Climate Change and Social Resilience: "Adaptive" Conflict in the Sahel

Matthew D. Turner
University of Wisconsin-Madison

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Due to its dramatic downward shift in rainfall since the late 1960s, the Sahelian region of West Africa has been a major focus of the climate change community.[1] While still highly debated due to the complex circulation patterns that influence the movement and strength of the ITCZ (Intertropical Convergence Zone) over the area, some work has tied the downward shift in rainfall to global climate change (differential warming of the south Atlantic). This is a morally and politically provocative finding. People in arguably the world's poorest region,[2] whose deteriorating physical environment has previously been blamed on their mismanagement (e.g. desertification), are actually increasingly seen more as the victims of the material consumption of the world's rich. While not as explicitly stated in the numerous international forums (ICCC etc.) on the human dimensions of global climate change, the region is cited as a prominent example of experiencing costs disproportionate to any economic benefits accrued from fossil fuel combustion or net deforestation.

In a certain sense, the expanded attention toward climate change vulnerability has been a positive development for Sahelian countries who have lost funding over the past decade due to a lack of global goods (biodiversity, carbon sequestration) that they can offer to the international community. Attention toward vulnerability could shift attention back toward aiding the rural poor in semi-arid areas who are seen as the most vulnerable to climate change. Associated with this new emphasis has been the use of a new language of institutional change. Social vulnerability is seen to be reduced by increasing the adaptability and resilience of institutions and communities in dryland areas. In this paper, I critically engage with this type of thinking by focusing on the implications of its highly abstract, polity-as-organization treatment of environmental politics. Using the politics surrounding livestock mobility in the region as a case, I will argue that not only do these treatments share the failings of previous intellectual traditions (e.g. environmental security) by grossly simplifying the micropolitics surrounding resource access, but also, by treating conflict as a sign of resiliency failure, they ignore that the necessary

[1] The downward shift in rainfall is the most dramatic regional shift in precipitation ever recorded in the world.
[2] The West African Sahelian region includes the countries of Senegal, Mali, Burkina Faso, Niger and Chad.

role of conflict in social/institutional change (and "adaptation"). Farmer-herder conflicts ARE political in the full sense of the word. They are driven by a fuller politics than resource competition and they do political work.

I will develop this argument across the following sections. First, I will briefly trace the succession of simple narratives and models that have been used to describe human-environment relations in the Sahel. The Sahel's major discursive utility has seemed to be as extreme case of failure. The ease at which such narratives are imposed on a region can only be explained in large part by the international community's ignorance and limited interest in the region. This section serves as a cautionary prelude to the contemporary focus on improving the resiliency and adaptive capacity of Sahelian society to climatic variability. The second section summarizes these viewpoints. While their embrace of change is encouraging, their theory of social change is troubling – society is an organization that adapts to changes through internal restructuring. A particular tension that arises by such treatments is the treatment of the adaptation and conflict. Mobility and particularly livestock mobility, is commonly cited as an important adaptation to climate variability and change in dryland regions. After outlining this argument, farmer-herder relations and how they are influenced by livestock mobility will be discussed. A case study of livestock mobility and conflcit from the Fakara region will be presented. This case will be used to not only explore the connections between "adaptation" and conflict but to critically engage with underlying models of community and social change found within the social resilience and adaptive capacity literatures.

Development and conservation narratives

The Sahel has successively served as not simply an example but a prominent example of succession of declensionist narratives including: desertification (Aubreville 1936; Gorse and Steeds 1987; Mainguet 1994; Mortimore 1989; Swift 1996; United Nations Sudano-Sahelian Office 1992); tragedy of the commons (Barrière and Barrière 2002; Sinclair and Fryxell 1985; Picardi and Siefert 1976); population-induced land degradation (Cleaver and Schreiber 1994; van Beusekom 1999; Ramaswamy and Sanders 1992); global markets and land degradation (Franke and Chasin 1980); poverty-induced land degradation (Watts 1983a; Adams 2009); and scarcity-driven social conflict (Blench 1996; Homer-Dixon 1999; Bennett 1991). As I and others have argued, the region's prominence as example of crisis in international development and

