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Prog Hum Geogr 2010 34: 38 originally published online 8 July 2009

DOI: 10.1177/0309132509338642

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Political ecologies of health

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Abstract: Emerging research within health geography and related fields is attending to the social dimensions of human health. Notwithstanding these contributions, health geography has provided less rigorous attention to the role of political economy in producing disease and shaping health decision-making. Additionally, the reciprocal relationships between health and environment have been underexplored. This paper asserts that political ecology would contribute by examining the political economy of disease, interrogating health discourses, and understanding the interactions between social and environmental systems. The benefits of a political ecology of health are demonstrated through an examination of the HIV/AIDS epidemic in South Africa.

Key words: disease, health, health geography, HIV/AIDS, medical geography, political ecology, South Africa.

I Introduction

The 2008 World AIDS day was notable in coinciding with two events that clearly demonstrated the social and environmental dimensions of human health. The first case involved a growing cholera epidemic in Zimbabwe that resulted in an estimated 12,000 people infected and more than 560 dead by early December. What was remarkable was the insistence by the health community that the national government, and by extension its political and economic programs, was responsible for the outbreak. Dr Douglas Gwatidza, head of the Zimbabwean Association of Doctors for Human Rights, was quoted as saying ‘this cholera epidemic is man-made’ (*New York Times*, 2008), having been produced by the poorly maintained sanitation services and lack of clean water that allowed the disease to spread. While the

World Health Organization announced that the epidemic was mounting, Zimbabwe’s information minister, Sikhanyiso Ndlovu, called the situation under control, and declared that the west had caused the crisis to enable a military intervention. By mid-December, President Robert Mugabe said the epidemic had ended even as health experts warned that the number of cases could surpass 60,000 and that half of the country’s population was at risk. The second case concerns the shifting governmental response to the HIV/AIDS epidemic in South Africa. The resignation of President Thabo Mbeki in September, and subsequent replacement of his long-criticized Health Minister Dr Manto Tshabalala-Msimang, heralded, to many, a new beginning as the government moved away from years of denial and resistance to the distribution of a national anti-retroviral

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(ARV) therapy program. In a sharp break from previous governmental policies, the new health minister pledged to reduce by half the number of new infections by 2011 and ensure that 80% of the people with the disease receive treatment and care. Sadly, this shift came shortly after a report from researchers at the Harvard School of Public Health that estimated that governmental delays in distributing AIDS drugs between 2000 and 2005 resulted in the death of at least 330,000 people (Chigwedere *et al.*, 2008). Additionally, the study reported that 35,000 babies were born with HIV during the same time period because of the government's reluctance to introduce a mother-to-child transmission prophylaxis program using nevirapine. The authors of the report were explicit in stating that the South African government acted as 'a major obstacle in the provision of medication to patients with AIDS' (Chigwedere *et al.*, 2008: 410).

Both of these cases are surely tragic, yet merit attention for demonstrating the role of social processes in shaping human health. Whether it is cholera in Zimbabwe, or AIDS in South Africa, health is structured by political and economic systems that influence the transmission of disease and the ability of health care agencies to effectively respond. These cases also reveal the importance of biophysical processes in creating the conditions that influence the spread of infectious disease or exposure to non-infectious disease. Interest in the social and environmental dimensions of health has expanded in recent years with the health geography subfield generating critical perspectives on the geographies of health (Kearns, 1993; Elliott, 1999; Dyck, 1999; Kearns and Moon, 2002; Gesler, 2003; Brown, 2006). Notwithstanding these contributions, health geography has provided less rigorous attention to the role of political economy in producing disease and shaping health decision-making. Additionally, the reciprocal relationships between health and environment have been underexplored. These relationships require greater analysis

to understand how disease transforms the interactions between social and environmental systems, and how these systems in turn shape disease management. While these interactions have been partly examined within the fields of disease ecology (May, 1954; 1958; Hunter, 1990; Haggett, 2000), and medical anthropology (Baer, 1996; Harper, 2004), this paper contends that political ecology has much to add to these studies.

The intention of this paper is to demonstrate how political ecology would contribute to a research agenda on the geographies of human health. Within the last two decades, political ecology has emerged as a geographic subfield intent upon examining the contextual realities of resource use decision-making (Zimmerer and Bassett, 2003; Peet and Watts, 2004; Robbins, 2004). From its beginnings, political ecology has shown how decisions to transform the natural environment are often produced by political and economic systems operating across multiple scales. Political ecology research has also generated alternative readings that challenge conventional ideas about environmental change (Fairhead and Leach, 1996; Robbins, 2003; Turner, 2003) and provided insights into the social production of nature (Castree and Braun, 2001; Swyngedouw, 2004). Despite previous calls for a political ecology of disease approach (Turshen, 1977; 1984; Mayer, 1996), there have been only a handful of studies that are explicit in using political ecology to examine human disease (Kalipeni and Oppong, 1998; Mayer, 2000; Oppong and Kalipeni, 2005; Richmond *et al.*, 2005; Sultana, 2006; Cutchin, 2007; Baer and Singer, 2008; Hanchette, 2008). Yet, at the same time, other research is either considering how health is 'biosocial' (Mansfield, 2008: 1015), exploring the intersections between health, social representations and biopolitics (Nichter, 2008), or drawing upon Foucault's concept of biopower to examine state control over life and death (Mbembe, 2003). This paper builds upon these studies to outline the

