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Mira Slavova, Anca Metiu

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Mira Slavova

Anca Metiu

RITUALIZATION AND THE PROCESS OF KNOWLEDGE TRANSFER

MIRA SLAVOVA¹

Gordon Institute of Business Science, University of Pretoria, South Africa

ANCA METIU

ESSEC Business School, Cergy- Pontoise, France

Abstract

We analyze interactions among members of rural communities in Ghana and agriculture development specialists. We find that these participants in the knowledge transfer process are separated by deep knowledge boundaries, as well as by diverging worldviews (one centered on community relations, the other on market relationships). In this context, knowledge transfer is enabled through ritualized interactions and in particular by the use of two types of ritualization strategies: marking strategies (visiting dignitaries and events, praying, gift-giving) and recurring strategies (performing, fable-telling, affirming community values). These findings show that ritualization – understood as a way of acting that distinguishes particular situations from other, usually more mundane, activities – allows encounters between opposing orders and thus enables knowledge transfer. We suggest that this is the case because ritualization speaks to people’s aspirations to change; it is morally redemptive; and it bridges across groups. Ritualized interactions facilitate knowledge transfer by creating a context for learning during mundane interactions, by fostering mechanisms for peer-learning and teaching and by triggering reverse learning on behalf of knowledge workers from rural communities. Our study contributes to the literature on organizational rituals, learning in strong culture contexts, and economic sociology.

Keywords: knowledge transfer, knowledge boundaries, ritualization, community learning, development

¹ Authors listed in reverse alphabetical order. Both authors contributed equally to the paper.

INTRODUCTION

Groups and communities constantly engage in knowledge acquisition processes to gain, adapt, and integrate new technologies, methods, and views into their activities. For this, communities as collective actors and not as simple collections of individuals, engage with a diverse set of knowledge workers who perform roles of knowledge intermediaries, boundary spanners, and cultural brokers. The resulting interactions involve intricate dialogues, clarifications, interpretations, and negotiations that have prompted scholars to extend understandings of knowledge transfer to knowledge translation and transformation; because they involve not only the acquisition of new vocabularies, but also the negotiation of common understandings and even interests (Bechky 2003; Carlile 2004). Therefore, while we choose to use the term knowledge transfer for simplicity of exposition, we view it as encompassing not only a simple transmission of information, but also translation and transformation.

When communities and organizations function as collective actors in the knowledge transfer process, learning can be perceived as a double-edged sword: despite the hope and the promise of improvement it brings, learning may be viewed as threatening to the *status quo*, and endangering existing community structures and bonds (Barley 1986; Orlikowski 1992; Dougherty 1991). Consequently, established group culture can constitute a major impediment to the integration of new knowledge. In agriculture development contexts, this challenge manifests itself rather strikingly. On the one hand, opening up to outside knowledge is of vital importance for human welfare and wellbeing in agricultural smallholder communities. For example, the acquisition of new agricultural and managerial knowledge, and its transformation to fit local needs are critical to the food security and welfare of many communities in the rural areas of less developed countries. On the other hand, a series of factors such as cultural differences (Andolina, Laurie, and Radcliffe 2009), the ingrained legacy of colonialism and the persistent inequalities between the ‘developers’ and ‘those to-be-developed’ (McFarlane 2006a; Spivak 1988) all exacerbate the knowledge gaps between the parties to the transfer process and the difficulties encountered in this process (Hobart 2002). Moreover, the knowledge transfer process is impeded by the fact that new knowledge often comes in the form of a new order, a fundamentally different worldview that encompasses

fundamental assumptions about the world and human activity (Dessein, 2000). For example, the current push for fostering market-based relationships among agriculture smallholders may be perceived as threatening to community bonds based on solidarity and mutual help. Often, in spite of the best efforts and intentions of both local communities and agriculture development assistance agencies, knowledge transfer processes remain ineffective and smallholder farming communities continue to be plagued by low agricultural productivity and poverty (Collier and Dercon 2014). Understanding community learning thus poses a major challenge to all involved, farmers, development practitioners, their agencies and researchers: how can interpersonal bonds and shared values be upheld while much-needed outside knowledge, which is potentially threatening to community cohesion, is being introduced?

Research has identified several factors that facilitate the knowledge transfer process. Thus, within organizational settings teams (Ancona and Caldwell 1992), boundary objects (Bechky 2003; Carlile 2002), and knowledge workers with boundary spanning roles (Levina and Vaast 2005) have proved effective in bridging the gaps separating groups in possession of different kinds of knowledge and culture. At the same time, much less research has focused on the structuring and understanding of the process through which communities that are not confined within organizational structures, engage in knowledge transfer. We propose that when the knowledge transfer process takes place within a community, less formal setting, and when the knowledge disparity consists primarily of mismatched values, incompatible beliefs and diverging worldviews, attention is due to the symbolic aspects of the knowledge transfer process.

In this paper we offer ritualizing strategies as an answer that fully acknowledges the centrality of culture and the significance of its symbolic, ritual elements in constituting and maintaining communities, and thus in their response to the threat posed by new knowledge to community bonds. We understand ritual as a staged communicative dimension of social activity, both sacred and secular (Baumann 1992; Goffman 1967; Wuthnow 1989). In contrast to the dominant view of rituals as custodians of the existing social order, and obstacles to change and learning (Durkheim 2012; Collins 1990; Collins 2004; Meyer and Rowan 1977; Dacin, Munir, and Tracey 2010), we view ritual as a mechanisms for effecting social

change (C. Bell 1992; Bourdieu 1977). This view focuses on ritualization as a strategy that facilitates and authorizes passages or encounters between opposed orders (Bourdieu 1977). Remarkably, ritualization – understood as a way of acting that distinguishes particular situations from other, usually more mundane, activities (Bell 1992) – seems to be particularly effective in contexts where diverging worldviews come into contact and the resulting tensions need to be appeased. Thus, ritualization appears particularly useful for understanding knowledge transfer in cases where knowledge boundaries are deeply ingrained and communities identify with strong localized cultures. We focus on the case of the incursion of market-driven ideologies into the world of rural agricultural communities in Africa. As market principles make inroads into the world of tightly-knit farming communities, they also bring into question established knowledge and existing norms. To briefly preview our findings, an ethnographic study of farming communities in rural Ghana, who have been exposed to market attitudes; led us to observe that ritualization strategies enabled the knowledge transfer process through their impact on knowledge transformation and mutual learning.

THE PROCESS OF KNOWLEDGE TRANSFER

The process of knowledge transfer among different organizational entities – company departments, working groups, or occupational communities – is complex and rife with difficulties (Zander and Kogut 1995). The nature of knowledge is, of course, the main reason for the challenge of transferring knowledge. As scholars have shown, knowledge is a ‘*dynamic and ongoing social accomplishment*’ that is *emergent* (arising in activities), *embodied* (carried and enacted by human actors), *embedded* (situated within socio-historic contexts) and *material* (much like practice, it is constrained by material matters) (Orlikowski 2002, 2006). In other words, not only is knowledge often tacit, but also difficult to articulate and acquire (Nonaka and Takeuchi 1995; Zander and Kogut 1995), mainly because it is highly bound up with the context and with the social groups in which it has been created. The communities that produce and integrate knowledge can be formal or informal social groups, such as organizations, communities of practice (physical and virtual), villages, and so on, all of which share a common culture.