conservation discourse not only reflects the real problems that the region faces but the persistent, reinforcing ignorance of outside experts. The area is of limited strategic and economic importance – a backwater of weak states and limited development potential. Fleeting attention is pulled to the region during periods of perceived crisis (e.g. famine). Limited knowledge of Sahelian ecology and society, allows simple diagnoses and prescriptions to be imposed on the region by the international conservation and development communities with little opportunity for opposing narratives to arise. In this way, ignorance has bred more ignorance.

An example of this phenomena is that the science which has shaped understandings of Sahelian environment, up until the mid-1990s was based on "equilibrium" notions. Simply put, deviations from expected environmental conditions led to prescribed reductions in anthropogenic environmental pressures to allow the system to return to its appropriate state (Boudet 1975; Heady and Child 1994). The power of this approach is that experts could read the condition of the landscape and prescribe remedial actions without understanding the history of land use nor ecological response to peoples' land-use practices. Therefore, little perceived need to study ecological response to land use led to remarkably little research in this area. For example, up until the mid-1990s there were but a handful of controlled grazing experiments in the region despite the fact that based on rangeland condition, overgrazing was seen as widespread (Boudet 1972; Le Houérou 1989; Penning de Vries and Djitèye 1982).

Such equilibrium assumptions of standard environmental assessments have come under attack since the mid-1990s with greater recognition that much of what was diagnosed as environmental degradation (e.g. desertification) was actually less persistent change associated with climatic variability (Behnke, Scoones, and Kerven 1993; Dodd 1994; Ellis and Swift 1988). This along with the new emphasis on the climate adaptation has reinforced the idea that the biophysical environment upon which Sahelian communities depend is rapidly changing and that development and conservation actions should seek to help build their "adaptive capacity" or "resiliency" to climate change.

Social resilience to climate change

In contrast to earlier conceptions, current understandings influencing the climate change community embrace change and promote ecological concepts such as resilience and adaptive capacity to describe complex social-ecological systems. This is welcome for dryland areas such

as the Sahel where equilibrium notions have misled environmental policy and management. An ecological concept (Holling 1973), resilience was introduced and promoted to characterize socio-ecological systems by the Resilience Alliance, a group of scientists with shared interests in the concept (Gunderson and Holling 2002), and has subsequently been incorporated into existing bodies of work in common property theory (e.g. Adger et al. 2003; Berkes, Armitage, and Doubleday 2007; Berkes and Folke 1998), environmental governance (Lebel et al. 2006); sustainability science (Clark and Dickson 2003), ecological economics (Beijer Institute of Ecological Economics renamed to Stockholm Resilience Centre) and a mix of broader hazards-inspired social science perspectives (e.g.Adger et al. 2003; Eakin and Luers 2006; Nelson, Adger, and Brown 2007; Scheffer et al. 2002). This work embraces complexity and sees change in social ecological systems as being driven by interaction of processes governed by cycles and thresholds working at a range of spatial and temporal scales. Such work is attractive for understanding "dryland systems" which have increasingly been recognized as being governed by thresholds, external shocks and processes working at a range spatiotemporal scales. In fact, nonequilibrium rangeland perspectives arguably have played an important role in the development of the concept.[3]

Attempts to develop lessons from complexity science to build sustainable societies that are resilient to climatic variability and change has proven to be more difficult. Within these more applied realms, (social) resilience has been used to simply refer to the ability of a system to adapt to (external or internal) shocks. The resilience perspective has been very successful. Resilience language has been incorporated into discussions and documents associated with such high level forums as Group II of the Intergovernmental Panel on Climate Change (Schneider et al. 2001; Parry et al. 2007), the Millennium Ecosystem Assessment(2005), and the World Summit on Sustainable Development in Johannesburg, South Africa (Folke et al. 2002). Moreover, these concepts have been embraced by the major international organizations (e.g. United Nations Development Programme et al. 2008; World Bank 2006). Despite their influence, there remain significant conceptual difficulties with making these concepts relevant to situations of climate vulnerability. The concept of resilience remains too abstract and vague to be

