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One step forward, two steps back in farmer knowledge exchange: 'scaling-up' as Fordist replication in drag

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6

ONE STEP FORWARD, TWO STEPS BACK IN FARMER KNOWLEDGE EXCHANGE

'Scaling up' as Fordist replication in drag

William G. Moseley

Introduction

A few summers ago I spent several hours in an airline lounge in Paris as I had a long layover between flights from the United States to Mali where I was to do preliminary fieldwork for a research project on the New Green Revolution approach in Africa. Although I had worked on and off in Mali since 1987, I was very keen to return because it was my first time back since a coup d'état in 2012. In addition to work, I wanted to see old friends and I was very curious to see what had changed.

As I settled into a bank of workspaces to call a number of colleagues and friends in Mali before I arrived, a thirty-something woman sat down next to me and similarly set about her work of making calls and typing on her laptop. Try as I might to ignore her voice, I could not help but overhear snippets of the dozen or so phone calls she would make over the next two to three hours. It became clear, by her accent, that she was American, likely well educated and that she was director of an NGO working in southern Mali on agricultural issues. It was June (still early in the rainy season) and she was communicating with various staff about getting agricultural inputs out to farmers in a timely fashion. She talked to one staff member about soliciting funds from a private sector donor, Orange, the French cell phone company. This was for support to bring their project to 'scale'. She actually spoke repeatedly about scale in her various calls with staff. It seemed as if it was almost an obsession for, in her view, all would be for naught if they could not bring this project to scale. The other aspect that became obvious in these conversations was that she travelled a lot. She had just been in the US for a conference at Harvard. She would then be in Mali for a week before heading to a meeting in East Africa and then up to Europe.

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So what have we learned here (other than not to speak too loudly on the phone while in airports)? My new friend at the airport, whom I would never actually meet but subsequently would learn a lot more about, was part of a new breed of development workers. She had a business degree from an American Ivy league school, was passionate about international issues (particularly hunger), carefully framed the development organization she founded as a social enterprise (not an NGO), and believed that her approach was new, different and would succeed where others had failed. She also represents a particular imaginary, a global jet setting elite who directs projects from international airport lounges. Her approach to agriculture, frequently called the New Green Revolution for Africa, involving improved seeds, pesticides, fertilisers, the commercialization of agriculture, and business-savvy development professionals, is also the subject of my study.

To be more specific, I am exploring the ‘scaling up’ approach to extension embedded in the New Green Revolution for Africa’s emphasis on value chain construction. I seek to understand how this approach is similar to, or different from, previous methods, and how this tactic resolves or accentuates agro-development challenges related to gender and participation. This approach to knowledge dissemination is explored using case studies in Mali. My findings are based on 30 years of work and research experience in Mali in which I have informally observed NGO and government approaches to extension. In particular, I rely on a set of semi-structured interviews from June 2014 with government and NGO representatives about the New Green Revolution for Africa approach in southern Mali. This included observation of extension staff working for a social enterprise (inspired by this paradigm) in southern Mali.

Context in the literature

This chapter is informed by ideas and theories from cultural and political ecology, as well as contested agronomy. Certain traditions in cultural ecology have sought to validate traditional agricultural practices in the tropics as rational (Moseley *et al.* 2013). Cultural ecology was, in part, a reaction to colonial modes of management which were grounded in Eurocentrism. As Richards notes (1985:11): ‘French, Belgian and British colonialists, convinced of their own intellectual and cultural superiority, failed to understand both how particular and place-bound were their own principles of environmental resource management, and the extent to which many of the characteristic practices of African farmers and pastoralists were effective responses to the highly specific challenges posed by the African environment’. Scott (2009) has made similar points about historically and regionally situated western modes of understanding being pitched as universals. Political ecology built on the insights of cultural ecology about local agricultural practices, but inserted the need to understand these strategies as nested in political economy dynamics at the local, national, regional and global scales (Moseley *et al.* 2013). As such, one cannot understand changes in agriculture, and orientation of agricultural extension, without understanding political economy. Post-structural political ecologists have

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also written extensively on environmental narratives, or the discursive framing of environmental management issues as influenced by power dynamics (Leach and Mearns 1996; Robbins 2012).

