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Viewpoint

The African Sahel 25 years after the great drought: assessing progress and moving towards new agendas and approaches

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Abstract

This paper introduces a special issue of *Global Environmental Change: Human dimensions* on the Sahel of West Africa. It reviews the seminar to which the papers were presented, and brings together some conclusions. Despite the quarter century of research into the West African Sahel that followed the great droughts of the 1970s, there are still strong disagreements about how to achieve more prosperous, yet sustainable livelihood systems in the region. There are conflicts between those who believe in indigenous capacities to maintain rural livelihoods, those who believe that various forms of external support are necessary, and those wedded to a vision of a Sahel directed by regional urban growth. Under economic and cultural globalisation, the future of this region is, at best, unclear. The papers in this collection do agree that Sahelian environments are diverse, and that Sahelian people cultivate and exploit diversity and flexibility. They also suggest that there are no quick-fix development solutions, except to build upon this historical diversity with renewed purpose. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Well before the global environmental community became obsessed with global warming or ozone depletion, the Sahel region of West Africa¹ had come to represent what Claude Raynaud (1997) calls ‘the quintessence of a major environmental emergency’. It is now a quarter of

a century since the major droughts of that time. For many, the droughts were a major historical marker. Although Sahelian populations are accustomed to drought, as historical accounts and oral histories reveal (Watts, 1983; Cross and Barker, 1991; Rain, 1999), the droughts of the 1970s were significant not only because of the particular severity of their challenge to local adaptive strategies, but also because they prompted profound economic and political reforms and extensive international assistance.

Sahelian droughts and their effects have been studied intensively since the 1970s, as part of the international response to the ‘environmental emergency’. But only now are their long-term impacts becoming clearer. The links between population growth, climate, and socio-political

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¹ In the papers, the term ‘Sahel’ (an Arabic word for shore) is used loosely to refer to the semi-arid zone bordering the Sahara desert to the south, and including parts of Chad, Nigeria, Niger, Burkina Faso, Mali, Senegal, Mauritania and the Gambia. The best way to define the ecoclimatic limits of the Sahel and Sudano–Sahelian regions is through the spatial distributions of plant species and communities (Le Houérou, 1989). These distributions are relatively stable over years and decades; other measures, based on biomass or on pure rainfall, may fluctuate seasonally. It is therefore impossible to draw an accurate boundary defining the southernmost limits of the Sahel, and the Sudano–Sahel that lies to its southern margins. In climatic terms, the boundary between the Sahel and Sudano–Sahel ecoclimatic zones lies between 500 and 700 mm of rainfall per annum. Trees such as *Butyrospermum parkii* (shea nut, or

karité) and *Gueira senegalensis* are less able to thrive in the true Sahel, where the vegetation becomes sparser and thornier. The Sahel itself is one of the world’s warmest regions (Le Houérou, 1989, p. 47) and has been so for over two millennia (Gritzner, 1988, p. 5). Rainfall is restricted to three summer months. At other times of the year continental airmasses dominate, and precipitation during these times is very sparse or non-existent.

change are being rethought, and development policy is being steered away from expensive and unsuccessful interventions towards more considered schemes targeted at boosting local capacity (Batterbury, 1998). Since the 1970s, the Sahelian nations have also witnessed an abrupt economic transformation involving increases in international trade, demographic movements, and links to the international development aid system.

This special issue of *Global Environmental Change* offers a 30-year perspective on the emergency, and brings together the results of several research programmes. Most of the papers were presented at a meeting at the Royal Geographical Society in London, in May 1998. Their tone, and the discussion they prompted, is anxious, but also hopeful. They ask what has been learned over the last quarter of a century about the human ability to adapt to, respond to, and fight against natural and human-induced changes in the marginal environments of the Sahel. There are five recurrent themes. The first is environmental, about climatic uncertainty and possible environmental degradation. The second is about the driving forces of change that are transforming the rural environment. The third is about the role of governance. The fourth is about the relationship between the immediate past and the immediate future. And finally, there is reflection on the role that research can and should play in bringing about a better future.²