[3]African rangelands along with temperate lakes dominate early examples of complexity presented by the Resilience Alliance (Gunderson and Holling 2002) and Brian Walker, a very accomplished rangeland/savanna ecologist working in southern Africa and a member of the Resilience Alliance, was a major early contributor to the development of the concept of resilience (Walker et al. 1981).

meaningfully applied. It remains simply a metaphor whose attraction derives largely from its joint capture of references to change, risk, and complexity. How is a society resilient? As eloquently stated early on by Carpenter *et al.* (2001), the questions of *resilience of what and to what* need to be answered.

In short, there is widespread recognition of conceptual difficulties associated with social resilience and allied concepts by academic critics and proponents alike. My concern, as someone that works in the Sahelian region, is how the concept reflects and reinforces simple notions that relate environmental micropolitics (including conflict) with "climate change adaptation." Diagnosis and prescription of "vulnerability" is a major industry in places such as the Sahel. The literature on global climate change suggests that semi-arid places such as the Sahel are seen as most vulnerable to climate change for the following reasons: 1. Agrarian societies there remain directly dependent on the biophysical environment (rain-fed farming and livestock rearing) with downward deviations in rainfall more likely to lead to crop failure and livestock losses (heavily constrained by climate). 2. People are poor and have fewer economic resources to buffer them during hard times (Boko et al. 2007). I don't question these characteristics – yes, poor peoples' subsistence in dryland areas are vulnerable to any decline of income or wealth. But how should we think about vulnerability or resilience? If we think of these terms as the degree to which livelihoods or institutions must change in response to climatic change, one could argue that Sahelian communities with a long history of adaptation to climate variability and 30 years of response to current climate shifts, are less vulnerable and more resilient to the climate change than many industrial societies.

There are a number of problems with the present fuzzy thinking about vulnerability and resilience. The most obvious one is that is that it has facilitated slippage into old-school hazards thinking where vulnerability is treated as the physical exposure to the threat (e.g. production failure due to climate change). As a whole lineage of scholars have noted (e.g. Watts 1983b; Ribot, Magalhaes, and Panagides 1995; Sen 1981) – vulnerabilities (and resiliencies) to climate threats are not explained simply from the physical exposure to the threat (e.g. production failure) but by broader political economies. The second major problem is how community resilience is conceptualized. The systems thinking that underlies social resilience has reinforced pre-existing views of communities as unified and cohesive organizations sharing a common purpose. Within such a framework, "adaptation" is at the least a management problem and at most a collective

action problem. The community as factory (with a docile workforce) implicitly sees "adaptation" as a corrective action that maintains the structure, joint purpose and membership of the community. This reflects the deep tension within the concept of resilience itself that despite embracing change, the concept is all about "returning back" to some state. Not surprisingly, practitioners often use signs of conflict or discord within communities as signs of low community resilience and adaptive capacity.[4] The impulse to view discord as a sign of institutional failure is not new -- common property approaches share this diagnostic (e.g. Moore 2005) while environmental security has treated discord and conflict as signs of socially-produced resource scarcity (Peluso and Watts 2001; Turner 2004; Obi 2000; Homer-Dixon 1999; Bennett 1991).