When it is embedded in communities with strong internal norms, knowledge can be bound up with other highly localized, culturally-specific elements that can hinder the knowledge transformation processes (Bechky 2003). Groups with a long histories have been shown to resist learning more so than new groups (Argote, Gruenfeld, and Naquin 2001; Barley 1986; Orlikowski 1992). Furthermore, in many community contexts none of the factors that facilitate organizational or community learning – codified knowledge (Zander and Kogut 1995), strategic similarity (Darr and Kurtzberg 2000), or common superordinate organization (Ingram and Baum 1997) – are present. The complexity of the knowledge transfer process is such that the notion of transfer has been extended to include processes of translation and transformation. Research has shown that as knowledge disparities grow and novelty increases, the transfer process involves not only the emergence of common taxonomies but also the negotiation of common meanings and interests (Carlile 2002; Carlile 2004).

The processes of clarification, meaning-making, and negotiation involved in knowledge exchanges have been studied in detail (Bechky 2003, Carlile 2004). When learning challenges cultural assumptions (Schein 1993), interactivity and dialogue are necessary because learner's involvement is essential (Lewin 1943; Schein 1996). Consequently, the exchanges triggered by boundary objects used and by knowledge workers performing boundary spanning roles need to be interactive and dialogical, i.e. they need to support meaningful, intricate, and mutually engaging (Tsoukas 2010). As Bechky (2003) has shown, tangible boundary objects need to invoke precise exchanges and specific loci of practice in order to foster the emergence of understanding and common ground. Facilitators with boundary spanning roles are especially valuable when knowledge is non-codified (Ancona and Caldwell 1992; Levina and Vaast 2005), and when they identify simultaneously with two or more groups (Meyerson and Scully 1995). Apart from their competence, boundary spanners' credibility and effectiveness are strongly linked to their ability to present themselves as having the group's interests at heart (Eagly, Wood, and Chaiken 1978) and in a way consistent with the prevalent culture of the group (Perrone, Zaheer, and McEvily 2003). Such studies suggest that successful knowledge transfer processes among informal groups and

occupational communities can be characterized by the tangible materiality of boundary objects, and by the participatory engagement in dialogical exchanges fostered by boundary spanners.

While knowledge transfer often happens in groups and communities, it is fair to say that occupational communities have been noted primarily as the backdrop for knowledge transfer processes. Within organization studies the focus has remained exclusively on knowledge transfer interactions at the levels of dyads and small groups and in established organizations (Barley 1986; Orlikowski 1992; Bechky 2003; Carlile 2004), rather than learning within larger and less formal, ad-hoc groupings, brought together by shared cultural and occupational identities. The few exceptions are cases where the community has to learn as a whole (Senge and Suzuki 1994; Levitt and March 1988; Huber 1991). Thus, close examinations of the process of collective knowledge transfer, translation and transformation, of learning at the community level, remain lacking.

Within the development studies literature, scholars have examined occupational learning in farming communities by considering knowledge transfer through the introduction of new agricultural practices (Kleerx and Leeuwis 2008, Dessein 2000). Such studies have pointed out that the agriculture development context poses particular challenges, whereby the knowledge transfer process is rife with problems and failures (Pretty 2008; Collier and Dercon 2014; Gautam 2000). Research has also shown that innovations in production techniques and the introduction of market-oriented production tend to transform social relations in rural Africa. New knowledge can be met with latent grievances and inchoate tensions, thereby bringing communities under stress (Barker 1989). This is the case because the development context involves not only different lexicons, sets of meanings, and interests, but also multiple historical layers of power relations, of economic dependencies, of cultural inter-changes and mis-understandings (McFarlane 2006a). In the post-colonial context people tend to be wary of any novelty undermining traditional structures, and especially of novelties brought in by former colonists (McFarlane 2006a).

More fundamentally, the introduction of the market paradigm as a basis for social relations in smallholder communities tends to challenge the traditional worldview of the farming communities and to

put into question their organizing principles (Dessein 2000). In the case of agriculture development, farming can be viewed as a way of life or as a business, depending on the community to which one belongs (small farmer community or development industry). Market relationships distract from community members' primary obligations to the well-being of their fellow sisters and brothers, and from perceptions of shared identity and sense of belonging (Tönnies 2001; Wenger 1998). Therefore, the clash in worldviews can pose a threat to traditional values, bonds, and ways of living that constitute communities' very fundament.

The threat to community bonds, the incommensurability between worldviews may prevent the actors from engaging in the intricate, participative exchanges upon which the process of knowledge transfer rests. To address the symbolic threat posed by the new worldview, symbolic means need to be mobilized. We surmise that in order to understand the process by which communities engage in learning while maintaining strong community ties, attention to ritual and ritualization is necessary.

RITUALIZATION AND THE KNOWLEDGE TRANSFER PROCESS

At the risk of over-simplifying, we can state that there are two main ways in which the relationship between secular ritual and organizational learning has been conceptualized. The prevailing view in organization theory positions rituals mainly as impediments to change and learning, their main function the maintenance of existing institutional arrangements (Dacit, Munir, and Tracey 2010). This organizational view draws on classical work that links ritual and community in the most definitive way (Durkheim 2012; Collins 1990; Collins 2004). According to Durkheim, ritual is the very source of collective symbols, the very generator of community bonds (see also Collins 1990, 2004). Contemporary understandings of ritual construct it as action, in opposition to thought, and ritual is viewed as symbolic action, representing verbally identifiable, yet tacit meanings (Bell 1992; Hollywood 2002). In contrast to conceptual blueprints such as beliefs and myths, rituals are seen as something acted out, as the performance of such conceptual orientations; they are highly participative performances with strong

material elements. In recent years anthropologists and sociologists have come to see ritual as an aspect of all social activity (Bell 1992; Wuthnow 1989).

The view of ritual as sedimented culture has been a mainstay of organization theory. It points out the ubiquity and persistence of ritualized elements in organizations, such as structures, techniques, or policies based on rational processes (Meyer and Rowan 1977). Through the decoupling of formal policies and actual practices, such rituals help maintain the status quo (Meyer and Rowan 1977). For example, a recent study shows how the performance of dining rituals (the use of particular spaces, artifacts language, and so on) at the University of Cambridge helps maintain the British class system (Dacin, Munir, and Tracey 2010).