benefits of political ecology to research on human health. I argue that political ecology offers a needed framework for understanding how social and environmental systems intersect to shape health across spatial and temporal scales. Political ecology has demonstrated a commitment to mixed methods and multiscale analysis that would illustrate how health is embedded within social networks that increase vulnerability to disease and shape health decision-making (Rocheleau, 2008). The field has also shown an interest in uncovering social and environmental narratives that challenge representations produced by powerful institutions. I argue that a political ecology of health would generate new insights into the political economy of disease, interrogate health discourses produced by actors and institutions, and show how health is shaped through the relationships between social and environmental systems. While these have been areas of emphasis within health geography and related fields, this paper asserts that political ecology provides a framework to address them in concert.

In order to accomplish this, the first section of the paper provides a review of health geography emphasizing its specific concerns for the places and landscapes of health, critical social theory, and social relevancy (Kearns and Moon, 2002). The paper then reviews the growth of political ecology and its application to research on human disease. The third section of the paper examines the HIV/AIDS epidemic in South Africa, paying particular attention to the sociopolitical and discursive dimensions of the disease. While HIV/AIDS is dramatically reshaping economies and agricultural systems (Barnett and Blaikie, 1992; Bachmann and Booyen, 2004; Negin, 2005; Barnett and Whiteside, 2006), new research is uncovering the ways in which social processes structure the impacts of the disease and the ability of institutions to deliver care (Hunter *et al.*, 2007; Posel *et al.*, 2007). Individuals and households within rural South Africa remain

dependent upon the natural environment to generate income and meet subsistence needs; therefore, the interactions between human populations and the environment are critically important in providing a safety net while offering possibilities for recovery. This paper draws upon political ecology research that attends to biophysical processes in order to understand how the relationships between social and environmental systems create 'different scales of mutual relations that produce distinctive political ecologies' (Zimmerer and Bassett, 2003: 3). I argue that political ecology's focus upon the interactions between social and environmental systems is needed to understand how families respond to disease over time, and how these systems in turn shape disease management and the opportunities for healthy decision-making. The paper concludes by outlining how political ecology would contribute to a research agenda on the geographies of human health while simultaneously demonstrating the importance of geography to research in cognate fields such as social epidemiology and public health.

II Health geography: places and landscapes

Geographic research on human disease has been concentrated within the subfield of medical geography, which has focused upon the spatial and ecological dimensions of human disease and health care delivery (Andrews and Evans, 2008). A central feature of medical geography has been the use of the biomedical model that views humans and disease in biological terms. Absent from the model is a systematic analysis of social processes that influence disease exposure and transmission (Mishler *et al.*, 1981). The disease ecology tradition in medical geography is particularly germane to this paper, as research in this area has worked to demonstrate how the relationships between human populations and the environment contribute in producing disease (May, 1958; Mayer, 1996). As Mayer (1996: 441) explains, disease ecology

examines how 'humanity, including culture, society and behavior; the physical world, including topography, vegetation and climate; and biology, including vector and pathogen ecology, interact together in an evolving and interactive system, to produce foci of disease'. Disease ecology shares an interest with political ecology in analyzing social and environmental interactions, and in fact an early call by Mayer (1996) for a political ecology of disease approach emphasized the links between these fields. Gesler (2003) suggests that medical geography has expanded into several new areas since the 1980s, including studies on the distribution of health services (Mohan, 1991; Cromley and Albertsen, 1993), health inequalities (Hayes, 1999; Smyth, 2008), and the relationships between gender and disease (MacIntyre *et al.*, 1996). The concept of place has also been utilized to examine the places of health (Moon, 1995; Williams, 1999; Smyth, 2005) and to explore the intersections between health care and cultural and social geography (Gesler, 1992; Gesler and Kearns, 2002; Andrews and Evans, 2008).

There has been considerable discord as to whether these research directions constitute an expansion of medical geography, or whether they represent a new field often referred to as health geography. In an early argument for a 'post-medical geography of health', Kearns (1993: 144) suggested that the concept of place served as a central element for a reformed medical geography that would expand beyond its traditional boundaries to appreciate health and personal well-being. This prompted a strong response that place had always been part of medical geography, particularly within the disease ecology tradition (Mayer and Meade, 1994). As Mayer and Meade (1994: 104) argued, 'disease ecology is so inherently concerned with the notion of place that implicit in disease ecology is the fact that diseases, vector habitats, and adaptive and maladaptive human responses to disease help to characterise place'. Kearns' challenge

to integrate social theory into medical geography also prompted other responses. Some argued that he was not expansive enough and that theorizations of the body and identities were needed (Dorn and Laws, 1994). This argument presaged later work from a more social theoretical perspective, examining the body (Dyck, 1999), or drawing from feminist scholarship to interrogate the gendered dimensions of health (Dyck, 1995a; 1995b; MacIntyre *et al.*, 1996). Still other debates occurred in the journal *Health and Place* regarding the employ of theory within traditional and contemporary medical geography (Litva and Eyles, 1995; Philo, 1996), with Philo (1996) asserting that the subfield was on the verge of engaging with insights from social and cultural theory.