2. Drought and degradation

It is often assumed that the short and long-term impacts of drought and degradation are greatest in regions that are poor, as indeed was much of the Sahel in the early 1970s and mid-1980s. The papers in this collection, and the discussion that surrounded them, make many references to the role of climate and soil degradation as influences on patterns of movement, economic activity, and food supply. But they all recognise that easy assumptions about either side of the equation or their relationship can no longer be made. There is, first, no end to environmental uncertainty. Mike Hulme describes the Sahelian climate as 'perhaps the most dramatic example of climatic variability that we have quantitatively measured anywhere in the world'. It is probably true that there has been a 20–30% net decline in Sahelian rainfall in the latter part of the 20th century, and the 1970s droughts were indeed almost unique in their severity. But Hulme shows that climatologists persistently misunderstood the evolving situation and failed to predict the extent of drought, variously over-estimating or minimizing the extent of the 'crisis'. Most models of change have now been discounted, despite continuous improvements

in modelling technique, and prediction is still in great doubt. We are faced with an inability accurately to predict the onset of a future drought or its impacts, or even, yet, to understand the pattern and reasons for the great droughts.

Then, there is the relationship between environmental and social change, which, though central, is recognised by all as being even more problematical. The Sahel, with its vastly varied capacities to adapt (as described by Raynaud), is an especially apt background against which to examine this issue. One of the most puzzling aspects of the relationship is that the droughts may not have had quite so disastrous effects as is often claimed (Mortimore, 1989). The signs of drought are not signalled clearly in the economic performance of the region (Benson and Clay, 1998). The GNP of Burkina Faso, as Benson and Clay noted, was not particularly affected by drought over a 10-year period, despite the short-term effects that were felt on food stocks and imports. The explanation may be that adaptive responses at the local, regional and national scales are often better advanced in countries with a 'drought history'. Mortimore and Adams show, in their paper in this collection, that agriculturalists develop effective adaptive strategies: they diversify their livelihoods into activities less affected by drought, for instance into migration, as is also evident in the case study in the paper by Warren, Batterbury and Osbahr. This case study shows how migration appears to have a relationship with degradation, for in a Nigerien village, it is the households that send most men away that cultivate fields with the most erosion. Extending the spatial reach of the household is an effective adaptive strategy for drought that is shared by communities across the full 3000 km of the western Sahel. In the francophone CILSS countries, the F CFA currency may be earned in more buoyant regions and remitted to boost the resilience of the home households, a source of income that may become crucial in drought years. The relationship between drought and survival may also be more complex in pastoral communities than has been believed. Other changes in the pastoral zone, including the construction of boreholes, may have been more malign (see Thébaud and Batterbury's paper). Climatic instability may even had some positive effects. At the national level, the recurrent droughts forced governments, with the assistance of the international community, to shore up existing famine-preparedness systems (famine early-warning systems) and to create better food stockpiling and distribution mechanisms.

Thus, 30 years of environmental science has given us less, rather than more certainty about dryland ecological processes. Although caution is now much more evident in statements about the Sahelian environment, many scientists now see resilience to human damage and climatic variability where they saw fragility before (Turner, 1998). Our research meeting agreed that the persistent lack of understanding had allowed myths about the Sahelian environment to flourish and that these had

² We are conscious that not all the questions that might, or even should be asked about the future of the Sahel are asked here.

hampered development. Among these, the idea of ‘carrying capacity’ for humans or livestock is perhaps the most dangerous and misleading. A related, more persistent, and almost equally damaging myth, that of ‘desertification’ is a homegrown Sahelian myth (from the 1920s). Few environmental scientists would now be as sure of the process as many were then.

Laying the desertification narrative to rest has proven difficult, partly because it has bankrolled decades of development interventions, research and international debate (Batterbury and Warren, 2001). But most research workers in the Sahel (if not policy-makers) now see a complex landscape, one constantly transformed by human actions, rather than one in monotonal decline. It may well be that diversity and change have always been evident to the Sahelians themselves, and that is only being ‘rediscovered’ by scientists. Complementing this perspective is the realisation that indigenous practices such as the use of fire for soil fertility management, and land investment through agricultural intensification have a logic in the light of this diversity and change, and that this too deserves much closer scrutiny. The opportunities for studying these interactions and practices have fortuitously increased, for the ecological and natural sciences now have the tools to monitor these changes with the aid of more advanced instrumentation and remotely sensed data (Reenberg, 1999). As we develop a common research language for these rediscovered ideas like variability, stability, diversity, and vulnerability, there is a growing need to translate them into viable projects, programmes and policies.