This chapter is also informed by the discussion of contested agronomy. As Sumberg, Thompson and Woodhouse (2012) and Ross (2014) have suggested, development-oriented agronomy, originally tropical agronomy, has its roots in Europe and was driven by the need for colonial powers to capture and modify tropical crops, soils and farming practices as fuel for European economic expansion. In the post-colonial period, Sumberg, Thompson and Woodhouse (2012, 2013) further argue that development-oriented agronomy has been influenced by the neoliberal project, the environmental agenda and the participation agenda. When thinking specifically about agricultural extension practices and development-oriented agronomy, one could argue that there is both complementarity and competition between the participation agenda and neoliberal project. In the first instance, it could be that the participation agenda is consistent with the neoliberal project because increased decentralization and local-level decision making may render national governments less important (Mann 2015). In the second situation, however, increased participation may lead to greater expression of local-level particularities, both social and ecological (Richards 1985). Such local particularities may rub up against the need to standardize in capitalist oriented agriculture (McMichael 1997).

Understanding knowledge politics is also central to contested agronomy (Andersson and Sumberg 2017). As Vanloqueren and Baret (2009) note, an analysis of knowledge politics in agronomy helps explain why some technologies or development pathways are privileged over others. I would further argue that embedded in knowledge politics are certain ways of knowing and doing. With respect to the New Green Revolution for Africa, the influence of a business-oriented donor community (Schurman and Munro 2014) has likely resulted in certain modes of practice in agricultural extension.

The evolution of extension in tropical agriculture and development

Jones and Garforth (1997) have defined agricultural extension as including 'activities which seek to enlarge and improve the abilities of farm people to adopt more appropriate and often new practices and to adjust to changing conditions and societal needs'. While various forms of agricultural extension have been around for centuries, more modern versions of this approach likely date to the mid-nineteenth century in the UK. It was at this time that both Oxford and Cambridge universities began to think about serving populations in surrounding communities. While agriculture was not the initial focus of these efforts, it began to receive more attention by the 1890s.

Developments in the UK influenced thinking in the United States and spread to newly created land grant universities with explicit public missions. This

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happened to coincide with a political movement in the United States known as agrarian populism that was organized by small and medium farmers against urban-based financial speculators (Schneiberg *et al.* 2008). According to Richards (1985: 16), in this era ‘American extension agents were seen, initially, as employees of the farming community, not as agents of a centralized scientific bureaucracy. A priority for a number of early extension services in the United States was to communicate farmers’ needs to researchers, not to disseminate scientific findings to potential users. Under a populist rubric extension workers were truly “agents,” rather than the educators, communicators and even salesmen, they have since become’.

This is not the extension model that comes to Africa in the colonial era, through the activities of some colonial agricultural research stations as well as missionary outposts in the early twentieth century (Jones and Garforth 1997). Here there was little interest in working with African understandings of tropical agriculture, but rather the focus was on getting Africans to adopt European practices and/or to grow crops for the commercial market. In many cases, local, subsistence-based systems were seen as a problem and frequently framed as under productive and environmentally destructive (Beinart 1984). In West Africa, a combination of taxation, coercion and extension was used to develop cash crop farming in the region in the colonial period, a process often met with considerable local resistance and agency (Bassett 2001).