As these debates unfolded, it was more regularly asserted that health geography constituted a distinct field from medical geography, categorized as 'indicative of a distancing from concerns with disease and the interests of the medical world in favour of an increased interest in well-being and broader social models of health and health care' (Kearns and Moon, 2002: 606). This 'decentering' of the medical (Dyck, 1999: 247) draws upon insights from social and cultural geography to engage with new epistemologies of health and to examine often overlooked subject matter such as disability (Butler and Bowlby, 1997; Dear *et al.*, 1997) or sexuality (Brown, 2006). Research on the social dimensions of health has been more critical of the biomedical model, asserting that the model fails to explain many forms of illness because it assumes that 'illness has a single underlying cause, disease (pathology) is always the single cause, and removal or attenuation of the disease will result in a return to health' (Wade and Halligan, 2004: 1398). These insights have been important in broadening the concept of health beyond the absence of disease; rather, health is understood as the relationship of people to their environments in addition to their physical and emotional well-being. Kearns and Moon (2002) suggest

that what defines this 'new health geography' is the use of place for understanding health, the application of social theory, and critical perspectives on the geographies of health. Additionally, landscape serves as a metaphor for 'the complex layerings of history, social structure and built environment that converge in particular places' (Kearns and Moon, 2002: 611). The concept of a therapeutic landscape has received much attention within health geography, and Smyth (2005) argues that therapeutic networks between social actors, many of which exist outside of the biomedical model, are critical for study.

Health geography is not only categorized by its theoretical contributions but also its use of diverse methodologies that can include qualitative techniques. This interest was demonstrated in a focus section of *Professional Geographer* that argued for expanding the methods used for examining health topics (Elliott, 1999; Dyck, 1999). While traditional medical geography has often shown a willingness to engage with these approaches, the methodological and epistemological differences warrant emphasis as 'the positivist paradigm that has dominated traditional inquiry, with its focus on geometric space and space as a container of action, is questioned as understandings of space and place are adopted that emphasize their relational, social, and recursive dimensions' (Dyck, 1999: 245). This offers a direct challenge to the biomedical model that is often criticized as a western discourse that privileges elite perspectives. Qualitative methods, including participant observation and ethnography, have been increasingly advocated as a means of revealing alternative ways of knowing and to document the experiences of those living with disease in various contexts.

My concern here is not to resolve the debates within medical and health geography so much as to identify particular areas of convergence with political ecology. Health geography's use of place and landscape offers a direct connection with political ecology, since both of these subfields have shown a

commitment to understanding the particular set of social relations, networks, and experiences that produce place. Political ecology has similarly drawn upon social theory to see place not as a location or portion of geographical space, but as being constructed and reconstructed out of a particular set of social relations, experiences, and understandings (Massey, 1994; 1999; Moore, 1998; Bebbington, 2000; Perreault, 2003). The landscape concept has also been utilized as a way of interrogating the relationships between social actors across multiple spatial and temporal scales, in addition to examining the interconnections between social and environmental systems (Fairhead and Leach, 1996; Batterbury and Bebbington, 1999; Walker and Fortmann, 2003). Although health geography and political ecology share an interest in places and landscapes, there are important contributions that political ecology can make to studies on human health. As the next section details, political ecology provides a theoretical framework that makes political economy and power central to its analysis of the relationships between social and environmental systems. Additionally, political ecology would assist in illustrating how these relationships shape the transmission of disease and ability of institutions to provide effective treatment.

III Political ecology and disease

Over the past two decades, scholars from a number of research traditions, including agrarian studies, human and cultural ecology, development studies and critical social theory, have argued that broader assessments of the interconnections between political economy and human-environment interactions are needed. This has contributed to the growth of the geographic subfield of political ecology, which addresses the links between political, economic and social structures and local resource use decision-making. Political ecology utilizes a scalar approach that examines links between various actors to understand the contextual realities of resource use decisions

(Bassett, 1988; Zimmerer and Bassett, 2003; Peet and Watts, 2004; Robbins, 2004). Because ecological issues involve modes of production, development of local economies, and access to resources, political ecology research examines power relationships that reinforce inequities in decision-making at a variety of scales. As has been more fully outlined elsewhere (cf. Robbins, 2004), Blaikie and Brookfield (1987) were instrumental in constructing the political ecology framework and defined it as:

[combining] the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself. (Blaikie and Brookfield, 1987: 17)

Their study linked local management practices to external processes that demonstrated how choices to degrade the landscape were inherently rational and the product of political and economic systems. Other studies at this time showed how decision-making was tied to external structures and capitalist relations of production that constrained the opportunities available to local populations (Watts, 1983; Hecht, 1985; Bassett, 1988).