3. The driving forces of the rural the economy

Raynaut’s geographical analysis shows that population is concentrated in ‘poles of attraction’ (or in-movement), and ‘zones of saturation’ (where there are out-movements of people). The location of these zones is as much influenced by politics, history, transport networks and the growth of cities as by the natural environment. Generalizations about ‘overpopulation’ and environmental degradation are, therefore, misleading. While population patterns are not as closely tied to natural conditions as scholars once assumed, food production systems mirror them more closely, and the clash between different production systems — particularly on the Sudano–Sahelian fringe where agriculture meets pastoralism — has shifted over time in response to rainfall and pasture quality (McCann, 1999). To environmental diversity (in space and time), must be added a lively history of political change. For example, regulatory institutions that have previously been adequate to ensure human welfare and survival have been altered out of all recognition by the changing Sahelian political economy. The downturn of Niger’s economic fortunes in the 1980s and 1990s, or the levelling of social hierarchies

initiated by Sankara’s socialist regime in Burkina Faso in the 1980s are examples.

Diversity is perhaps most evident in rural livelihoods. Diversity is indeed increasing as local technical knowledge is enriched by selective adoption of modern tools and inputs (Saul, 1991). Cour shows that most individuals participate in regional or local trading networks for agricultural products or non-farm items, and their social systems are in the midst of profound social reconstruction. The growing monetary value of land, and its increased privatisation, are important driving forces (IIED, 1999). There are increasing opportunities for urban speculators to invest in livestock and farming. Whereas, the gradual disappearance of tribute systems and kinship networks may challenge some oppressive regimes, this loss is at the same time weakening some forms of ‘social capital’ in rural areas. Even as new forms of institutions emerge — womens’ associations, decentralized management committees, and youth clubs — traditional networks of affinity, such as age-set groupings and lineages, are losing their power. Raynaut concludes that the Sahelian ‘crisis’ is both the manifestation and the cause of these profound social changes. Sahelian people are active human agents operating within multiple institutions and acting within a diversity of constraints (and opportunities). What is needed, above all, is an ‘enabling environment’ to support these local responses, buttressed by the sorts of frameworks and policies provided by national governments, aid agencies, and by organizations like CILSS. This requires negotiation, and recognition of diversity.

3.1. *Agricultural and pastoral dynamics*

Not only is the Sahel’s rural life diverse, it is also its lifeblood. Because people will continue to rely on the primary commercial and subsistence sectors, there is little choice but to intensify and diversify. Two major visions of Sahelian agriculture emerge in this collection. Where Breman et al., see ‘resource limitations’ in Sahelian farming, Mortimore and Adams see coping, adaptation, and a largely sustainable portfolio of survival strategies (see also Breman and Sissoko, 1998; Mortimore and Adams, 1999). There are two disagreements here: whether there is overpopulation; and whether long-term sustainability can be demonstrated. Breman et al. argue that the gap between aggregate food production and aggregate population growth has grown since the 1970s. The task, on this premise, is to reduce the impacts of rainfall variability with more intensive agriculture, including more input of inorganic and organic fertilizers, and improved technique. The work of researchers at the Royal Tropical Institute (KIT) and at Wageningen Agricultural University on soil fertility has calculated that some 40% of income from farming in the region results from the ‘mining’ of soil nutrients (van der Pol, 1992), as farmers have been forced to extensify agriculture onto less suitable

soils, and then to intensify production by reducing the length of their fallows. Adaptation to this kind of resource constraint has undoubtedly occurred, and Breman and his colleagues feel that because it is accelerating as population increases, coping systems have been unable to respond quickly enough. To them, the decline of soil fertility is a 'time bomb' and, at the very least, localized low-grade applications of inorganic fertilizer to sustain productive potential must be part of rural 'eco-development'. The enabling policy environment, they argue, will then need to include mechanisms to deliver fertilizer more widely, and to make it affordable.