In Mali, the French colonial authorities were mainly interested in working with local farmers to produce cotton. They initially focused their efforts on irrigated cotton in the Office du Niger (middle Niger valley around Segou) but met with limited success. Cotton production for the external market expanded in the 1950s when the French began to focus on the promotion of rain-fed cotton (as opposed to irrigated varieties) in the southern third of Mali, mainly the Sikasso, southern Segou, and southern Kouloukoro regions. The French parastatal Compagnie Française pour le Développement des Fibres Textiles (CFDT), or the French Company for the Development of Textile Fibres, was responsible for facilitating cotton production in southern Mali (Roberts 1996; Bingen 1998). Early French work with farmers in Mali was highly coercive (Becker 1994), eventually moving to a model of price incentives to encourage production (Roberts 1996). In both cases, there was a consistent effort to modernize agriculture along the lines of European agricultural methods and systems (van Beusekom 1997).

In the post-colonial period, the ‘Training and Visit’ extension method, or T&V, prevailed throughout most of the 1970s, ’80s and ’90s in many African countries (Anderson 2006). T&V is an extension methodology wherein the agent meets repeatedly with select groups of contact farmers who in turn are to disseminate what they learn to others in the community. It is in part based on models of diffusion, i.e. how ideas and practices spread across a landscape in space and time. This was the dominant approach to agricultural extension when I worked and did research in Mali between 1987 and 1995. In interviews, agricultural extension agents, working for the Office de la Haute Vallée du Niger (OHVN), often

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characterized their relationship with farmers as that of a teacher and his students, making it clear who had the knowledge to share (Moseley 1993). Ideally agents would discuss problems with farmers, and then return over the coming months to share a number of technical packages with the farmers as a way to address these problems. One of the challenges I noted at the time was the power differential between extension agents and local farmers, and the fact that book knowledge was valued over local knowledge (Moseley 1996). In southern Mali, this approach to extension was overshadowed by an over-arching preoccupation with growing more cotton (Moseley 2008). As such, extension efforts were almost exclusively focused on male farmers (the target audience for cotton growing) who were taught techniques developed on research stations (see Figure 6.1). While farmers often deviated from these prescriptions when extension agents were not present, based on their own knowledge and particular constraints, the actual T&V sessions were run in a top-down, proscriptive manner. As others have discussed, the Malian state and its agricultural extension efforts, weakened by neoliberal economic reform, had become the hostage of a single commodity (cotton) whose sale paid most of the bills (Keeley and Scoones 2003).

With an increasing awareness of local knowledge, prompted in part by cultural and political ecology in anthropology and geography, more participatory research and extension methodologies began to appear from the late 1980s to the 1990s. The most popular of these was a suite of techniques developed and made popular in several works by Robert Chambers (e.g. 2008), initially known as Rapid Rural



FIGURE 6.1 Field day in southern Mali in the late 1980s. A group of (all male) farmers being taught techniques for growing cotton by OHVN extension staff. Photo by author. **Not for distribution**

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Appraisal and then Participatory Rural Appraisal. This approach, using participatory techniques such as community mapping, proportional piling, transect walks, and Venn diagrams (see Figure 6.2), sought to make the research process more transparent, participatory and accessible to illiterate subjects, and – critically – open to local insights and input. Central to this method was a core belief that local knowledge could make a critical contribution to development initiatives and therefore research methodologies were needed to make this know-how legible to outsiders (Chambers 1994).

While this extension and research approach never made significant inroads into government extension work in Mali, it did have a big impact on NGOs and their practice during this period. While working for Save the Children (UK) in central Mali in the mid-1990s, I saw first-hand how participatory methodologies were incorporated into extension work and assessments (Moseley *et al.* 1994; Moseley 1995, 2007). One of the more remarkable initiatives using these approaches at the time was the NGO World Neighbors in the Segou region of central Mali (Gubbels 1994). While this group sought to improve food production, food security and



FIGURE 6.2 Participatory Rural Appraisal, using progressive piling, with female farmers in Zimbabwe in mid-1990s. Photo by author.