If one considers community "adaptation" or resilience not as internal organizational adjustment but as social change involving divergent interests and hard choices, it becomes clear that social responses to climatic variability are political and are not without conflict. Conflict, defined as variable expressions of discord, should be seen as a common feature of dynamic social response to climate variability or change. Conflict however is best seen not as erupting from in-the-moment scramble over resources but part of a range of political expressions over time (Turner 2004). Effective local institutions would not eliminate conflict but manage it to avoid socially-degenerative situations. I am not advocating violence but have found that common face-to-face expressions of discord in rural communities are often viewed as overly confrontational and explosive by western observers who are more accustomed to highly-formalized, institutionally-mediated conflict (courtrooms, legal documents, regulatory hearings..). Those that use conflict to diagnose lack of social capital or low adaptive capacity may actually be misdiagnosing actual "adaptive response" as failure. Moreover, programs that seek to avoid or reduce such conflict may be prone to reinforce unequal power situations leading to increased vulnerability among certain segments of the population.[5]

[4]In an interesting article, Cooper and Walker (in press)develop an argument that the rapid spread of the resilience concept is influenced not only by ecological systems thinking but also by the nonequilibrial neoliberal economic thinking of Friedrich von Hayek within a broader set of risk management concerns held by international institutions. In this way, the spread of resilience thinking is not explained solely by ecological concerns but by an interest to manage risks – particularly security risks – in a world that is seen as increasingly risky.

[5]The relationship between unequal power distribution within communities and the visibility of conflict is complex. I have observed that communities where power distributions are highly unequal (with those in power few in number), conflict is often suppressed.

In the remainder of this paper, I will explore the relationship between social conflict and community adaptation (social responses to climate variability). I do so by focusing on a commonly-cited adaptation for dryland regions of the world: livestock mobility. In areas where croplands are important, the maintenance of livestock mobility is institutionally demanding. Flexible access to pastures, corridors, and encampment points is necessary which is best supported by less formal, socially-porous, and mediated modes of governance (Niamir-Fuller 1999). At the same time harder, more formal protections are needed to protect key pastoral resources from agricultural encroachment. For livestock corridors to be uninterrupted, coordination across communities and administrative jurisdictions is required. Given that the complete lack of national level coordination or mediation of these needs, it is not surprising that livestock mobility has been associated with significant conflict in the Sahelian region.

Mobility as adaptation to climatic change and variability

For the Sahelian region, the present concern about the vulnerability of rural households and communities to climatic variability is not novel. Today the language of the ecology and economy is prominently featured in terms such as resilience, risk mitigation, social capital, and portfolio diversification. But in most regards, these terms overlap with earlier understandings tied to terms such as food security, coping strategies, and wealth stores, and social differentiation. Still, approaches to reduce drought vulnerability have changed over the past thirty years. Comparing programs to reduce drought vulnerability over the past ten years with those of the 1970s, a number of differences can be identified. Today there is much less optimism about finding technical fixes to crop and livestock production in the region (new crop cultivars, large irrigation schemes, borehole programs). Instead there is greater attention to community-scale initiatives such as grain banks, microfinance, and small-scale irrigation. These trends are associated with shifts of donor funding away from Sahelian governments to local and international NGOs working with local communities and "decentralization" initiatives by governments that variously devolve authority to local governance structures (Agrawal and Ribot 1999; Ribot 1999; Ribot 2002). These trends precede the upswing of concern about climate change vulnerability but play an important role in affecting the ways in which we think and seek to implement programs to increase social resilience to drought (see below).

The spread of two somewhat novel ideas can be tied more closely to the upsurge of interest in reducing climate vulnerability in the region. The first is the view that vulnerability can be reduced through the provision of market and climate information to rural producers. This has led to projects to disseminate rainfall predictions and price information to rural producers through rural radios and cell phone technology in the hopes that fuller information will allow producers to manage economic and climatic risk more effectively.[6]