An almost cynical understanding of ritualized aspects of organizations has been put forth by the dramaturgical perspective within organization studies. This stream has drawn attention to the ubiquitous rituals of storytelling, knowledge sharing, celebrations, and events in organizations and equates them with meaningless organizational life (Boje 1995). In this view, 'dramaturgical performances' involving groups and communities in organizations are seen as untruthful and potentially manipulative (Bjorkeng, Clegg, and Pitsis, 2009). In sum, the established organizational view in casts rituals as maintaining current institutional arrangements through at best pointless and at worst devious performances which serve as impediments to change and learning (Dacin, Munir, and Tracey 2010).

When we look outside our field though, especially in anthropology, we notice that a strategic, performative view of ritualization has been offered (C. Bell 1992; C. M. Bell and Aslan 1997) as an alternative to the organizational view. Building on Bourdieu (1977), Bell defines ritualization is a strategy for dealing with situations in order to render them more coherent with the group's values (Bell 1992: 108). In contrast with Durkheim who posited that the sacred is conveyed through social rituals, Bell argues that "ritualization gives rise to (or creates) the sacred as such by virtue of its sheer differentiation from the profane" (1992: 91). In this view, ritualization is something people do, it is situational and strategic: it is "a way of acting that is designed and orchestrated to distinguish and privilege what is being done in comparison to other, usually more quotidian, activities" (Bell 1992: 74). Thus, acting ritually is a

cultural strategy of differentiation rooted in the interplay between a socialized body and its environment (Bell 1992). The dimensions of ritualization identified by Bell and Aslan (1997) include *formalization*, *traditionalism*, *sacral symbolism*, and *performance*. In contrast with the organizational view of ritual, performance is only one aspect of ritual; a sine qua non aspect, to be sure, just like formalization; but ritual is not drama, it is a performative activity done by people, together, in particular circumstances.

The performative view presents ritual in the form of story-telling and celebrations as substantive, knowledge- and meaning-rich interactions with a significant role in learning. This view is consistent with a series of rich empirical studies of knowledge sharing and creation, have shown the importance of rituals in supporting community learning (Lave and Wenger 1991; Orr 1996). Secular rituals, such as organizational meetings (Gephart Jr 1978), engineering presentations (Kunda 1986), and experiential learning (Kolb and Kolb 2005), play complex roles – from transferring knowledge to creating solidarity to capturing ambivalence or anger. These studies of communities and organizations suggest a more strategic use of ritual, one in which ritual is an enabler of learning and change. While strategic motivations have become an accepted interpretation of the use of ritual within individual behavior (Goffman 1967), similar strategic explanations of the use of ritual at the community level are currently lacking in organization studies.

Such strategic, performative view of ritual can be used to explain other functions of ritual than social integration. Thus, ritual was shown to reduce conflict and to induce cross-group integration among opposing groups. For instance, studies have shown how “*the restraint, regularity, gravity, measured pace, and tedium*” of courtroom proceedings facilitates the transition from initial trial controversy and contest, toward communal acceptance of court outcomes (Ferguson 2008). Through the use of ritual strategies, the ideal trial moves from parties’ initial contest toward communal acceptance of the result achieved in court (Ferguson 2008). In another context, Kertzer (2008) examines a variety of political systems and shows that political ritual doesn’t only serve to reinforce the status quo; it is also used by revolutionaries to overthrow established power, and to integrate revolutionaries within the

political process (Kertzer 1988). Everyone involved in the political process does ritual work, it seems:

“Ritual may be vital to reaction, but it is also the life blood of revolution” (Kertzer 1998: 2).

By capturing ritualization as a strategy for enabling social change, the performative view of ritual can be useful to our understanding of the process of knowledge transfer. Ritualization can be particularly effective when learning involves the risk of weakening communal bonds. As Bell argues, ritualization is particularly effective because it allows encounter participants to feel they are fulfilling their obligations toward the community in spite of the changes involved (Bell 1992). By taking mundane, profane encounters and infusing them with symbolic significance, ritualization strategies bring coherence between actions and community perceptions of reality. Consequently, novelty is placated, made acceptable by ritualization.

Therefore, the performative view of ritualization can help explain the process of knowledge transfer in contexts where collective actors integrate knowledge that may pose a threat to their values. When rural communities with strong cultures engage with outsiders who bear different kinds of knowledge and purvey cultural values that are contrary to community values, ritualization may become a strategy for engaging in knowledge transfer processes while upholding the community values and bonds. It may become a way for communities to appropriate new knowledge that is both needed and has the potential to transform the communities themselves.

We show how a focus on ritualized interactions helps understand the way communities bridge the multiple and complex knowledge boundaries standing between them and knowledge intermediaries. Our empirical findings show how marking and recurring ritualization strategies – visiting prominent community members, praying, gift-giving, performing, fable-telling, and affirming community values – enable the bridging of boundaries separating rural communities from the knowledge they need.

METHODS

Research Setting: Agricultural advisory services in rural Ghana

To form a theoretical understanding of the processes of knowledge transfer involving communities, we study the delivery of agriculture advisory services in rural Ghana. For reasons of operational efficiency, farmer groups have been the dominant modality for the delivery of public, private and non-government agriculture services to smallholder farmers (Salifu, Francesconi, and Kolavalli 2010; Salifu and Funk 2012; Francesconi and Wouterse 2011) since they were first introduced in Ghana in the 1990s, as part of the National Agricultural Extension Project (NAEP), funded by the World Bank (MoFA 2001). Farmer group interactions were intended to facilitate learning (e.g. promote awareness, train farmers, demonstrate new technologies) and to capture indigenous agricultural innovations.

This setting of rural group learning is particularly appropriate for producing a rich understanding of knowledge transfer because smallholder communities are the main actor in the learning process; they both need new knowledge of methods and technologies (Adesina and Baidu-Forson 1995) and face great challenges in bridging the deep boundaries separating their indigenous knowledge from new ways of doing things. Furthermore, the agriculture development context is fruitful for theory building because it is an extreme case in which multiple knowledge boundaries are exacerbated by opposing worldviews. Consequently, understanding the enablers and inhibitors of the introduction of new knowledge in farming communities can reveal rich insights about the phenomenon (Ragin and Becker 1992; Flybjerg 2011).

In Ghana, agricultural advisory services have been transitioning from an aid-based paradigm to a market-based one (Dar and Slavova 2013; Slavova and Karanasios 2014; Christoplos 2010). This transition has been accompanied by a shift away from large scale national interventions, and towards decentralization and development of pluralistic ‘innovation systems’ where a variety of stakeholders (e.g. research, education, private firms, producer organizations, public services) play a role (Davis et al. 2009). In the past two decades, private sector organizations have been playing an increasingly prominent role in agriculture research, innovation and development (Tripp 1993; Chapman and Tripp 2003). Within the Ghanaian agriculture sector, knowledge and information are delivered primarily through the activities of

development partner organizations, in the form of in-person services by field agents and also through social networks and information and communication technologies (Slavova and Karanasios 2014).