Mortimore and Adams paint a very different picture. Mortimore was based in northern Nigeria at the time of the 1970s and 1980s droughts, and he and Adams believe the apocalyptic visions of famine, though real at the time in places, have lured many policymakers into unrealistic pessimism. In the droughts, coping strategies like migration, asset sales and non-farm income generation were well developed. Today, often with even less external support, 'Sahelian farmers are still in business' and there are ample signs of recovery, adaptation, and innovation. Mortimore's work with the farmers of Northern Nigeria, especially around Kano — which has the most successful record of agricultural intensification of any Sahelian city — has identified a wide range of strategies to cope with climatic perturbation and diminishing returns from agriculture. These can be represented as economic diversification, which starts from a farming-only system, but moves on to include animal ownership, off-farm income sources, and then migration and remittances. Indigenous technical change — embedded in the culture of dryland farming communities — has apparently been adequate to meet the new challenges, even, perhaps specially, in areas of high population density. These adaptations have included indigenous forms of soil and water conservation, exploitation of wetter sites, cautious expansion and retraction of cultivated area, and maintenance of distinct seed stocks suited to variable conditions. Markets for agricultural products, in Mortimore's view, should be seen as 'benign rather than malignant' features of the 'structural adjusted' Sahelian countries, whereas for Breman et al., market production is a necessary precondition to increase food supply and returns to labour in agriculture.

This debate, well rehearsed in the papers in this collection, remains unresolved. Elsewhere, Bryceson (1999) had worried that the 'farmers-are-still-coping' paradigm, represented by Mortimore and Adams, ignores the effects of cutbacks in public expenditure, subsidies, and marketing services under structural adjustment programmes. She also believes that on this view, 'long-term sectoral transformation remains out of focus' (p. 174). Is it only the wealthier households that command the assets necessary to diversify and make investments? Whether local strategies work well and whether they harm the environment rather than protect it, clearly depends upon context.

Assessment may depend on different definitions of land productivity, and the scales of analysis. Taking the question of the benefits of land intensification through high labour inputs, pools of nutrients may be being maintained in sites of intensive farming, while the surrounding extensively cultivated areas, or the regional nutrient supply, experience a net loss of fertility or land quality (Krogh, 1997). Above all, as our own review and the brief description of a field study show (Warren et al., in this collection), enough is not yet known about the local environment and its social context (and their complex interaction) to make hard-and-fast predictions on the fate of Sahelian agriculture.

Thébaud and Batterbury's essay in this collection shows that pastoral livelihood systems are also experiencing extensive change generated by land struggles and the political economy of modernisation, which are generating new kinds of poverty and wealth. However, they see the situation of pastoralists as especially precarious. Pastoralism is the dominant productive activity in the northern Sahel, where large settlements are few, and mobility is vital to maintain access to water and fodder. Even here, but with much greater intensity in the south, pastoral and agro-pastoral groups are increasingly in conflict over resources with agriculturalists. Pastoralists are sometimes also in conflict amongst themselves. At the same time that Sahelian farmers are increasing their livestock holdings, pastoralists and agropastoral groups are diversifying into farming, although often with less secure tenure than the farmers (Bosma et al., 1996). Emphasising one of our points above, Thébaud does not see drought as the main cause of the present difficulties facing pastoral groups (although it does influence rangeland quality). She puts more emphasis on other factors including longstanding negative views of pastoralists, inappropriate water point development, and the lack of commonly agreed or legal security over the rangeland commons.

Before the capacity of grassland ecosystems to regenerate was re-evaluated by the scientific community in the last decade (Turner, 1998; Warren, 1995), accusations that pastoralists were responsible for degradation circulated in governing circles and these views blocked understanding of the importance of herd mobility and of the use of 'patchy' landscapes. For the future, the debate about land tenure rules and law in the Sahel needs to recognise the dynamism of common property regimes based on mobility (particularly, as decentralization of political power continues), and this requires more forums for negotiation, as Raynaud, Thébaud, and others have stressed (IIED, 1999). Pastoralism could also be supported by enabling the efficient sale and movement of livestock to markets. This is particularly evident following devaluation of the francophone CFA currency in 1994, from which the herders have benefited.