The second is the recognition that mobility is an important strategy to reduce the risk of production failure. It has long been recognized that farmers (through the seeding of dispersed fields) and herders (through regular seasonal movements and strategic movements to productive pastures) can reduce their risks to local rainfall deficits.[7] Mobility is a commonly-cited "adaptation" to climatic variability and figures prominently in documents focused on social resilience to climate change in dryland areas. Moreover, it has been argued that mobility options have declined for both farmers and herders with growing land shortage, labor shortage caused by emigration, enclosures of key pastoral sites by local village projects, and increased insecurity in the northern Sahel caused by various insurgency movements. Despite its professed importance and evidence for its reduction (e.g.Niamir-Fuller 1998), programs that seek to facilitate mobility have been rare. The uneasiness, hesitancy, and even incipient hostility within development circles toward the facilitation of mobility reflects long-standing views tying mobility to primitiveness and to the political problems associated with movements across political jurisdictions (village territories, administrative districts, nation states). In addition, the flexible common property institutions that have allowed such mobility run counter to the current philosophy of development programs that promote privatization and devolution of exclusionary authority to communities (Marty 1993; Painter, Sumberg, and Price 1994; Turner 1999). As a result, a conceptual stalemate exists where references to the importance of mobility are common but on-the-ground actions to facilitate mobility are nonexistent (e.g. protection of transhumance corridors, promotion of labor sharing and livestock entrustment…etc.).

[6] There are many reasons to question the benefits of such programs. To what extent do these programs provide actionable information not already available to rural peoples through their social networks? Are seasonal rainfall predictions sufficiently accurate to influence livelihood strategies? Does wide dissemination of price information differentially benefit livestock and grain merchants who have greater market flexibility than small scale producers?

[7] In the case of livestock production, widespread recognition of the importance of mobility stems from the growing influence of nonequilibrium understandings of range ecology since the mid-1990s (Behnke, Scoones, and Kerven 1993; Ellis and Swift 1988; Scoones 1994).

Conceptual stalemates around the question of livestock mobility also exist among rural peoples in dryland Africa. At a fundamental level, livestock movements are seen by farmers as the cause of problems since it is necessarily livestock on the move that cause damage to their crops. For herders, restrictions that impede the movement of livestock result in problems with farmers since livestock have difficulty moving out of or through cultivated areas to reach rainy-season pasture areas. I have heard these sentiments expressed in many different communities across the region and I am convinced that, while strong reflections of divergent positionalities to conflict, they are truly felt and not simply political rhetoric. Interestingly, I have witnessed the same person express each of these different views under different circumstances. Clearly, such stalemates are far from conundrums and could be effectively managed. Still, they reflect the difficulties and distrust that can develop between farming and herding groups.

Farmer-herder relations within agropastoral communities

Historically, ethnic identity has been tied to occupational specializations in the West African Sahel (Grayzel 1977). While occupational specializations were never fully distinct, there has been an acceleration of the despecialization trend since the 1960s with "farmers" owning livestock and "herders" farming (Toulmin 1983). Despite the diversification of livelihoods, strong distinctions remain in the social identities held by rural people tied to the livelihood of their ethnicity. Given the knowledge and social networks required, more mobile forms of livestock husbandry remains largely (but not entirely) under the purview of members of herding ethnicities (Bassett and Turner 2007).

Much has been written about the evidence for and against an expansion of conflict among farmers and herders since the mid-1980s (Bennett 1991; Bassett 1988; Hussein, Sumberg, and Seddon 1999; Moritz 2006; Breusers, Nederlof, and van Rheenen 1998; Heasley and Delehanty 1996; Tonah 2006; van den Brink, Bromley, and Chavas 1995; Zuppan 1994). As in most societies, conflicts among people arise for a multitude of reasons and have broader political-economic roots (Bassett 1988).[8] Conflicts among members of different social groups tend to