Data Sources

The data for this study was collected as part of the work of the Ghana Strategy Support Program of the International Food Policy Research Institute (IFPRI), where the first author was employed in the period 2010-2012 as an out-posted fellow. To increase the generalizability of our findings, we follow a strategy of theoretical sampling (Coyne 1997; Strauss and Corbin 1998). We began by studying the knowledge transfer strategies employed by fifteen advisory agencies, both Ghanaian (e.g. MOFA District Agriculture Development Units (DADUs), Presbyterian Agricultural Services, International Tamale Food Company, etc.) and international (e.g. Engineers without Borders or EwB, Agricultural Cooperative Development International/ Volunteers in Overseas Cooperative Assistance or ACDI/VOCA, etc.). Having developed a preliminary understanding of the significance of symbolic aspects of the knowledge transfer process, we continued by observing the delivery of extension services in the rural communities of three districts in Northern Ghana (Bongo, Kassena-Nankana East and Tamale Metropolitan). As part of our effort to increase the validity and generalizability of our findings we followed three types of agents: agriculture extension agents (AEAs) who carry out field advisory activities and community engagement, district agricultural officers (DAOs) who perform monitoring tasks and provide support for the agricultural agents, and veterinary technical officers (VTOs) who provide animal health services.

To capture the complexity of the knowledge transformation process, we employed a multi-method data collection approach involving interviews, non-participant observation and secondary sources.

Interviews

In order to reflect the changing mix of actors participating in the organizational field of agriculture advisory services, we conducted interviews with MoFA representatives, but also with representatives of private commercial and private non-profit organizations. We conducted 14 interviews, with managers from 11 Ghanaian and international (3 for-profit and 8 non-profit) organizations operating in Ghanaian agriculture services. Table 1 lists all the organizations whose representatives we interviewed. We

validated findings from those preliminary interviews by interviewing 3 MoFA representatives (e.g. district directors, information officers, etc.) in each district during the observation fieldwork, and one additional MoFA representative from another district. Interviews ranged in length from 21 minutes to 1 hour and 22 minutes and followed a protocol, based on (Birner et al. 2009). Interviews were conducted in English and we were able to record 20 out of 24 interviews. Recordings were complemented by detailed, structured notes; where no recordings were possible or permitted, detailed notes were taken.

INSERT TABLE 1 HERE

Interviewees were deeply knowledgeable about the knowledge transfer processes in Ghanaian agriculture. They were asked to share their knowledge transfer objectives and strategies, as well as encountered challenges and insights about effective interaction modalities. Interviewees indicated that MoFA remains the single dominant stakeholder (Mitchell, Agle, and Wood 1997) within the country, capable of assisting with access for agricultural service delivery to communities in each of the 181 districts of Ghana. Moreover, interviewees indicated the significance of symbolic and relational elements (e.g. trust, ownership) for the effective unfolding of the knowledge transfer process. They clearly pointed out the significance of symbolic knowledge transfer strategies, relying on the mediating role of locally trusted individuals. For example, interviewees indicated that MoFA extension agents “*come in handy*”, and serve “*like a bridge*” in helping development partners to enter rural areas and to “*organize farmers in the communities*”. Furthermore, they emphasized the significance of participatory methods and ownership in the knowledge transfer process:

“40:30 Samson: It is completely participatory. It is not top-down. Because when we go to the community they get to choose the crop that they want to grow, they get to choose the products for the pest control, and the fertilizer. We just facilitate the process. The whole thing is owned by them.” (Golden Stork-Tamale, interview)

The interviews reinforced our intuition that to understand the process of knowledge transfer in this setting, observation data were needed.

Non-participant observation

The main corpus of data for this paper comes from non-participant observation fieldwork. The observation fieldwork and the associated collection of secondary artefacts was designed and carried in collaboration among the first author, two out-posted fellows of EwB, and five Ghanaian field researchers. We took care to recruit field researchers who were experienced with field and survey work and we explained that the purpose of the research was to evaluate knowledge transfer activities. Prior to data collection, the first author and the two EwB fellows trained the recruited field researchers in observation, note-taking, *in situ* interviewing and data entry. Training activities also included activities aimed at teambuilding and the adoption of good project management practices. During data collection, the Ghanaian field researchers – supervised and guided by the two EwB fellows – conducted 5 days of concurrent observation of 2 AEAs, 1 DAO, and 1 VETO in each of the three districts. Thus, during June-July 2011, the five Ghanaian field researchers collected 60 person-days of observation, bringing the total of observation days to 61. Involving local field researchers in the data collection process was highly apt, as they were fluent in the languages of the farmer-agent interactions, and because their presence in the field was far less disruptive than that of foreigners.

The timeframe of the fieldwork falls within the cropping season. The period is characterized by land preparation and the planting of cereals (e.g. early millet, sorghum, maize and rice). In the course of the study, field researchers accompanied the agents on their visits to villages, sat in meetings with communities and groups, in various formal and informal settings, and participated in community events. They also observed agents' office activities and interactions with their colleagues. Agricultural extension outreach work in Ghana tends to take place early in the morning, prior to farmers going to their fields, or in the late afternoon, after they have returned. On average, agents were observed for approximately 5 hours and 24 minutes per day. Observation work typically involved 4-5 agent tasks per day and started at dawn when the agents picked up by motorbike their assigned observers, from the guesthouses where the research team was based. Researchers observed the agents as they went about their workdays and

accomplished a variety of activities, out of which group interactions with smallholder communities stood out as meaningful interactions capturing the complexity of knowledge transfer.

Documents and artefacts

Documents and artefacts were used extensively in the field, by agents during their interactions with the groups and communities. Interviewees and agents under observation welcomed researchers' requests for copies of the materials being used, and shared a wide variety of materials representing the work of their organizations, ranging from operational to publicity artefacts. On the one end, they included digital files for past presentations, photos of demonstration plots, maps of irrigation installations, solution specifications for information and communication technology tools and details about teaching materials. On the other end, they included paper brochures, advertising materials and press cuttings. All of these documents helped us understand the context in depth.

Data analysis

Our analyses were guided by the grounded theory method of comparing and contrasting interactions and interpretations (Glaser and Strauss 1967). There were two main stages in the analysis of the non-participant observation data. The first, more incipient stage, occurred while the field researchers were collecting data. This is when one of the authors noticed the enabling role of ritualization elements in the knowledge transfer process, as well as the agents' complex roles in bridging the gaps in terms of indigenous community knowledge. Once back from the field, the two authors read all the field notes, interview transcripts, and studied the secondary data. At this stage it became clear that group interactions between communities and agents were the main locus of knowledge transfer in this setting. Therefore, our analyses are primarily focused on the *interactions* between field agents and groups of service beneficiaries as the unit of analysis.

During analysis we identified several strong ritualistic elements in the interactions between farming communities and agents. Prayer, fable-telling, gift-giving, were pervasive, and they framed and permeated otherwise technical discussions and activities. Successive readings of the data and numerous discussions enabled us to identify and refine several other dimensions of these interactions –their

material, embodied nature, the presence of constant affirmations of both community and market values, the active participation of both farmers and agents in the discussions and activities. Finally, we observed that knowledge transfer did take place in these interactions.

