked harder and longer, often degrading their land, in order to ensure social reproduction in the face of price squeezes. In short, this political ecology had as its reference point what I would call regimes of accumulation, operating at a multiplicity of scales and through complex chains of causation, providing structures of opportunity and constraint – imposed by social relations of production and exchange and by property relations – that shaped how resources, environments and perturbations might be managed and governed.

As a constellation of ideas and approaches, political ecology became, not surprisingly, something of a moving frontier. By the 1990s this first generation political ecology had been broadened in two ways: to put it crudely, to Marx and regimes of accumulation were added *Foucault* and regimes of truth (*Forsyth* 2003; *Li* 2007), and *Gramsci* and regimes of rule or hegemony (*Moore* 2005). The new palette was partly a result of changing intellectual fashion (the growing influence of forms of post-structuralism), partly a function of cross-fertilization with other fields (science studies, race theory, environmental history, green justice), partly a function of the interest of deploying political ecology in First World, industrial and advanced capitalist settings (rather than the world of peasants), and not least because of the blind spots and silences within Marxian political economy. Political ecology had been relatively silent on the forms and dynamics of political contention surrounding the environment (see *Peluso* 1992). Environmental movements, the role of civil society and later armed struggle (militants struggles over forest or oil) pushed political ecology to expand and deepen its understandings of the operations of power. No surprise then that the knowledge-power-institutions nexus, drawing especially from post-structural and discourse analysis, was taken up quickly. Careful examination of forms of environmental expertise, such as how institutions like the World Bank were “greened”, how conventional models of environmental degradation (e.g., the tragedy of the commons) constructed referent objects in particular ways with consequences for policy, and especially a focus on forms of green governance – for example understanding the effects of decentralized governance on forest

regulation or common property institutions, and the politics of differing management regimes – all became central to political ecology in the 1990s which shaped *Hans-Georg Bohle's* work (see *Watts* 2000 for review).

Resilience, complex adaptive systems and the market

Adaptation as a form of thought never really disappeared of course, any more than systems or evolutionary theory lost its appeal in the social sciences with the rise of political ecology. Quite the contrary, over the past two decades, adaptation has returned arguably more robust than ever, attached now to the risks of global climate change and indeed to global threats of virtually all sorts (see *Floyd* 2010). Retooled and re-purposed, adaptation and adaptive governance are put to the service of a new framework, designed to assist in the construction of resilient social systems (*Folke* 2006). Adaptive capacity is, as some of its foremost theoreticians put it, “a core feature of resilient socio-ecological systems” (*Nelson et al.* 2007: 395). In place of the managed environmentalism or neo-Malthusian models of the 1960s and 1970s is a new-fangled language of resiliency, adaptive community institutions and market governance (see *WRI* 2008). Radical uncertainties about the effects of global climate change – global climate change models are robust on system dynamics but weaker on regional and local predictions – are the harsh realities to which adaptive and resilient systems are to be made to speak.

It is at this point that governance and institutions meet up with theories of ‘complex adaptive systems’ (CAS) (see *Miller and Page* 2007) designed to incorporate social and economic systems into an overarching science of “socio-ecological resilience” (*Adger et al.* 2009; *Holling* 1986, 2001; *Folke et al.* 2005). Local knowledge and practice, notions of vulnerability and exposure – in other words the conceptual armory of political ecology – have been grafted onto this new turbo-charged systems theory, derived in particular from the work of ecologist *C.S. Holling* (1973), and brought together in a highly influential think tank called the Stockholm Resilience Center. Resilience is a risk-management tool for the sorts of communities – whether in New Orleans or Lagos or rural Papua – that political ecology saw as under threat or now confronting radical ecological change (or for that matter global terrorism, biosecurity, or financial crises).

In so far as resilient systems embody adaptive capacity, then to the same extent resilience is understood as the amount of change a system can undergo while retaining “the same controls on function and structure” (Nelson et al. 2007: 398) through self-organization, capacity for learning and capacity to absorb change. In resilience talk, adaptation is always coupled with a set of affine terms – vulnerability, capacity and exposure – while being embedded in larger socio-ecological, living, self-organizing complex systems (see Ribot 2014). All of this is then harnessed to governance – adaptive governance is the moniker – which links self-organization to particular sorts of environmental problems (ecosystem restoration in the Everglades or water catchment systems in Kenya). Adaptation to drought in Nigeria would involve adjustments (switching occupations say) and resilience (social networks). The governance of drought related issues involve “building knowledge”, “networking” and “leadership” (Olsson et al. 2006). Not unusually, much of this adaptation and resiliency is draped in the language of community empowerment, adaptive management, community regulation and insurance using market mechanisms. The notion of adaptive capacity with respect to climate change, for example, relies upon a substantial body of research which demonstrates, for example, how rural communities in Africa (and elsewhere) adapt to climate change through mobility, storage, diversification, communal pooling, and exchange by drawing on social networks and their access to resources (Adger et al. 2009; Agrawal and Perrin 2009).