Robbins (2004) argues that political ecology has concentrated upon four distinct theses: degradation and marginalization; environmental conflict; conservation and control; and environmental identity and social movement. The degradation and marginalization theme situates environmental change within its political and economic context to show how efforts to improve production systems often result in unsustainable decision-making and inequality. Second, changes to social and environmental practices at various locations contribute to conflict as access to resources and territory are restricted by state authorities, private firms, or elite actors. Political ecology research has also demonstrated how interventions by conservation and development agencies

have marginalized livelihood systems for local populations and criminalized traditional practices (Neumann, 1998; Sundberg, 2003). Finally, Robbins (2004) suggests that political ecology has examined the emergence of political organizations and movements that connect seemingly disparate groups to challenge global political and economic agendas. Because of its divergences in research questions and methodologies, political ecology has been called an 'emblem' (Blaikie, 1999: 131) that brings together a diverse community of scholars and practitioners with different normative concerns, methodologies and epistemological positions. Recent reviews attest to its multiple definitions and often eclectic research interests (Walker, 2005; 2006; 2007); however, I believe political ecology is properly understood as a loosely bounded geographic subfield that offers specific theoretical and methodological contributions to research on human-environment interactions.

Regardless of its many contributions to human-environment geography, political ecology has directed less attention towards understanding human disease and health. One of the strongest calls for the use of political ecology was from Mayer (1996: 449) who asserted that a political ecology of disease approach would help demonstrate 'how large-scale social, economic and political influences help to shape the structures and events of local areas'. In suggesting links between political ecology and disease ecology, Mayer argued that the role of culture, behavior, and other social and environmental factors would be taken into consideration to understand the spread of disease. While Mayer's paper deserves credit for advancing the boundaries of medical geography, I believe it offers a partial view about how political ecology should be applied to research on human health. For one thing, it is difficult to see a strong argument in support of political ecology, as opposed to a vigorous defense of disease ecology. In making the case, Mayer continues to reference the 'rich

work in disease ecology' (1996: 450) and seems unwilling to cede ground to other approaches. This is even more apparent in a later paper that argues that the political ecology of disease approach combines 'the elements of traditional disease ecology with the concepts of political economy' (Mayer, 2000: 948). It remains unclear from these studies how political ecology specifically advances previous research on disease, and whether disease ecology and political economy are so easily reconciled.

Mayer's (1996: 446) political ecology of disease approach also suffers from a misreading of political ecology, which he suggests is best understood as the integration of cultural ecology and political economy into 'one coherent analytical framework'. As the preceding review asserts, political ecology is an expansive field that works through multiple narratives (Robbins, 2004) and competing epistemological positions (Blaikie, 2008). The debates that have unfolded since Blaikie (1985) and Blaikie and Brookfield (1987) helped usher in political ecology hardly support the notion that it is the product of cultural ecology merging seamlessly with political economy perspectives. Rather, some political ecology studies have challenged cultural ecology as being functionalist and deterministic, while others have used poststructural theory to interrogate social and environmental discourses produced by powerful institutions (Escobar, 1996; 1999). Additionally, it is important to specify how political economy is being theorized since there are divergences in disease studies (Turshen, 1977; 1984; Baer, 1982) and political ecology (Moore, 1996; Rocheleau *et al.*, 1996; Peet and Watts, 2004). Research generally classified as the political economy of health has displayed varied perspectives about how political economic systems impact the spread and treatment of disease (Doyal, 1979; Turshen, 1984; Morgan, 1987; Packard, 1989). As Morgan (1987) explained, research at the time was generally aligned with one of three theoretical perspectives: orthodox

Marxist approaches, cultural critiques of medicine, and dependency theories. While dependency theory dominated the field, Morgan (1987: 132) argued that a political economy of health approach should include a 'historical perspective, conflict or dialectical models of social change, and a theory of disease causation that is multifactorial and encompasses social etiology'. The important point here is not that Mayer (1996) overlooks related work on the political economy of health, or provides a narrow presentation of political ecology, but that the theoretical and epistemological diversity of political ecology needs to be fully engaged to properly understand human health.

I contend that a fully engaged political ecology would offer a number of contributions to a research agenda on the geographies of human health. First, political ecology provides a multiscalar analytical framework that demonstrates how disease is embedded within social networks that are produced, and reproduced, over time. As one example, Meredith Turshen (1977) provided one of the earliest arguments for using political ecology to study disease but was not content with bounding the study within the local cultural area. In a direct challenge to the disease ecology tradition, Turshen (1977: 48) argued that the field deemed economic and political processes to be irrelevant, and therefore suffered 'from a failure to consider the relation of people to their environment in all its complexity'. This stemmed from clinical medicine's focus upon the individual rather than the collective, which diverted attention from a holistic analysis of the interaction of people with their economic, political, and social circumstances. Rather than incorporating the biomedical model of disease ecology, Turshen (1977) argued that medical concepts of disease were socially produced and linked to external market systems that benefited elite members of a society. In a later study, Turshen (1984) asserted that understanding health in Tanzania necessitated attention to colonial relationships and spatial

patterns that were linked to political economic arrangements that advanced the power of particular social actors. Turshen's political ecology approach is notable, therefore, in showing the importance of political economy in shaping the transmission of disease across time and space. Additionally, her work demonstrates that human disease exists within competing knowledge regimes that are historical and power-laden.