WORK CONTEXTS AND KNOWLEDGE BOUNDARIES

The main actors to the knowledge processes we examined were the farmer communities and the agricultural agents. To understand these processes though, we need to also explain the knowledge held by agents' employers, i.e. the public and private organizations active in the agriculture development field. Each of these three types of actors belongs to discrete work contexts, holds distinctive knowledge bases, as well as diverging understandings of agriculture and of extension service delivery. The farmers' community operates within the sphere of agriculture production, development stakeholders inhabit the sphere of agriculture development, and the work context of agricultural extension agents is situated at the overlap of the other two groups. Table 2 summarizes the key aspects of the work contexts occupied by farmers, agents, and development organizations, and the knowledge boundaries separating them.

INSERT TABLE 2 HERE

Small farming communities

The source of norms and identity for smallholder farmers are traditional rural communities, their local cultures and relational basis. Roles are well-defined, and interactions are characterized by condensed speech codes and extra-verbal signaling (Bernstein 1964; Bernstein 2003). Farmers' work revolves around agricultural production, and their knowledge is embodied in material artefacts and tangible field activities such as planting, growing crops, harvesting. Thereby, the locus of their practices remains physical, material and embodied. To pull together resources they use established rural social structures such as mutual labor (i.e. '*nnoboa*') and saving clubs (i.e. '*susu*'). For farmers, the practice of agriculture is a way of life which they identify with, and it is steeped in community relations (Dessein 2000). At the

same time, farmers do aspire to improve their practices and to increase their standard of living. They conceptualize such improvements within the 'aid' paradigm, whereby they welcome extension agents and the resources they often provide. Farmers' perceived agriculture challenges consist of lack of investment capacity towards best practices, rather than lack of awareness of what those practices actually are.

Development partners

In contrast with farmers' traditional, material knowledge, development partners' knowledge is conceptual, rational, and abstract, built through formal training. The managers of development partners tend to belong to national or international urban social orders (Bernstein 1964, 2003). Their sources of norms and identity are anchored within the formal organizations they represent, and within rational logics. Their vocabulary is consistent with business and management, with a locus of practice that is abstract and conceptual. Their work is focused on the design and implementation of government programs and NGO projects. In marked contrast with farmers' views, development partners view agriculture within a 'market paradigm', i.e. as a business enterprise and a profitable livelihood. They conceptualize extension services as fostering a similar market viewpoint among farmers, and improvements in farming practices and business attitudes.

These differences between farmers' and development partners' contexts amount to several types of knowledge boundaries: syntactic (concrete vs. abstract vocabularies for example), semantic (for example, the significance of a farmer group, for helping or for making a profit), and pragmatic (interests farmers' are to improve their agricultural practice and gain access to inputs, while partners want to change more radically existing practices). Over and above these differences though, there is a clash in worldview between farmers' view of agriculture as a way of life and of community as relational, help-based, and partners' view of agriculture as business, with relationships among farmers driven by a profit motive. These knowledge and worldview boundaries are bridged in interactions between farmers and agriculture agents.

Agriculture agents

The agents are field level employees of the development partners, with scientific knowledge acquired via agronomic training. They act as boundary spanners whose role is to stimulate behavioral change and adoption of new practices. Their norms and identity are rooted in their familiarity with the local culture and traditions, as well as in their sense of belonging to the formal organizations which they represent. Agents' work ranges from delivering disembodied agronomic advisories in the field to administering support services such as subsidies (e.g. seeds, fertilizers, pesticides, etc.). Similarly, their locus of practice ranges from the abstract and conceptual to the physical, embodied and material. Agents' view of agriculture blends localized understandings of farming as way of life, with understandings of farming as a business enterprise.

MUNDANE AND RITUALIZED INTERACTIONS

During the 61 person-days of observation, extension agents from the three districts were able to reach out to a total of 558 farmers. Our analyses reveal that there were two main types of interactions between field agents and the small farmers, mundane and ritualized. Both types of interactions were participatory and carried strong material elements, yet the ritualized ones were markedly different from the mundane interactions because of the presence of several ritual strategies. We will analyze in detail the ritualization strategies characterizing ritualized interactions in the next section of the paper. In this section we will focus on the mundane interactions between farmers and field agents.

Mundane interactions consisted of the agents interacting with single individuals or small groups and contained little to no ritualized elements. Such interactions were largely aimed at administering government support programs, and carried significant aspects of participation and materiality. During mundane interactions occurring on their field visits, agents tended to engage in very concrete activities, carried out on a specific plot, to the benefit of a single individual; or in a succession of concrete activities, carried out on the plots of a handful of farmers. For example, agents helped farmers with watering plants, taught them how to measure plots, observed how they had planted and taken care of the trees delivered to

them, collected dues, explained the advantages of different input combinations, showed farmers how to use maize seeds, demonstrated how to thin out properly, advised farmers on how to spray weedicides, thought them how to fill compost into pollen bags, supervised the planting of rice, etc. Two elements characterized these interactions: they were highly participative and they often mobilized material elements. Participatory engagement is essential in reconciling issues which emerge at the syntactic boundary of communication and vocabulary. For example, through questions and answers, agents were able to understand and deliver the farmers needed in order to register a group (e.g. procedure to be followed, exact type of photograph needed). The second feature of these mundane interactions was their materiality. For instance, physical artefacts such as planting tools, fertilizers, etc. were used prominently in order to translate the meaning of agronomic advice into localized practice. For example, within the Tamale Metropolitan district we observed the translation of standardized measurement units into concrete meaning:

“9:23 AM We reached the place where the bikes were parked. The agent took the measuring tape and measured the distance for the farmer. He cut a stick 40cm long and gave it to the farmer. The agent advised the farmer to use it to plant. He also encouraged the farmer to plant in straight line using rope.” [SID 110628, Tamale]

Here, the agent uses a material interpretative tool – a wooden stick – to capture the meaning of the abstract measurement, and thus to translate standardized planting advice into the more concrete language easily understood by farmers. When different interpretations of language open the possibility of misunderstanding, the need for knowledge translation can be alleviated by reference to material aspects. Such interactions included material elements that helped translate abstract knowledge into tangible meanings.

Mundane interactions represent an important setting for knowledge transfer processes, as the above example shows. However, our observations reveal that these mundane interactions occur concomitantly with a series of different, ritualized interactions.

RITUALIZED INTERACTIONS

By contrast to mundane individual interactions, during ritualized group interactions agents engaged with formal or informal groupings of farmers. Agents in our study reached the majority of farmers (333 out of 558) through 49 group interactions. While all group interactions took place in the rural community, some (19) were more formal, involving Farmer Based Organizations (FBO's) that had already been established with the agents' help. The other 30 interactions were less formal, involving whoever in the community was interested. Group interactions remained participatory and carried strong material elements, yet they were markedly different from the mundane individual interactions because of the presence of several ritual strategies.