But it is not clear whether the talk of adaptive strategies and networking as ways of framing vulnerability is consistent with the broader theoretical ideas developed by Bohle in his notion of vulnerability as a social space. It is one thing to say that “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) but quite another to move from indicators of exposure to a causal structure of vulnerability and a robust theory of power and circuits of capital. Political ecology, after all, in its account of vulnerability emphasized structures of domination; the community was seen as a theatre that had no simple unity, coherence or equality, but was one in which power was contested and fought over, often violently. In these communities nature is internalized within the circulation and accumulation of capital. All of this – to say nothing of

a broader grounding in social theory – is strikingly absent from the new adaptation studies. Rather what is on offer instead is a bland and bloodless shopping list of “conditions” for adaptive governance, including “policy will,” “coordination of stakeholders,” “science,” “common goals” and “creativity.” A canonical policy statement like ‘Roots of resilience’ (2005) proposes to scale up “nature based income and culturing resilience”, which require ownership, capacity and connection. Ecosystem-based enterprises, rooted in community resource management, will entail local-state and private-civic partnerships and enterprise networking (see Reid 2010; Grove 2014a). But as Evans and Reid (2014) point out, the human subject in this account is resilient to the degree she adapts to rather than resists: “To be resilient is to forego the very power of resistance” (Evans and Reid 2014: 81).

Climate adaptation is now embedded within a view of life understood as a living and complex adaptive system characterized by self-organization, non-linear, combinatorial transactions and radical contingency. Adaptation can only be meaningfully performed through contingency, which is to say through the conduct of shaping our exposure to, and creative exploitation of, contingent events and processes in nature and from the “independent actions and interventions of biological being itself” (Dillon 2008: 315). Contingency and transformation are the modalities of safety and survival, or more properly: qualitative change in the nature of the living thing itself is the condition of possibility of security. Adaptation and resilience cannot be achieved solely by actuarial logic alone but are governed by an anticipatory logic: it seeks not to forestall through calculation but “to incorporate the very unknowability and profound uncertainty of the future into imminent decision” (Amoore 2013: 9).

Irrespective of its specific referent object (drought, youth, finance), the defining quality of virtually all resilience thinking, at least in the social and socio-ecological sciences, is a robust relationship to systemic durability, flexibility and to a culture of preparedness, preemption and precaution (Anderson 2010). But as Dillon and Reid note of contemporary liberal rule, resilience’s reference point is all of life itself, and the practices required to “pre-empt the emergence of life forms in the life process that may prove toxic to life” (2009: 87; see Dillon 2007). Resilience is in the business of forming governable subjects, a technology that, as Neocleous (2013: 4) observes, facilitates the connection between state bureaucracy and politi-

cal imagination. It is, he says, "nothing less than the attempted colonization of the political imagination by the state" (*Neocleous* 2013: 4). In sum,, resilience provides a powerful anticipatory calculus, one of a flotilla of technologies associated with a security assemblage, rooted in a full-spectrum, and in some respects paranoid, social imaginary – a hyper-dangerous and threatening future. It is to this world of possibilistic logic that climate adaptation must speak (*Reid* 2010).

Climate adaptation and resilience, while they enroll concepts like vulnerability and exposure, are textbook illustrations of biopolitics understood as the administration and regulation of life processes (*Lemke* 2011), drawing, however, upon a distinctively modern theory of life as a complex adaptive system. Resilience, as it has emerged as a set of practices deployed by state and civil society groups, forms the basis for addressing the uncertainties and instabilities not simply of nature, but of contemporary capitalism, as well as the national security state, and it does so by endorsing a distinctive form of biopolitics and technologies of the self. Building resilient systems draws upon the adaptive and self-organizing capacities of the market above all else; resilience dissolves directly into neoliberalism understood as a way of life (*Foucault* 2008). At the time that *Holling* was laying out his first ideas, *Friedrich Hayek* delivered his Nobel Prize speech which, as *Walker* and *Cooper* (2011) brilliantly show, has an elective affinity with *Holling's* ideas. *Hayek* was moving toward his mature theorization of capitalism as an exemplar of the biological sciences: the extended market order is "perfectly natural ... like biological phenomena, evolved in the course of natural selection" (*Hayek* 1974, cited in *Walker* and *Cooper* 2011: 158). In his Nobel lecture, he returned to the epistemology of limited knowledge and uncertain future, a position which led him to explicitly reject and denounce the Club of Rome Limits to Growth report. It was to biological systems and complex, adaptive and nonlinear dynamics that he turned to provide the guide for his "spontaneous market order" of capitalism.