4. Governance

4.1. *The State*

As Raynaut shows in this collection, the role of the state in the Sahel is changing very quickly. Post-colonial regimes, are giving way to democratically elected and more accountable governments. Power is being redistributed. The Sahel is being incorporated into regional and worldwide institutions. Links to the global aid system have increased since the 1970s, but a vision of the Sahel as a mere recipient of large volumes of foreign aid, impelled by continuing food shortage, denies its capacity to operate alongside and on more equitable terms with international bodies, and to be an equal partner in international agreements. The notion of ‘partnership’ now colours most interventions, and debt cancellation is strongly on the agenda.

The ‘state’ has had a turbulent history in West Africa, and the pattern continues. Burkina Faso’s relative political instability until the early 1990s may be traced to the failure of a ‘historically illegitimate’ state to capture or placate a vibrant civil society, leading to tensions with traditional chiefs and trade unions (Englebert, 1996). Elsewhere, military coups have been frequent, as the tensions inherited from colonial policy, and from religious and ethnic differences are played out (Charlick, 1991; Hyden, 1990). At times, this kind of change has significant effects on the livelihoods of the Sahelian majority; elsewhere it is confined to the cities. Edicts issued by Thomas Sankara during his tenure as the president of Burkina Faso were far-reaching, challenging the power to traditional leaders, advancing women’s rights, and mobilising the masses to ‘save’ the environment during a period of hardship. Recent changes of leadership in Niger, however, appear to have had little effect on rural life, where *politique* is played out only among the *politicians* and the urban cadres. Nonetheless, as Raynaut argues, state functions have generally been very important, and they are actually taking on more power through bilateral support and partnership with international agencies.

4.2. *Development*

Most of the papers that follow and the discussion that accompanied them concur that the key challenge for policy-makers are now: poverty-alleviation, better methods for management of conflicts over land, water, and other resources; realistic rather than draconian population policies; and a coming-to-terms with aggressive global markets that have consistently disadvantaged Sahelian products. These views are all based on reflections about the history of policy in the last three, critical decades. This began with the international response to the image of a ‘dying Sahel’, which followed the droughts of 1970s; it focussed on the transformation of food pro-

duction and distribution systems, technical interventions which were designed to boost agricultural and rangeland productivity and to usher in ‘modern’ resource-use techniques, including mechanization and Green Revolution-style experimentation with higher yielding foodgrains and pulses (Sanders et al., 1996; Macmillan, 1995). While a lot of aid went in this direction, much was mismanaged because technically inappropriate or poorly deployed.

In general terms, development thinking has now moved on to include much more measured economic reforms, respect for gender and cultural and ethnic pluralism, the better targeting of aid, and support to local institutions to which state power is being increasingly devolved (see below). But the aid system still contains too much duplication. It requires yet more regional and national coordination, especially at the international level. The malign colonial divide between francophone and anglophone cultures is pervasive. European, North American, African and Asian programmes designed to improve local development capacity have worked at cross-purposes, and still tend to be defined by their respective national policies and political agendas. Some of these programmes could be significantly improved by working in closer collaboration with Sahelian partners. Certainly, CILSS and the Club du Sahel are keen to see more regional and national coordination between donors.

One pronounced shift in the style of aid to the Sahel over the last 30 years has been towards funding for ‘natural resource management’. This has been driven by concern about ecological degradation and the recognition of the vital role that natural resources have in rural livelihood systems. Both of these perceptions were heightened in the drought years, yet there is now a large body of evidence, drawing on analysis of numerous projects since the 1970s, that support to natural resource management alone does little to improve ‘livelihood viability’. Other constraints must also be addressed, including income generation, access to employment, resolution of conflicts, land tenure security, variance in resource entitlements by gender and status, and so on (Carney, 1998; Batterbury and Forsyth, 1999). Natural resource management is relatively easy to inscribe in the goals and the aims of a short-term project and there are many sound examples, particularly in the NGO and state sectors, that have achieved notable successes at environmental improvement. But ‘livelihood viability’ in the round, as demanded by the sustainable-livelihoods approach, is both more important and much harder to focus upon. It requires a ‘process’ approach capable of overcoming a wider range of constraints, some of which may be contentious or political. Though fewer, there are some good examples of projects in which these more difficult areas have been tackled, as in the work of organisations like ENDA-Graf in Senegal, where farmers themselves led the research, designing and implementing phases of low-key interventions over a long time period

and set their own goals for use of external agency funds (Ndione et al., 1995).