[8] In the Sahel, the political economy behind farmer-herder conflict involves: 1. The legacy of colonial policies that generally accorded greater authority to the village-based authority (dominated by farming interests) and disregarded pastoralists' claims to commonly-held pastures and water points (Schmitz 1993; Le Bris, le Roy, and Leimdorfer 1982; Niamir-Fuller 1999). Various postcolonial tenure reform policies according greater rights to 'users' of land (Ngaido 1996) have further eroded the grazing rights of pastoralists since grazing does not visibly demonstrate use or management of land; 2. In contrast to precolonial states, colonial and post-colonial governments

more public than those within a household or lineage group. This is not because conflicts of interest and disagreement are not prevalent within these social units but they are revealed less to the inquiring outsider than conflicts between members of distinct social groups where: 1. lines of authority are less likely to inhibit reaction to perceived infractions; 2. reasons for maintaining an outward semblance of unity are less compelling; 3. disagreements are more prone to be used to benefit those engaging in insider-outsider politics; and 4. political dominance by one group at the village level results in these conflicts being adjudicated at higher administrative levels. For these reasons, farmer-herder conflicts are more publicized then other conflicts occurring within rural communities.

Studies of social conflict have tended to focus on known conflict events (with or without violence) and therefore tend to ignore the level of day-to-day interaction among members of different groups and therefore the degree to which disagreements are managed before escalating into conflict. A study I conducted within four agropastoral communities in Niger demonstrate that unlike popular impressions, farming and herding social groups are far from isolated from each other and closely interact on a day-to-day basis (Turner et al. (in press)). As reported in the paper, 139 members of 72 households chosen for detailed surveys were asked to list relationships with people (inside and outside of their household) that play an important role in their production activities. Of the 500 outside relationships mentioned by informants, 43% were with members of their same social group (caste and ethnic groups) and 57% involved members of a different social group. 63% of these cross-group relationships involved farmer-herder relationships.

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have not protected major transhumance corridors linking populated areas in the south with rangelands to the north (Niamir-Fuller 1999). Programs seeking to devolve resource management authority to the local level, through either government administrative structures (Ribot 1999; O'Bannnon 2006) or NGO-led village projects of land management (gestion de terroirs villageois), further threaten the connectivity of extant regional networks of the livestock movement corridors (Painter, Sumberg, and Price 1994); 3. Population growth and soil exhaustion (van Keulen and Breman 1990) along with a series of the boom-bust cycles of groundnut and cotton production (Moseley 2005) has led to an expansion of cultivated area, reducing the availability of rangeland and transhumance corridors in cropped zones to the south (450-650 mm of rainfall/year); 4. Since the early 1970s, recurrent cycles of drought have worked in favor of those whose income is buffered against the predictable price swings against and for livestock during droughts and inter-drought periods respectively. As a result, livestock ownership has shifted southwards (Bourn and Wint 1994) and toward social groups without a historic connection to livestock rearing (Turner and Hiernaux 2008; Bassett 1994). Over the past twenty-five years, ethnic/caste groups whose identities are tied to livestock husbandry have increasingly relied on farming to support their families (Bonfiglioli 1990); 5. While labor emigration is not new to the Sahel, emigration to gain menial work in plantations, mines, and cities to the south has intensified as households have not been able to support themselves on farming and livestock rearing alone (Painter 1994; Pedersen 1995).

These same informants were asked to describe any misunderstandings or problems that can develop with cross-ethnic social relations of production. The types of problems most commonly mentioned in all four villages include, in order of frequency mentioned, problems/disagreements concerning: competition between pasture and fields, including livestock-caused crop damage (39%); field boundaries (11%); entrusted livestock that are lost or stolen (10%); loans and prices between sellers and purchasers of goods and services, other than farming and herding labor contracts (9%); rent and length of tenancy between landlords and tenant farmers (7%); access to water from wells (7%); remuneration and responsibilities of herding labor contracts (6%) and field labor contracts (4%); abuse of power by government agents (2%); and manure contracts (2%).