The interactions characteristic of this format were very diverse and rich. The purpose of the meetings was quite varied, from enabling access to government programs, agronomic consultations, raising awareness about future initiatives, supervising field operations, delivering technical advice, measuring and selecting fields, meeting farmer groups. They involved group sessions for information dissemination, delivery of administrative services and material supplies; sensitizing farmers about forthcoming government support initiatives (e.g. Youth in Agriculture, Western Africa Agriculture Productivity Program); enabling access by ensuring administrative requirements are fulfilled (e.g. measured farm sizes, assisted with opening bank accounts, etc.); facilitating access by delivering to the farms subsidized inputs (e.g. fertilizer, herbicide, etc.) and NGO assistance (e.g. small ruminants, goats, etc.).

Our analysis helped us determine that community interactions were characterized by a series of *ritualization strategies* that helped align participants' interests sufficiently for dialogue and exchanges to take place. Like the mundane interactions, the ritualized ones were also participative and had a material focus. However, in marked contrast with the mundane, regular interactions, the ritualized ones enabled interaction participants to embed knowledge within non-controversial community worldview of respect and reciprocity, and to establish common foundation for the interaction between the visitors and the farmers. The common ground enabled the establishment of a harmonious relation between the new

worldview's emphasis on production and yield and the old, traditional view of agriculture as community relations. This relationship helped interaction participants cross the knowledge boundaries separating them.

Figure 1 portrays the complex process of knowledge transfer we observed. The initial conditions of the knowledge transfer process comprise deep knowledge boundaries, including a desire to acquire new knowledge and the threat to community bonds posed by the business view of agriculture. The central part of the model shows the central role played by ritualized interactions in the knowledge transfer process, and the specific ways in which a variety of ritualization strategies helped bridge the worldview differences and the knowledge boundaries separating the community and the development agencies represented by the agents. At the same time, mundane interactions, via their participants' engagement and their mobilization of materiality, also contribute to the bridging of knowledge boundaries. As portrayed in the figure, materiality and engagement are also features of ritualized interactions. The process is also marked by feedback linkages not portrayed in the figure; for example, successful knowledge transfer is likely to lead to increased aspirations to learn, and to further participative engagement.

INSERT FIGURE 1 HERE

RITUALIZED KNOWLEDGE TRANSFER IN AGAASI

To illustrate how the interaction elements play a role in knowledge transfer we use a rich vignette from a meeting with a farmer-based-organization in the Agaasi (a pseudonym) community of the Upper East region of Ghana. The meeting is held by the extension agent for the Agaasi area and the representative of the Canadian NGO Engineers without Borders (EwB). The goal is to monitor and evaluate the EwB initiative Agriculture as a Business (AAB), aimed at building capacity within the structures of MoFA in terms of market-oriented extension. The goal of the meeting is to obtain feedback from farmers in terms of current activities, planned progress and encountered challenges. In the vignette, MS stands for the field researcher, BV for the EwB representative, and GP for the agriculture agent (who

translates in real-time, the interactions into English). The vignette illustrates how ritualization strategies, materiality, and participatory engagement play a role in the knowledge transformation process.

9.10-9.30 *The four of us (the agent GP, BV, the truck driver, and the field researcher) arrive at Agaasi and are met by a farmer outside a compound of clay huts. The farmer informs GP that holding the meeting is problematic due to a recent bereavement. It is agreed that a visit by the GP, BV, and MS to the bereaved family is appropriate.*

9.30- 9.55 *Helped by a local resident, GP, BV and MS reach the home of the bereaved. Upon arriving, they join a gathering under a canopy. As a sign of compassion and respect, GP, BV and MS shake hands several times with many of the people gathered. An elder sings a prayer. GP asks for permission to proceed with the meeting and it is granted. Immediately thereafter, GP, BV and MS ask permission to leave; they shake a line of hands and return to the meeting place, by the FBO's chairman's house. They are met by 8 men, 1 woman, and 2 children, already gathered in the shade of a tree. The FBO chairman shakes hands with the visitors and explains that many farmers cannot attend due to the funeral. He also says that those present are tired because of the wake. Still, it is decided to proceed.*

10.00 -10.20 *GP explains that the purpose of the visit is to collect feedback and introduces BV and MS. GP reads a fable from a printout and encourages farmers to share their opinions openly. GP asks farmers about the origins of the group, and about their activities before the AAB project. Farmers explain they came together in 2001 to solicit help with water scarcity from the District Assembly. By mobilizing funds, they managed to build 2 boreholes and completed a maize demonstration plot with GP. Having completed AAB, the group is planning to grow maize together. The group assists farmers in cases of illness, labour shortages, or unexpected expenses such as funerals.*

10.20 -10.40 *GP points out that the last time monthly dues [GHc 1 per farmer, approx. 25 US cents] were deposited in the group bank account was more than 5 months ago. Farmers explain that it has been difficult to put money aside due to the lean season. GP asks what happens if someone fails to pay. The farmers appear confused. After discussing it, a woman farmer answers that they try persuasion and if it does not work, it means the farmer is not interested in the group and he should leave. Everyone bursts out in laughter!*

[2 more farmers arrive. Attendance is 10 men, one woman, 2 children].

10.50 *Asked to evaluate their last harvests relative to their business plans, farmers present a report on their profits.*

11.00 -11.20 *Farmers explain that they did not engage in group marketing because they harvested their crops at different times. Farmers have few marketing options if they are not harvesting sought-after varieties, at the time when traders come to the area. Their personal links to traders failed them at the last harvest, and their contacts at the District Assembly were not able to assist. They acquired inputs on an individual basis and through MoFA's fertilizer subsidies (coupons). In terms of take-aways from AAB, farmers respond that they have learnt that by analyzing their activities, they can learn how to make improvements. They have learnt the significance of timing their production, of saving for the purchase of inputs and of site selection. Farmers have learnt from AAB to use the business principles as individuals, not only as part of the group; also, to build a spirit of unity within the group, allowing it to grow so that other people will try to emulate it.*

11.20 -11.40 *Asked what other options, apart from maize, they have considered for the coming season, farmers list the advantage and disadvantages of different crops. It becomes clear that options were not fully considered, compared and evaluated; yet, the group agrees on the choice of maize. The group disagrees whether they have a plan or not. Eventually, they agree that they do not have a plan on paper. They have discussed advantages and disadvantages of different options but have not evaluated them. A loud argument erupts about the flexibility of the plan, and*

how it can be disrupted by pests and diseases. GP states that farmers can learn from having a plan, even if it is not completed.

11.50- 12.00 Invited to ask questions, farmers ask for help in addressing pest issues and GP explains that MoFA is taking the issue seriously. Farmers also ask for help in marketing their produce; and GP and BV agree to prioritize marketing trainings. One farmer demands assistance, as a public service. GP asks him to choose between receiving fish every day, and learning how to fish. The farmer chooses learning; and GP asks what it means if after teaching him to fish, he is still asking for fishing net. The farmer agrees it means he needs to make a greater effort.