Second, political ecology research has shown an interest in the conditions that shape disease vulnerability, transmission patterns, and the impacts for social and environmental systems. A clear example of this is what Robbins and Bishop (2008: 751) call 'one of political ecology's least-known and perhaps most traditional works': Tony Barnett and Piers Blaikie's (1992) *AIDS in Africa*. Drawing upon empirical research in rural Uganda, the book attends to what the authors call the 'downstream' effects of HIV/AIDS, referring to the direct impacts for land, intra-household dynamics, regional economies and environments. Rebutting the notion that disease is simply a medical problem, the book outlines the underlying socio-economic structures operating behind the proximate or immediate causes of infectious disease. As with Turshen (1977; 1984), Barnett and Blaikie position individuals and households within larger social networks that expose the underlying structural conditions that contribute in producing disease. Socio-economic patterns, access to medical care and support networks, gendered power relations, production systems, and the survival strategies of households and communities 'all impinge upon a consideration of the ways in which an epidemic such as this affects societies and economies' (Barnett and Blaikie, 1992: 5). An additional feature of the study is its attention to the ways in which biophysical processes influence the impacts of a disease like AIDS. Emphasizing resource entitlements and agricultural production, Barnett and Blaikie outline how the interactions

between social and environmental systems are disrupted following an AIDS death. This adds a needed dimension to research on human health – namely, concerted attention to the reciprocal relationships between health and environment. Additionally, both of these studies show that health is much more than the absence of disease; rather, they reveal the ways in which health vulnerabilities, and the opportunities for healthy decision-making, are socially produced over time.

There has been a growth of studies using political ecology to understand human disease, many of which offer encouraging directions for future research. Kalipeni and Oppong (1998) examine how violent conflict and the corresponding refugee crisis in Africa contribute to the spread of disease. They suggest that the violence that produces refugees specifically disrupts livelihood systems, reduces state health care expenditures, and increases exposure to disease in refugee camps that suffer from poor sanitation and service provision. Their study helps situate the transmission of infectious diseases, such as tuberculosis and HIV, to a number of social processes that increase vulnerability. Robbins and Sharp (2003) address the expansion of chemical fertilizers in the United States to understand the associated risks to water and human health. Employing a political ecology approach, they effectively link household decision-making about lawn care to corporations that produce particular representations of nature in order to market their commodities. Richmond *et al.* (2005) draw upon political ecology to examine the impacts of aquaculture development upon First Nation's perceptions of environment, economy, and health. Their study shows that decreasing access to environmental resources and economic opportunities contribute to negative perceptions of community health and well-being. In a case study from Texas City, Cutchin (2007) applies several theoretical

perspectives, including political ecology and territoriality, to demonstrate the ways in which 'people and places are negatively affected by larger-scale forces, such as state apparatuses and global firms' (Cutchin, 2007: 726). Cutchin also illustrates how the construction of space contributes to health disparities between racial and social classes. Hanchette (2008) argues that high rates of lead poisoning in eastern North Carolina can only be explained through a contextual analysis of historical, social, political, and economic processes. The case study specifically links lead poisoning to historical patterns of tenant farming for tobacco, the increasing mechanization of production, and the transition from an agricultural to a mixed economy.

Building upon these studies, I believe that a political ecology of health would contribute to future research by examining the political economy of disease, interrogating health discourses produced by actors and institutions, and in demonstrating how health is shaped through the relationships between social and environmental systems. In order to make this case, the next section of the paper addresses the HIV/AIDS epidemic in South Africa. It is argued that understanding HIV/AIDS requires an examination of historical and contemporary political economies that were created through the construction of space. Colonial and apartheid authorities utilized space as a mechanism for enforcing racial classification and segregation, and these historical patterns have contributed to producing the places of health in the contemporary era. The spread of HIV/AIDS within South Africa has generated tremendous social struggle, with competing disease discourses structuring the governmental response and ability of health institutions to provide effective care. The section concludes by examining how HIV/AIDS is disrupting social and environmental systems that provide a safety net for populations working to respond to the disease.

IV The HIV/AIDS epidemic in South Africa

The expansion of HIV/AIDS in sub-Saharan Africa has had significant impacts upon demographic patterns, national economies, and agricultural systems (de Waal and Whiteside, 2003; Love, 2004; Murphy *et al.*, 2005; Negin, 2005; Barnett and Whiteside, 2006). South Africa has been particularly hard hit and continues to have one of the largest estimated infected populations in the world. The official HIV infection rate is 18% with roughly 5.7 million people believed to be infected, making South Africa the site of 'the largest HIV epidemic in the world' (UNAIDS, 2008: 40). Recent demographic data attest to the severity of the disease. In 2000, HIV/AIDS accounted for 25% of all deaths, and mortality was 3.5 times higher than in 1985 among women aged 25–29 and two times higher among men aged 30–39 (Fassin and Schneider, 2003). Citing national data sets, UNAIDS (2008) reports that total deaths from all causes increased by 87% between 1997 and 2005, with death rates tripling for women aged 20–39, and more than doubling for men aged 30–44. At least 40% of deaths are believed to be attributable to HIV/AIDS.