4.3. Regional co-operation

The CILSS grouping (the Permanent Interstate Committee for the Fight against Drought in Sahelian Countries) was founded in 1973 and now comprises nine countries. The Club du Sahel operates as an intermediary between CILSS and donors, encouraging the sharing of knowledge and best practice. The Club has recently been stressing the need to encourage regional integration and the best use of aid in a time of economic reform and structural adjustment. Cour, in his essay in this collection, sees many possibilities for the development of the CILSS region, although they are not all rosy. For example Niger and Chad, although members of CILSS, are currently experiencing very poor economic conditions and, as a result of recent political developments, there have been some cutbacks in international donor support to these countries. Despite the current difficulties, these nations urgently need to be better incorporated into development and eco-regional initiatives.

4.4. Decentralization

A significant change in resource management in the modern Sahel is devolution of state power. Decentralization could bring significant benefits in such a diverse ecological and cultural area, but progress is slow (Toulmin, 2000). At worst, decentralization is no more than a partial abdication by the state, imposing free-market ideologies, driven by structural adjustment programmes. It can create unnecessary bureaucracy. The primary intellectual and practical challenge of decentralization is to clarify its aims: is it about local empowerment? or a reinstatement of modified forms of autonomous political systems? or about cost-cutting? Decentralized institutions should not be in opposition to central ones, but should not be 'led from above', and they need to control a fiscal base. Local rules (over common property, law, position of chiefs, etc.) cannot simply be adapted from national ones; they need to be simplified, but with heed to local norms. There are ongoing studies of decentralization in Mali, Burkina Faso, Ghana and Senegal, but more needs to be learned. Research should anticipate problems and opportunities, so that the risks can be minimised and the debate informed on possible rules and modes of regulation of finance, common and private property, and services.

5. Into the 21st century

Jean-Marie Cour, in his paper in this collection, provides a challenge to doom-laden predictions of economic

and environmental crisis. For him, it is vital to see the Sahel in regional context; as part of the West African economy, which is by-and-large following a realistic path of economic development, and is increasingly linked to the global economic marketplace. Going against the present rhetoric of World Bank and national aid donor policy (and some of the other papers in this collection), Cour asserts that research needs to focus on wealth creation, not on poverty reduction. For him, wealth creation could be accomplished first by increasing regional inter-linkages, for example, through facilitating migration to zones of economic 'attractiveness' and urban centres, thus increasing mobility. Second, wealth could be created by giving special attention to the vigour of trade and marketing around the emerging and still-developing population centres and cities. Third, it needs a reorientation of the international view of the Sahel: myths of crisis and poverty need to be replaced by a more realistic view of Sahelian vitality and its economic prospects. It is cities, not rural areas, that are absorbing the largest percentage of West Africa's population growth, because of jobs, markets and other opportunities. A Sahelian population of 80 million is forecast by 2020, almost balanced between rural and urban. As David Rain notes in a perceptive analysis of Hausa migration in southern Niger, migration is a solution to land degradation, as well as a reaction to it (Rain, 1999).

Cour's view of agrarian change is broadly consistent with Mortimore and Adams'. A 'silent agricultural revolution' of increasing cash-crop production and sales is occurring, particularly for specialised markets near to urban centres. Yet in truth, these trends benefit small areas, particularly, the accessible and the richer environments and regions of West Africa, and rarely reach the distant, rural Sahel. Even within the Sahel it is coastal Gambia, Senegal and Mauritania that have the greatest growth possibilities. Rural producers need to be organised to protect their market share against these peripheral and other peri-urban predators.