The chairman expresses thanks to the GP, BV and MS for attending and handling the meeting. Mostly, he is grateful for the expression of sympathy with their mourning. All join for a prayer before closing the meeting.

This vignette summarizes a three-hour meeting and illustrates the way knowledge transfer takes place in a community context. The group reflects on past knowledge achievements (building and managing two boreholes, completing a maize demonstration plot) and states plans for the future (growing maize together, using collective marketing strategies). Syntactic and semantic knowledge boundaries are bridged; for example, by clarifying the amounts of money made or lost, or by clarifying the meaning of a plan. Even the pragmatic boundaries are bridged, as farmers explain that they have enlarged the sphere of application of the principles purported by EwB to other domains than agriculture; thus, they started using the principles in the individual domain (“have learned from AAB to use the business principles as individuals, not only as part of the group”) as well as in the community domain (“[we want to] build a spirit of unity within the group, allowing it to grow so that other people will try to emulate it.”) Notwithstanding the element of politeness that may drive some of farmers’ comments (they would want the visitors to feel good about their efforts to bring knowledge to the village), the evidence for rich knowledge processes in the meeting is strong.

The ritualistic character of the interaction is critical for the process of knowledge transfer and is brought about by a series of ritual acts or strategies that set it apart from regular, mundane interactions. The multitude of these ritualization strategies are coherent with farmers’ traditions and worldview, and can be striking to readers accustomed to more technical knowledge process settings. We describe briefly the ritualization strategies observed in this meeting and we will examine them in more detail later in the paper. First, *marking strategies* occur at the beginning and the end of the interaction. The interaction

described in the vignette is framed by *visits to important community events* (the funeral) and by *prayer*.

The funeral is a major event in a community that conceives of itself as including the living, the dead, and the unborn (cite), and normally all other activities are suspended during the days of mourning. At the same time, both the farmers and the visitors know the meeting has to take place, if at all possible. The ritual visit to the bereaved family serves as a way of engaging in knowledge processes, while respecting the community traditions. Permission to hold the meeting is requested, and it unreservedly granted, thereby setting the interaction apart from everyday farming activities. While of no particular religious significance, the prayers also set the meeting apart from mundane interactions, and align it with community values. Common participation in prayer also signifies a bond between the outsiders and the community.

In addition to marking strategies we note the *recurring strategies* taking place throughout the interaction. Two *fables* are being told, both with clear lessons for participants. The initial fable invites farmers to overcome traditional norms of politeness, to speak their minds, and to be forthcoming with concerns and issues. The end fable about fishing and the fishing net serves to dilute the tension in the meeting, and to reinforce the message of self-reliance advocated by the development agencies. Throughout the interaction we also notice farmers' recurrent *affirmations of community values*. The business values are explicitly promoted by the agents (analyzing options and initiatives, timing production so as to be able to market the products at the same time) and embraced by farmers who have used them to save, decide on crops, and so on. At the same time, community and traditional values are never far away: immediately after stating collective maize production as the group's next project, farmers explain that the group "assists farmers in case of illness, labor shortages, or unexpected expenses such as funerals." Right after talking about how they learned to "use business principles as individuals, not only as part of the group," farmers also talk about their goal to see their group emulated by others in the community. For farmers, business values are not separated from the community values; they make sense only insofar as they help the community and strengthen the community bonds. When the two sets of values clash, community values take precedence. For example, business logic demands that people who

do not pay their dues be excluded from the group. When the rule is invoked, laughter at its preposterousness ensues. Yet another ritual aspect pervading the entire interaction is its *performance* character. The meeting takes place under a tree in the communal space outside the group secretary's compound, with children and domestic animals roaming around. There are no barriers to the group, people can join and leave, and the gathering can be observed by passers-by.

Both the marking and the recurring ritualization strategies help bridge the knowledge boundary and worldview difference between farmers and agriculture agents. They do so by marking these interactions as congruent with farmers' worldview and values and by making interaction participants look similar (they pray together, they participate in common events). Throughout the meeting, both the agent and the villagers demonstrate a nuanced knowledge of the community customs and values (the importance of the funeral) and of expectations about a successful meeting (the urgency of addressing the evaluation objective of the EwB representative). The agent is fluent in both realms, and able to align the very utilitarian, business priorities of EwB staff with the farmers' emphasis on mutual help and support.

Like mundane (non-ritualized) interactions, ritualized encounters are also participative and they often have a focus on material aspects. Thus, these interactions have a strong *participatory character*. Throughout the meeting, farmers make suggestions, ask questions, ask for help, and challenge one another. As we know (Pretty 2008), such type of participation is key to learning. Also, what we call *mobilizing materiality* refers to the focus on material artefacts during the knowledge exchanges; farmers are clear about their expectations from MoFA services; they ask for access MoFA's fertilizer subsidies, for "help in addressing pest issues" and "help in marketing the produce".

While particularly rich, the Agassi vignette is by no means unique in terms of knowledge processes, ritualization strategies, and participants' competence in effecting these strategies. We observed similar elements in many other interactions in our data, additional examples are to be found in APPENDIX A. The next section analyzes each interaction dimension in detail, and provides additional examples.

RITUALIZATION STRATEGIES

Our analyses revealed that there were three main dimensions to the knowledge interactions we observed: they were strongly ritualized, they mobilized material aspects, and they were highly participative. While all three dimensions played a role in bridging the knowledge boundaries separating participants, by far the most important dimension in bridging the worldview difference consisted in the ritualization strategies. These strategies marked these meetings as special, different from the mundane interactions of everyday farming by their alignment with the farmers' cosmology, worldview, community relations and values.

Our analysis revealed a multitude of such strategies which we grouped in two categories, based on their timing within the context of the interaction. The *marking strategies* occurred either at the beginning or the end of the interaction, and included visiting community events and individuals, praying, and gift-giving. Such elements, only one of which was related to religion, marked the time of occurrence of the interaction as 'sacred' time. The *recurring strategies* occurred throughout the interaction, and included performing, fable-telling, and affirming community values. The recurring strategies reiterated the embeddedness of the interaction within the community worldview.

Marking strategies

Visiting important community events and individuals

Knowledge interactions often take place only after knowledge agents show respect for community values and hierarchies by visiting important people and/or events. As we saw in Agaasi, the interaction could only take place after the agent and the other two visitors paid their respects to the family of the bereaved. Community events are to be acknowledged and respected. It is not uncommon for agents to be asked to pay respect to village elders or household heads. By obliging, agents acknowledge the value system of the village. Incidentally, the agents we interviewed report attending on average 3 funerals per year. Chronologically, such visits tended to occur immediately before, or after the group meetings, and formed an intrinsic part of the interaction as they highlighted the significance of the agents' visit to the community.