Looking at the statistics alone might lead to the conclusion that particular locations or sectors of the population are the site of disease; however, uncovering the processes that produce particular places reveals multiple factors that are critical to understanding diseases such as HIV/AIDS. As one example of this, the construction of space in South Africa was partly a result of aggressive intervention by colonial and apartheid authorities to ensure the most productive land was controlled by the minority white population. The Natives Land Act of 1913 and the Natives Trust and Land Act of 1936 laid the groundwork for spatial segregation, which was intensified by the apartheid construction of the ten bantustans that were promoted as the ideal location for the majority African population. It is estimated that

during apartheid roughly 3.5 million people were forcibly relocated (Unterhalter, 1987), and from 1960 to 1980 the proportion of the total black population living in the bantustans increased from 39% to 53% (Platzky and Walker, 1985). Although the apartheid government claimed agricultural production was viable within these territories, this was belied by the high population densities, lack of investment, and restricted market access for residents (King, 2007). Temporary migration to agricultural and mining centers became a regular feature of life for many South Africans, who were forced to seek employment unavailable in the rural areas. Because human migration can contribute to the spread of infectious diseases, South Africa's history of population movement under colonialism and apartheid has played a role in shaping transmission patterns in the contemporary era. Additionally, employment within industrial sectors, including mining, has been shown to contribute to the spread of HIV. As evidence of this, Campbell (1997) documents how masculine identities are socially constructed within a Summertown gold mine in ways that increase vulnerability. Miners interviewed in the study attested to the difficult work conditions and few opportunities for intimacy as contributing to risky decision-making about sexual activity and condom use. Additionally, social inequalities in income and employment status tend to be associated with greater exposure to sexual activity, diminished access to health information, and delayed diagnosis or treatment (Marks, 2002; Fassin and Schneider, 2003).

The recent shift in the national government's response to HIV/AIDS comes after a period of significant political struggle over the disease. There has been heated debate about the cautiousness of the government's response to the epidemic following the 1994 democratic elections, in addition to a seeming denial of the severity or causes of the disease. Numerous scholars and activists pointed to a 'dissident' position within the government

that downplayed the link between HIV and AIDS or the effectiveness of particular treatments (Makgoba, 2002; Nattrass, 2004; Jones, 2005; Fassin, 2007). Jones (2005: 421) outlines the dissident position as one that 'refuses to accept the orthodox view that HIV develops into AIDS and is sexually transmitted. Rather "dissident" views regard AIDS as the product of other factors, notably, poor nutrition and poverty.' Leading governmental officials, including former President Thabo Mbeki, questioned the link between HIV and AIDS and stated that more research was needed before the African National Congress (ANC) government would broadly distribute anti-retroviral (ARV) therapy. This prompted lawsuits by civil organizations, most notably the Treatment Action Campaign (TAC), that used the Constitutional Court to pressure the state to roll out a national ARV program. In seeking to explain the dissident position, Butler (2005) suggests that the government's response to HIV/AIDS was tempered by a colonial and apartheid history that used public health as a justification for racial segregation. As he explains:

political and economic calculation, in the face of the government's cruel inability to muster human resources for a universal ARV programme, may have further predisposed the government towards delay and obfuscation, and encouraged it to disperse responsibility for the epidemic across society as a whole. (Butler, 2005: 612)

The possible reasons for the government's response to the HIV/AIDS epidemic are beyond the scope of this paper; however, the politics surrounding the disease clearly demonstrate how competing knowledge regimes produce particular health narratives. For some in the South African government, HIV/AIDS was seen as a neocolonial racist discourse constructed by western donors and corporations for the purpose of selling pharmaceuticals (van der Vliet, 2004; Jones, 2005). As Jones states:

Those who promote the 'orthodox' argument that HIV leads to AIDS and that it can be controlled by [anti-retrovirals] are depicted as reinforcing the colonial dehumanization of the African. Indeed, these anti-retrovirals are labeled as highly toxic, and themselves as responsible for death due to side-effects. (Jones, 2005: 426–27)

What is particularly notable about the governmental response was the positioning of HIV/AIDS within a gamut of diseases that officials argued were caused by poverty. Former President Mbeki and other governmental officials regularly asserted that poverty was the underlying cause of AIDS (Sidley, 2000). The former Health Minister, Dr Manto Tshabalala-Msimang, emphasized that HIV/AIDS is not just a health problem, but a development challenge (Butler, 2005). Tshabalala-Msimang also stated that traditional medicines, including the African potato, garlic, and beetroot, should be part of treatment at certain stages of the disease. While there is clearly evidence that socio-economic poverty is associated with the spread of infectious disease (Whiteside, 2002), the government's positions garnered international attention and scorn by health activists who saw them as an attempt to weaken a national ARV program on the one hand, or outright ignorance about the disease on the other.