The study was concerned with tracing the social networks that are enrolled by informants when disagreements arise. The relevant findings of this work for this paper is that farmers and herders closely interact with each other in their day-to-day productive activities and that their interactions (like all reported social relations) have both cooperative and competitive features. Therefore, farmer-herder conflicts do not arise out of fleeting, in-the-moment struggles over resources but more often arise among people that mutual histories and relationships that are complex – involving both cooperative and conflictual aspects. An example of how livestock mobility is enmeshed in a broader politics is presented below.

Conflict and mobility: Case from the Fakara region of Niger

Since the 1970s, the population-sparse Fakara region, lying immediately west of the densely-populated fossil valley called the Dallol Boboye, has proven attractive to those FulBe pastoralists who have lost much of their livestock (Heasley and Delehanty 1996). The FulBe settling in the area have borrowed fields from the land-owning Djerma, paying the latter one-tenth of their harvest each year. The Djerma village of Belel has proven attractive to the FulBe because of its proximity to plateau areas that, due to their poor cropping potential, are attractive as pastures. Recurrent conflict between farmers and herders over a livestock corridor running east of the village of Belel and extending into the neighboring village territory of Tambo (to access a key

ephemeral pond) occurred throughout the 1990s and into the early 2000s.[9] Up until the early 1990s, there existed very little reason to define a corridor – ample areas of fallows and uncleared land existed in the area through which livestock moved from the village to the plateau area to the east for pasture during the cropping season. The location of fields shifted from year to year but there was sufficient area to navigate through them. Moreover livestock moved across an ill-defined and disputed boundary between the territories of the two villages.

In 1992, villagers of Tambo dramatically extended their fields into the area through which cattle moved. The FulBe protested to the chief of Tambo who a corridor opened on the Tambo side of ill-defined boundary. In 1996, the corridor was closed again due to the extension of fields from Tambo and another village. The FulBe notified the Tambo chief again as well as Tambo's Canton chief (Tambo and Belel are in different cantons). Negotiations and informal payments (to canton chief) led in 1998 to the scheduling of a meeting to delineate the corridor in the area of question.

Prior to this meeting, the FulBe notified the chief of Belel village, who, after showing initial surprise, expressed opposition to the plan. It is difficult at this point to understand his reasons but informants point to concerns about the implicit territorial claims by the Tambo chief through the act of delineating a corridor.[10] The Belel chief demanded money to delineate the corridor on the Belel side of the border. The FulBe refused and in so doing implicitly threatened to seek authority from Belel's canton chief. Members of the Belel chief's family, sought to mediate the standoff in a meeting at which they persuaded the FulBe to give the chief a small gift of 10.000 FCFA or $20 (to save face). The following day, the corridor on the Tambo side but when the contingent (FulBe representatives, Tambo chief and notables, canton guards) approached Belel territory, they were met by farmers (from the Belel chief's family) who refused to allow them to proceed further. After hours of failed negotiation, the Tambo chief backed out stating that if Belel does not delineate a corridor, why should he. As a result, negotiations completely fell apart and there were continual problems (difficulty of herd movements, sporadic violence and crop damage) until the death of the Belel chief in 2005.

[9]To protect informants, the village names of Belel and Tambo are pseudonyms. In 2004, Djerma and FulBe informants from Belel characterized farmer-herder relations as poor with crop damage and blocked access to pastures cited as major problems (Turner et al. (in press)).

[10] I am also aware that he had grown frustrated by the problems between women of his village and FulBe over access to the village well during the dry season.

Soon after his death, an election was held to identify his replacement. In the Fakara, these elections are largely pro forma with eldest of the deceased chief's sublineage generally chosen. In this case, a rich emigrant from a different sublineage (still part of the large chieftancy lineage) funded the campaign of his brother. Even with this influx of money, his alternative candidacy was far from assured. Both candidates courted the Belel FulBe, promising them their corridor. The FulBe distrusted the family of the former chief and, except in cases of those FulBe farming on fields loaned by the former chief's family, supported the alternative candidate (24 of 31 FulBe votes). The FulBe voting block tipped the election in the favor of the alternative candidate (the alternative candidate won by 15 out of a total of 93 votes).