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nutrition in rural communities (especially among women), it started with the assumption that local insights and know-how were critical to this process. According to Gubbels (1994), the idea was to train ‘peasant farmer experimenters’ in an approach and method for comparing new technologies with existing practices. The steps in this process were described as follows: 1) farmer diagnosis of agricultural problems; 2) helping communities identify potential innovation; 3) community selection of innovations to test; 4) testing of new technologies; 5) community evaluation of results; and 6) community-managed extension of successful innovations. World Neighbors claimed that this approach was enormously successful, leading to series of innovations that blended local and outside know-how and technologies – and an outcome similar to that advocated by Richards (1985). The programme also claimed success in engaging with and involving women, a process which, it was claimed, eventually led to significant household food security and nutrition gains (Gubbels 1994). The programme continues to function today with limited support from Groundswell International,¹ a successor to World Neighbors.

The New Green Revolution for Africa and reversals in agricultural extension

The New Green Revolution for Africa starts with the basic premise that the first Green Revolution of the 1960s and 1970s largely bypassed Africa, and that Africa now needs its own Green Revolution to jump start development and feed its growing population.² As with the previous Green Revolution, the new one involves the use of improved seeds, fertilisers and pesticides to boost crop production (Annan 2007; Toenniessen *et al.* 2008). However, the New Green Revolution differs from the previous one in a number of ways. Unlike the first iteration (which was largely limited to cash crops and male farmers in the African context), this new one is more focused on food crops and the need to reach female farmers, who are the majority of agriculturalists in many areas of the African continent. Proponents further argue that this new approach is best adopted within the context of global value chains, that is, African farmers need to be integrated into chains of input suppliers, processors and transformers of agricultural products, and retailers (Moseley *et al.* 2015).

According to Hellin and Meijer (2006: 4), ‘a value chain can be defined as the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final customers, and final disposal after use’. The Alliance for a Green Revolution in Africa (AGRA) conceptualizes value chains as the sequence of activities focused on the transformation of a crop from the farm to national levels. At the farm level, the value chain framework promotes the ‘upgrading’ of agricultural production and food security by integrating farmers into new input and output markets in order to increase production, sales, and income. At the national level, the value chain approach seeks to transform the structure of national economies by promoting

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investments in agro-processing to add value to products previously exported as unfinished goods. Figure 6.3 depicts these different steps for the AGRA project from inputs, to farming, processing, distribution, and trading.

This approach also involves a new and unprecedented level of public–private partnerships, as donors work to increase the penetration of the private sector and build links between African farmers, input suppliers, agro-dealers, agro-processors and retailers (Hartmann 2012). The private sector, in turn, lauds this new approach and supports it through rhetoric, active involvement in sales, as well as philanthropic activity (e.g. Page 2012). Along with private sector involvement, has come greater emphasis on the need to ‘scale-up’ after an initial pilot phase – small is no longer beautiful (Schumacher 1973). This last shift has significant implications for the practice of agricultural extension.

Scaling in this context has two meanings. First and foremost, it denotes mass replication akin to assembly-line or Fordist reproduction in older industrial terms. It also suggests the need to jump from local, to national, regional and international scales by integrating small producers into value chains that cross these levels (Hartmann 2012). As I will discuss below, local knowledge returns to the back seat in such a process (as compared to its relative import during the participatory development era, at least among NGOs) and local control is also lost as farmers are more closely integrated into global supply chains. While African farmers have long been integrated into global supply chains for some cash crops, such as cotton (Moseley and Gray 2008) and cacao (Ryan 2011), this is a relatively new phenomenon for food crops.

While not always stated explicitly, local technology and know-how are almost always framed as inadequate in the New Green Revolution for Africa literature, and those who claim otherwise are frequently dismissed as naive. Norman Borlaug, the father of the first Green Revolution, wrote in one of his final publications (Borlaug and Dowswell 1995: 123): ‘Some ... contend that small-scale peasant food producers can be lifted out of poverty without the use of modern agricultural inputs ... They envisage soil fertility strategies based on organic fertilisers, farmer-bred and maintained indigenous varieties, biological or mechanical control of weeds, diseases and pests ... In our experience, small-scale farmers are loath to