The instantiation of resilience thinking as a form of risk management for climate change in Africa is part of a larger set of technologies devoted to "human security". Climate change becomes a market opportunity and source of profit by making contingency a fungible commodity; resilience is a means by which exposure to various contingencies is not just a referent object but a form of commodification (*O'Malley* 2010). Risks multiply and circulate; they are mon-

etized and securitised in a veritable avalanche of forms and norms. Building African resiliency in drought prone regions is in profound ways a sort of Hayekian project: how a spontaneous market order will be built from and out of individual and community self-making and self-regulation through means of calculation and commodification. The details of this construction will be shaped, in the case of the Sahel, by the peculiar exposure to the necessary and unavoidable contingencies of life confronted by poor peasants, slum dwellers and pastoralists across the region. This Hayekian universe of resilience as a way of life is a world of shocks, tipping points, thresholds, and possibly extinction. Resilience frames vulnerability through a calculative metric appropriate for a brave new world of turbulent capitalism and the global neoliberal order. It is a new ecology of rule. Africa's bottom billion provides a laboratory in which the poor will, in this regard, be put to the test: in the Sahel, the test of new and unpredictable turbulences residing at the intersection of global climate change and neoliberal capitalism. On my read this sort of analysis seems very far removed from the sort of insight offered by *Hans-Georg Bohle* when he argued for "contested entitlements and politicized livelihoods in violent contexts". His form of political ecology was deeply sensitive to the ways in which power operated and how this social field of contestation in and around forms of livelihood was always rooted in the complexities of political economy operating at multiple scales through differentiated practice (see *Béné* et al. 2012; *Cote* and *Nightingale* 2012; *MacKinnon* and *Derickson* 2013). Vulnerability as a complex social space constituted through geographically and historically specific networks of entitlement and power relation seems to be resilience theory's blindspot. It is precisely this dialectical relation between social theory and political economy which seems absent in the often anodyne and bland accounts of building resilient communities, drought-proofing rural livelihoods and new forms of adaptive governance.

Notes

¹ This essay is dedicated to my friend *Hans-Georg Bohle* with whom I had the great pleasure and privilege of working. Some of the ideas in the paper are developed in: Now and then: the origins of political ecology and the rebirth of adaptation as a form of thought. – In: *Perreault, Tom, Gavin Bridge* and *James McCarthy* (eds.) 2015: The Routledge handbook of political ecology. – London: 19-49

- ² The various, and often contested, meanings of resilience across social, ecological, engineering and medical scientific fields cannot be covered here (see *Martin-Breen* and *Anderies* 2011 for a review, and also *Bahadur* et al. 2010; *Folke* 2006 has a review of more recent resiliency theory). In brief one can gloss this vast literature by saying that in engineering or 'disease' resilience (returning to normal in the wake of a stress), social psychological (individual and group responses to adversity), sociological (collective and structural aspects of coping with stress), and ecological (complex adaptive living systems). There is considerable debate and ambiguity over the question of whether resilience is a state, a capacity or a condition and how, whether resilience inheres in individuals, communities and institutions and whether it refers to short- or long-term responses. Typologies of resilience and shopping lists of resilience properties abound (see *Brand* and *Jax* 2007 and *Béné* et al. 2013; also *Bahadur* et al. 2010).
- ³ For fuller accounts of the history and development of the field see *Robbins* 2004, *Watts* and *Peet* (2004).
- ⁴ *Brookfield* teamed up subsequently with *Piers Blaikie* to organize the important political ecological text 'Land degradation and society' (1987).
- ⁵ Much of the political ecology work on hazards and disasters was pulled together in *Blaikie* et al. 1994. *Wisner's* critical approach was very much shaped by the Marxist-inspired critical development debates in Dar es Salaam and Nairobi during the 1970s.

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