In addition to the political economy and discursive representations of disease, recent research is demonstrating the significant social and environmental impacts of HIV/AIDS. In documenting perceptions in Limpopo Province, Posel *et al.* (2007: 138) find that there are 'many competing versions of what HIV/AIDS is, what causes it and how it is spread, ranging from scientific explanations to conspiracy theories'. Their study shows that local residents often perceive of the disease in cultural terms, whereby HIV transmission is facilitated through an erosion of cultural norms and traditions. Similarly, Campbell (1997: 275) found that perceptions of health by mine workers were not

dominated by the biomedical model but holistically in terms of a 'harmonious balance between person and environment'. HIV/AIDS is eroding social systems, as elderly women are increasingly responsible for caring for their sick children, or serving as surrogate parents for their grandchildren (Schatz, 2007). There also remain stigmas attached to HIV/AIDS, which has been shown to reduce open communication about how the disease is spread or can be treated (Campbell, 2003; Kauffman, 2004; Hosegood *et al.*, 2007; Posel *et al.*, 2007). Knowledge about HIV is high for some South African youth, for example, but perceived vulnerability and reported condom use remains low (MacPhail and Campbell, 2001). This has caused many researchers to argue that education programs alone are not the solution to preventing disease transmission because health decision-making remains situated within social and gendered norms that increase vulnerability.

HIV/AIDS is also disrupting the interactions between social and environmental systems, many of which remain critical for livelihood production and in providing a safety net following the death of a family member. Research in rural South Africa reveals that households remain dependent upon a variety of natural resources to generate income and meet basic needs (Shackleton *et al.*, 2001; King, 2005). In an extensive study from northeast South Africa, Shackleton *et al.* (2001) conclude that the returns from the collection and selling of secondary resources including fuel wood, construction wood, edible fruits and herbs, and medicinal plants are higher than those paid for agricultural wage labor. The consequence is that the impacts of disease must be understood within a gamut of livelihood practices, including the maintenance of land and resource collection. Hunter *et al.* (2007) identify a number of natural resources that are utilized to offset decreased food production following adult mortality. Their study demonstrates the importance of the natural environment for livelihood production in providing a safety

net for surviving household members. The reciprocal relationships between social and environmental systems merit greater scrutiny, therefore, to understand how human disease reworks demographic and livelihood patterns over time.

V Political ecologies of health

The severity of the HIV/AIDS epidemic in South Africa, along with the cholera outbreak in Zimbabwe, help demonstrate the necessity for understanding the social, political, and environmental dimensions of human health. I believe that political ecology would contribute to a research agenda on the geographies of human health in three specific ways.

First, political ecology would assist in showing how health is situated within political, economic, cultural and environmental systems that intersect to shape the spread of disease and decision-making options available to human populations. Disease vulnerability is connected to environmental factors and, as demonstrated by the concept of environmental justice, can be tied to race, ethnicity, class, and other social categories that experience differential exposure to unhealthy conditions (Walker and Bulkeley, 2006; Cutchin, 2007; Schroeder *et al.*, 2008). Research on environmental justice has shown that political and economic systems structure the conditions that contribute to poor health and help explain variations within societies in the rates of non-communicable chronic diseases such as diabetes or cancer. Political ecology has demonstrated a commitment to mixed methods and multiscale analysis that would show how vulnerability to disease and health decision-making are embedded with social and spatial processes that have contributed to produce the places of disease. As I have argued elsewhere, the construction of space within South Africa established the groundwork for the political and economic formations, social networks, governance systems, access to resources, and other patterns that remain persistent in

the contemporary era (King, 2006; 2007). Contemporary conditions that influence disease transmission, such as a lack of infrastructure or the need to migrate to seek out employment, were created by national and provincial agencies to facilitate particular political and economic agendas. Linking these contemporary patterns of disease to historical spatial economies extends the analysis much further than understanding space as a location; rather, the places of disease are understood as the outcome of social relationships and power dynamics that have been produced over time and through space.

Historical and contemporary political economies are also important in the response to the onset and spread of disease. Disease vectors, for example, are often local phenomena but they are embedded in social networks of power that influence transmission and treatment patterns. Research on HIV/AIDS in South Africa is revealing that home-based care and social networks are important in responding to disease throughout the country. Home-based care, which involves networks between hospitals, clinics, and often volunteers who administer to sick individuals and their families, has received attention in order to produce more effective models of care (Uys and Cameron, 2003). Other work shows that particular generations, and women, are more likely to be infected with HIV (Kahn *et al.*, 2007; UNAIDS, 2008), which makes gender relations and power dynamics critical to understand transmission patterns and the impacts of disease upon families and communities. Fassin and Schneider (2003) argue that social violence and rape, prostitution, and the lack of power for women in negotiating sexual decision-making contribute to the spread of sexually transmitted diseases. These studies reveal that human diseases, including HIV/AIDS, are deeply intertwined within the social and spatial systems in which they are situated. Political ecology provides a framework to understand how these 'webs of relation' (Rocheleau, 2008) contribute to the spread

of disease and shape decision-making power for social actors. Additionally, this assists in understanding human health not as the absence of disease but as existing at the confluence of relationships and social networks that shape vulnerability and decision-making power.