6. Discussion and conclusion: what now is the role of research?

The papers in this collection reflect the wider debate about the prospects for the Sahel. One's view of the future in that debate depends on one's disciplinary orientation, choice of data, scale of investigation, and linguistic tradition, among many other things. Debate is to be welcomed, not only for the way it constantly tests assumptions, but because of the Sahel's diversity of environments and societies, of pasts and of futures.

The diversity can be ranged along a number of related axes. First, and most simplistic, is the axis that stretches from optimism, a stance enthusiastically embraced by Jean-Marie Cour, to pessimism, not so evident perhaps,

but in the minds at least of Henk Breman and his colleagues. The two camps, the pessimists and the optimists have waxed and waned in their influence on the debate since the deep depression of the early 1970s, although, we like to think, there has been a gentle shift to optimism in many publications about the modern Sahel. A second and closely related axis separates those who see the Sahelian environment as fragile, poor and deeply implicated in its future, from those who see its strengths and possibilities and positive transformation by its inhabitants. A third, still related, axis separates those who believe in this indigenous capacity to transform for the better, and those who advocate intervention. This axis may be said to be another divide between Michael Mortimore and Bill Adams and Henk Breman and his colleagues, the one group believing in their demonstration of local adaptive capacity, the other in their proof that inputs of external aid and technology are an absolute necessity to compliment those indigenous strengths. Neither of these groups, of course, denies some truth in the stance of the other. This axis relates to yet another, between those who believe in strong government, and those who see a future devolved to the people. The 'devolved' end of this axis is clearly winning the argument. This particular part of the debate now circulates more between those who advocate caution, given the region's uneven legacy of local-level conflicts and warfare, and those who are ready to push ahead with populist faith.

None of our contributors to these papers or to the conference discussions that accompanied them, would deny that the Sahel is seeing a profound transformation of the ways in which its people relate to their environment and to each other. For Claude Raynaud, this transformation is fluid and dynamic, incorporating political and economic change, as well as environmental changes. But Raynaud has another equally compelling argument: the patterns of the modern dynamic are in strong continuity with those of the past. Traditional knowledge and cultures may be changing, but aid, structural adjustment, modernity and development, though they may transform the Sahel, cannot escape its history. The maintenance, even celebration of tradition seems even more necessary as the Sahel faces a series of economic shocks and political cataclysms. If these rich local traditions have been so adaptable in the past, as they certainly have been, they are likely to be able to absorb and build on ideas that are now flowing in rapidly from outside. The Sahelian farmer or pastoralist, battling against drought, degradation, pests, markets, changing land laws, and who knows what else, shows that it is the flexibility and absorptive capacity of this tradition that are its most remarkable and greatest strengths. The maintenance of these characteristics is the first requirement of any policy, at any scale, in the Sahelian context (Lavigne Delville, 1999). In this perspective, development institutions and government

policy must enable flexibility, yet defend the Sahel against its more sinister possibilities.

Research, which is after all the *metier* of most of our contributors, has had an equivocal role in these debates. At its best, it can produce the ambience for the kind of reflection shown in these papers and at the meeting to which they were first presented. The papers also show, we believe, that a quarter century of research has brought a clearer, though still clouded, view of the driving forces of change in the Sahel, both environmental and social, and a more realistic vision of its future prospects and constraints. It has also brought greater realism about the limitations of our knowledge of the Sahelian environment (Reenberg, 1999). It may have exposed the weaknesses of many forms of 'assistance' to the region, but little research can claim to have provided better answers. Worse, as Hulme's paper shows very well, research has the capacity to mislead and be itself misled. The often privileged place of research in the debate should not stifle profound caution about its findings. New research programmes will undoubtedly have to acknowledge these beneficial and malign potentials. They must also recognise, better accommodate and even make positive use of the diversity of approaches within the research community, and among its clients. There has been too much acrimony: what some have called the 'Punch and Judy' approach to research advice. Two important aspects of this process of reconciliation must be better dissemination both within the research community itself and to its potential users, and more democratisation of research, seen, not least, in the support for Sahelian research capacity.

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