With the election of alternative candidate, the FulBe received their corridor but those who voted for the alternative were kicked off of the fields controlled by the former chief's family. The new chief has proven to not be a strong leader. The family of the former chief claimed that many of the fields that were cleared under their chieftancy actually belonged to the family and not the chieftancy. This runs counter to customary law and in fact the canton chief first instructed them that the vast majority of "their fields" actually should follow the chieftancy and be managed on behalf of the village by new chief. The former chief's family protested this instruction resulting in a hearing in the village. At this hearing, the canton chief requested input from the new chief after the others had made their case. Much to the horror of the rest of the village, he reportedly hung his head and said very little in defense of the chieftancy claim. As a result, the canton chief had little choice but to reverse his original ruling and award a significant fraction of the village fields to the former chief's family.

I present the Belel's experience not as a particularly negative or positive case of a Sahelian community's (mal)adaptive capacity. It is what it is…. a story of micropolitics unfolding over time with success, tragedy, and human fragility. After years of struggle, the FulBe of Belel gained their corridor (running some 5 kilometers in length) but in so doing, they set in motion a process that has led to greater concentration of land wealth in the village. Not only will this have negative implications for the farmers in the community but may lead over time to significantly limit FulBe access to farming land since they are viewed as the political enemies of the largest land-owning family in the village. The politics of livestock mobility are influenced and influence a broader set of village and inter-village politics. Simply characterizing farmer-herder conflicts as "struggles over dwindling resources" or referring to Belel's "adaptive

capacity" is not necessarily wrong but misses the point(s) of how social change and climate variability are connected (or not).

Conclusions

As a political ecologist concerned with social vulnerability and environmental change in the Sahel, I have not generally relied on concepts such as social resilience and adaptive capacity in my own work. My first inclination has been to dismiss them as hopelessly burdened by the assumptions of systems analysis and organizational science to make them irrelevant. They have features that overlap with prior hazards and systems approaches whose limitations have already been well explored (Taylor 2005; Watts 1983a). This initial engagement has not drastically changed my initial views although these new perspectives have features – particularly their embrace of complexity and change over time – that may allow greater constructive engagement. Moreover, I have found with other perspectives (e.g. desertification, tragedy of the commons) that have come to dominate development and conservation thinking in the Sahel that one eventually has to engage to have any impact – better earlier than later.

The case of Belel provides some useful insights into how might livestock mobility be governend. Livestock mobility is a climate-change adaptation that requires a complex of formal and informal institutions working at different spatial/administrative scales. Intermediate-scale institutions (between national state and local community) are often much needed but underdeveloped in dryland areas (Agrawal 2008), one of the important political legacies of colonialism (Ribot 1999; Niamir-Fuller 1999). It is at these administrative levels where greater governance is needed and lacking in the Belel case. Not surprisingly, I have observed FulBe in other areas who do not even engage with local village chiefs and instead pursue their interests (protection of livestock corridors) at higher administrative levels (canton, arrondissement). Such scale jumping creates significant tension since local communities resent the fact that they are not consulted when corridors are established.

The case of Belel illustrates how it is difficult to translate abstract organizational concepts such as "social resilience" to the deeply fractured, power-laden and evolving sets of social relations that constitute local communities. What aspects of the Belel story show resilience and which do not? They are difficult to identify since the changes observed have features that could simultaneously be seen as resilient and not. Social conflict, often used as the

primary sign of a lack of resilience and adaptive capacity, is shown here to be very much part of the political process of change required to maintain livestock mobility. If we reject the inherent "return-back" implications of these terms (as prominent resilience theorists do), "adaptation" and "resilience" occurs through social change which if meaningful, inherently involves conflict. Bringing the politics into these concepts, will require a recognition of the fuller role that conflict plays – both negative and positive – within communities experiencing climate variability and change.

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