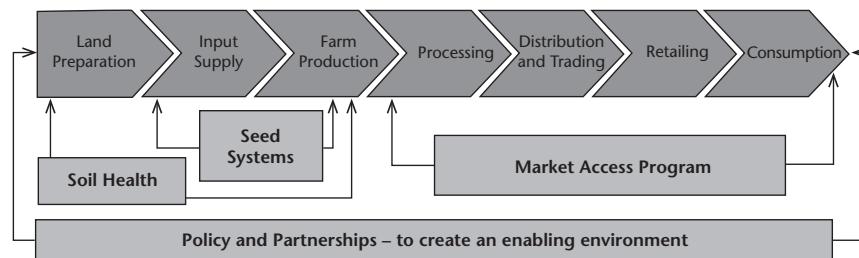


FIGURE 6.3 Alliance for a Green Revolution in Africa (AGRA)'s value chain approach for agricultural products. Source: Adapted from Toenniessen *et al.* (2008). Used with permission.

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adopt such ‘low-input, low-output’ technologies’. Furthermore, agroecology is not imagined or accepted as a basis for improved production (also see Sumberg *et al.* 2013).

Given the assumption, or bias, that farmers need exogenous technology and know-how to become more productive, extension has returned to older models seen during the colonial and T&V eras that emphasize a more top-down approach to knowledge dissemination. Furthermore, given the increasing presence of social enterprises as vehicles for development, as well as public–private collaborations, the business approach to development has conflicted in other ways with participatory models of extension emphasizing local knowledge. First and foremost, there is no money to be made in leveraging local knowledge. If a social enterprise needs a revenue stream, then something needs to be sold to the farmer-cum-customer. Secondly, in order to be financially viable, social enterprises need to increasingly reach large numbers of customer-farmers in order to be efficient and drive down costs. Lastly, the increasing involvement of business-oriented philanthropists in African agricultural development has resulted in a growing emphasis on metrics to demonstrate impacts and growth.

In June 2014, I spent several days visiting a social enterprise in Mali actively involved with the New Green Revolution for Africa (whose director I briefly discussed in the introduction to this chapter). This organization, which I will henceforth refer to using the pseudonym ‘YourFarmer,’ started working in Mali in 2012. They operate in an area south of the capital city Bamako and introduce technical packages for improved maize and groundnut production. They are also part of a growing number of organizations working in southern Mali to improve food production. For example, Mali is a ‘Portfolio 1’ country for AGRA, a ‘focus country’ for USAID’s Feed the Future programme, and the recipient of the World Bank’s ‘Fostering Agricultural Productivity Project’. What these groups hold in common is a core belief that with the right technologies and know-how, southern Mali could become a bread basket for the entire region. YourFarmer believes that farmers in southern Mali are ripe for a transition to high external input agriculture. According to the group’s website: ‘Malian farmers, if connected to the right inputs, markets and affordable financial services, can get out of poverty, and help feed a growing country and region in the process’. The group’s website also discusses the importance of scaling, a process needed to ensure the growing efficiency of their operations. ‘As [YourFarmer] scales, we’ve generated some important lessons that influence how we operate. Lesson 1: Each person we add should be more efficient and lower our costs over time. We are aiming to serve over 450 farmers per field agent by 2022, up from 118 farmers in 2013’.

YourFarmer has developed an innovative savings plan involving the use of cell phones. Over the dry season, male and female farmers save money, purchase cards for a range of values from a network of vendors, and then using a client ID code, are able to upload their savings via a cell phone to a remote account kept by YourFarmer. This savings plan avoids the credit problems associated with some other high external input agricultural programmes. Farmers may purchase packages

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(improved seeds and inputs) for 1/16th to 1 ha of groundnuts (mostly women) and 1/8th to 5 ha of maize (mostly men). YourFarmer then comes to the village at the beginning of the agricultural season with the seeds, fertilisers and herbicides for each farmer. Part of the cost also includes training from YourFarmer staff.