Second, a political ecology of health would seek to understand the ways in which diseases are discursively understood and represented by institutions, and how these discourses align or conflict with local understandings. This approach would assist in revealing the micropolitics and inequities in power that shape access to information, resources, and opportunities. The HIV/AIDS epidemic in South Africa is clearly a discursive, as well as a material, struggle. Local understandings of disease are often different from national representations and remain important to understand to initiate effective treatment scenarios. This is demonstrated by the fact that there exist competing understandings of HIV/AIDS within local communities, and that AIDS deaths are interpreted by some residents in cultural terms (Posel *et al.*, 2007). As Madhavan (2007: 155) explains, 'HIV/AIDS features prominently in the way people think about their lives, in the gender and generational configuration of households, and in the ways in which people organize themselves'. Future research needs to uncover these *subaltern health narratives* that potentially challenge conventional disease orthodoxies produced by the biomedical model, or representations of disease that are created by powerful institutions, including national and international agencies. Among the many benefits this provides would be the identification of failures in health policy that stem from misunderstandings of local practices and knowledge systems. Additionally, attending to the 'techno-political discourses of health' (Robbins and Bishop, 2008: 754) reveals the hegemony of external agendas in which knowledge is produced and the material effects for human populations living with disease.

Third, a political ecology of health would assist in explicating the links between social and environmental systems, how these systems change in response to disease, and how they in turn shape disease management and the opportunities for healthy decision-making. Political ecology has examined livelihood production (Batterbury, 2001; Bury, 2005; McCusker and Carr, 2006), which provides a useful framework for understanding the interactions between social and environmental systems following the onset of disease. Livelihoods research has highlighted the ways in which a shock, particularly a famine, triggers coping strategies that result in a specific sequence of activities (Watts, 1983; Corbett, 1988; Swift, 1989; Ellis, 2000). HIV/AIDS is similarly conceptualized as a shock by some scholars (Ellis, 2000; Cross, 2001; Baylies, 2002) and political ecology would assist in understanding how livelihood systems are specifically transformed by disease. This research would also demonstrate whether human disease needs to be understood as a unique shock from others that have received greater attention in the academic and policy literatures. Although there is evidence for these coping strategies in response to the onset of disease, the degree to which HIV/AIDS follows a similar trajectory remains unclear. The effects of AIDS have been shown to occur over a longer time period, are gradual and incremental, and are generally uneven within communities and regions (Barnett and Blaikie, 1992). Since women in South Africa are more likely to be infected with HIV than men, this has different household responses, and social and environmental impacts, than a famine. While social relations and access remain critical themes to political ecology research, disease involves different spatial and temporal dynamics that need to be rigorously examined to understand the specific impacts for human populations.

In addition to social systems, political ecology can provide critical detail on the reciprocal relationships between health and

environment. HIV/AIDS research has concentrated upon evaluating the impacts of the disease for agricultural systems (Barnett and Blaikie, 1992; Lemke, 2005; Negin, 2005; Barnett and Whiteside, 2006), but other studies are revealing that households and communities rely upon the natural environment in a variety of ways following adult mortality (Hunter *et al.*, 2007). As Drimie (2003) asserts, HIV/AIDS is disrupting land administration systems, land rights of women and orphans, and social networks that are critical in providing a safety net to disease. A political ecology of health would assist in examining the diverse ways in which HIV/AIDS impacts the natural environment, including the collection of traditional medicine and other resource use patterns. Individuals and households draw upon specific resources in response to disease in the short term, thus reworking the long-term sustainability of social and environmental systems. Understanding the relationships between health decision-making and the environment is particularly needed in South Africa since rural populations have disinvested from agricultural production due to state policies and historical spatial planning (King, 2007). This demonstrates the need to broadly interrogate the relationships between health decision-making and environmental change in order to understand how HIV/AIDS is transforming social and environmental systems over time. The reciprocal relationships between health and environment remain important in shaping how disease reworks livelihood security and vulnerability for human populations, while also prompting responses that undermine environmental sustainability.

The intention of this paper was to demonstrate how political ecology would contribute to a research agenda on the geographies of human health. As I have argued, a political ecology of health would generate new insights into the political economy of disease, interrogate health discourses produced by actors and institutions, and show how health is shaped through the relationships

between social and environmental systems. While these are research themes in health geography and related fields, political ecology offers a framework for addressing them together. Political ecology's employ of mixed methods and multiscalar analysis would assist in showing how human health is embedded within social networks that increase vulnerability to disease and shape the opportunities for healthy decision-making. The subfield's commitment to uncovering alternative narratives for social and environmental change would contribute in examining dominant health orthodoxies that may conflict with local understandings. Lastly, political ecology would assist in understanding the reciprocal relationships between health and environment. A political ecology of health is well situated to provide new insights into the geographies of health, while contributing to emerging research in the fields of health geography, social epidemiology, and public health.

Acknowledgements

I want to thank the editor and four anonymous reviewers for their exceedingly helpful suggestions at various stages. Thanks also to Jeff Bury, Kelley Crews, Erica King, Kathy King, Brent McCusker, Joel Wainwright, and Dan Weiner who read and commented on earlier versions of this paper. Any errors or omissions remain the fault of the author.

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