I was able to observe training by YourFarmer staff in a few of the communities where they work – which also happens to be an area where I have undertaken long-term research. Much of the training involves transmitting a highly prescribed approach to planting and using associated inputs. One of the improved practices that YourFarmer is introducing is the micro-dosing of fertiliser. The basic idea is that one should use a small amount of fertiliser under each planted seed to maximize efficiency (Aune and Bationo 2008). In practical terms, this means digging a hole, depositing fertiliser, adding a little soil, depositing the seed and then covering the seed with soil before moving on to repeat the process (see Figure 6.4). This contrasts with a traditional method of going down a row, planting seeds and then dropping fertiliser in spaces equidistant between each seed. In informal conversations with participating farmers (who I knew from previous work in the area), several complained that the micro-dosing approach was, in their view, overly labour intensive. They understood the benefits, but just didn't have the time, given other farming demands. Interestingly, YourFarmer staff also complained that farmers just didn't understand the benefits of micro-dosing. At YourFarmer headquarters in Bamako multiple meetings were held in which micro-dosing was framed as an



FIGURE 6.4 Farmers micro-dosing fertiliser in Southern Mali. Photo by author.

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educational problem. The response was to change the training to better articulate the benefits of micro-dosing. Labour constraints were not discussed because farmer input was not central to YourFarmer's model of agricultural extension.

The other new extension agents on the ground in Mali are stationary and mobile agrodealers who sell inputs to farmers. For example, the local fertiliser company Toguna, which is an affiliate that mixes for the international corporation Monsanto, has a network of sales agents that work directly with farmers to get them inorganic or mineral fertilisers (often NPK or urea). The entrance of such private sector actors has been greatly encouraged by the donor community and proponents of the New Green Revolution for Africa. While Toguna agents do far less extension than YourFarmer, they do dispense a large amount of technical advice narrowly focused on the use of their products.

Conclusion

Agricultural extension has shifted and evolved over time in Africa. Little has been written about agricultural extension under the New Green Revolution for Africa, with its emphasis on value chains, public-private partnerships and scaling. Using southern Mali as a case study site, this chapter explored agricultural extension under this new paradigm in relation to past approaches during the French colonial, T&V, and participatory eras. While agricultural extension undertaken by NGOs arguably became more of a two-way dialogue between farmers and researchers in the 1990s participatory era, this has all but disappeared in the contemporary period dominated by the New Green Revolution for Africa. Given the dominant assumption that African farmers need new technology and know-how to become more productive, extension has returned to older models seen during the colonial and T&V eras that emphasize a top-down approach to knowledge dissemination. Furthermore, given the increasing presence of social enterprises as vehicles for development, the business approach to development also conflicts in other ways with participatory models of extension emphasizing local knowledge. First, there is no money to be made in leveraging local knowledge. Because social enterprises need revenue streams, goods or services must be sold to farmers. Second, in order to be financially viable, social enterprises need to increasingly reach large numbers of customer-farmers in order to be efficient and drive down costs. Lastly, the increasing involvement of business-oriented philanthropists in African agricultural development has resulted in a growing emphasis on metrics to demonstrate impacts and growth. This push for efficiency and numbers means that the particularities of place, participation, sensitivity to gender and power differentials, local knowledge or two-way dialogue are all but absent. As such, the impact of scaling on agricultural extension means that the New Green Revolution is only masquerading as gender sensitive and participatory. The above also suggests that knowledge politics, and the primacy of Western agronomic knowledge, is central to recent changes in agricultural extension.

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Notes

- 1 Groundswell International works with communities and organizations in Africa, Asia, and Latin America to spread agroecological farming practices, farmer innovation, farmer-to-farmer extension and community health (<http://www.groundswellinternational.org/our-story/>).
- 2 The truth is that the first Green Revolution did not entirely bypass Africa. It did appear in a more limited way and had a significant influence on the production of certain cash crops such as cotton, cacao and coffee. It also influenced the production of some food crops in certain areas, such as maize in Zimbabwe and rice in The Gambia (Carney 2008).

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