While visits to elders and community events signify the acknowledgment of local culture and values, visits to important events, to chiefs and other important individuals acknowledge the village governance structure. Ghanaian communities have strong kinship structures in which notions of “family”, “clan” and “lineage” (*abusua*) are particularly significant; with the main traditional governance structure the village chieftaincy. The meetings between village chiefs as custodians of the land and agents as representatives of local public services are meetings between the two parallel governance structures in Ghana. For example, as village guests, agents are expected to announce and clarify the purpose of their visit, their “mission” (*amane*) for the chief. By doing so, they can expect to be welcome on the chief’s land and to receive his help in achieving this purpose. The meetings between agents and village chiefs are shaped by traditional ceremonial norms that also show respect towards traditional ways of doing things. For instance, visitors have to ask permission before leaving the chief’s house. The respect shown by the agents to traditional governance structures is illustrated by the example below:

2:51 PM After lunch, the AEA decided we should visit the chief of the Nantugnia village. We arrived at the chief’s palace in about 20 minutes and the agent walks to the linguist² to inform him of his mission. After listening to the agent, the linguist informs the Nantugnia chief of the agent’s mission and the chief then invites the agent to come and talk to him.

The agent informs the chief they have successfully formed the group in his community and the group will be receiving a package from MOFA very soon.

3:15 PM The chief thanks the agent for the assistance he gives the community and the agent asks permission from the chief to leave. We proceeded to the house of a farmer. (Notes 110607 IDD 06)

This example illustrates how the worlds of the agents and the villagers are made compatible: the interests of the villagers and the agent are similar (delivering and receiving the MOFA package), the traditional authority upheld, the agents’ work acknowledged. In these meetings, the two orders – the old traditional

² The “linguist” (*okyeame*), or “community chairman” is an important and respected office in the Akan traditional chieftaincy system, which is still functioning. The office is symbolized by a “linguist’s stick” which must be present for the *okyeame* to exercise the duties and privileges of the office. The word “*okyeame*” does not mean “linguist” in our English sense of the word. It is better to explain the office as a lawyer, ambassador, mouthpiece, spokesperson, and speaker. Duties include prayers (pouring of libation to gods and ancestors) in chiefs’ courts and being sent on high level messages and errands between chiefs. Since the chief is the embodiment of the ancestors, out of respect, one may not address the chief directly, but make a statement to an *okyeame*, who will then speak “the language of the dead” to the chief (“**The Role of Linguist or Chief Linguist in the Eastern Region**” 2014).

village order and the new cosmopolitan one – meet and acknowledge one another. The representatives of the two orders show respect for each other, which makes their interactions compatible with the two moral orders (worldviews). Agents' missions are valued and appreciated, as suggested by the gift given by the chief to the agent. Villagers' traditions are upheld and abided, as the agent reports his results to the chief, according to customary norms; in the words of Bell (cite), such visits are morally redemptive as they discharge participants' community obligations.

Agents often visit entire families, not just the family member who is a member of a farmer group. For instance, they'll visit the farmer's relatives, three wives and many children (according to the Ghana Statistical Service 2012, in Northern Ghana Islam is professed by 60% of the population, and polygamy is not uncommon). This is significant because in addition to housework and caring responsibilities, women tend to do the majority of agricultural labor in rural Ghana. Such visits are shaped by hospitality norms and greeting ceremonies. For example, in Doba visitors are offered a glass of water as a hospitality gesture, while the participants in the meeting are gathering:

8:28 AM The agent arrives at the women group secretary's house and greets the husband. Secretary is doing some washing and stops to welcome the agent. [...]Secretary asks AEA if she could offer some water. (Notes 110611 MAR 02)

Throughout agent's visits to the village, agents and farmers uphold community norms and engage in rituals that acknowledge each other's values, emphasize common interests, and show appreciation for each other's contributions.

Praying together

Knowledge interactions are typically framed by opening and closing prayers. Consistently, the prayers we observed were of little to no religious significance. While Christianity, Islam and traditional animist beliefs are all common in Northern Ghana, it is uncommon for prayers to make reference to any religion. Rather than religious rituals, they serve as secular rituals aimed at generating a sense of belonging and community. Opening prayers are used to invoke community values, solidarity and commitment to the proceedings which follow; they set the mood of the interaction ritual and weaken the

likelihood of controversy in negotiating the alignment of interests. Closing prayers in this context are expressions of gratitude for the knowledge exchange, they are signs of optimism for the future, and of faith in the beneficial outcomes of the common undertaking. As we saw above, the meeting in Agaasi ends with expression of gratitude to the outsiders for having shown compassion for the bereavement in the community, and with a prayer.

In yet another meeting observed in Bongo district, a woman agent was providing NGO support for the members of a women's group who were planting trees of commercial value (e.g. cashew, moringa, dawadawa, sheanut). The agent observed that elderly women in the group were “*doing well*”, while younger women were “*not taking [good] care of the trees*”. The agent wanted to discuss the encountered challenges. In order to set an appropriate tone for the meeting she chose to invoke ritualistic elements, and invited an older woman to say the opening prayer:

9:35 AM The farmers had gathered under a tree near the farm and agent and the field researcher joined them there. The agent asked one of the women to say an opening prayer. The woman prayed in the local language and the meeting commenced. He explained to the group the need to take care of the trees. The agent told them not be concerned about only the present, but the future as well. The agent told the group to make sure that no one passes through the farm. The agent also encouraged them to make sure that they weed around the trees to keep them growing. [SID 110617 Bongo]

In this interaction, the agent delivers straightforward information about how to best care for the trees the women planted. However, he does so only after setting apart the interaction from ordinary ones, by asking an older woman to first say a prayer. It is as if only after marking the interaction as congruent with the farmers' worldview that the concrete advice about tree planting could be conveyed. Because prayers are usually said at the beginning and at the end of meetings, they serve as markers distinguishing these meetings as 'sacred', setting them apart from the 'profane' everyday farming interactions. They also align these meetings with farmers' traditional values and norms, with their culture and cosmology.

Gift giving

Gift-giving was often done at the end of meetings. It was initiated by farmers and functioned as a symbol of friendship and goodwill. The gifts consisted in farming products such as yams, fowl, or eggs. For instance, after a veterinary agent visited a village for the inoculation of 299 sheep and goats with a vaccine against viral diseases occurring during the rainy season, the following exchange took place.

10:19AM: The district agent, the veterinary agent, the Community Livestock Man, and the field researcher went to say good bye to the chief. The chief prayed for the district and the veterinary agents. The chief also gave the two agents some eggs and GHc10.00 as a sign of appreciation and gratitude for the service rendered. [DAW 110630 Tamale]

Similarly, a meeting aimed at establishing a new FBO ends ritualistically and a gift being presented to the agent. Just as patiently as they waited for the meeting to begin (40 minutes), the people do not rush to disperse once the meeting is over. The gift to the agent expresses gratitude for his visit, explanations, and effort. It also expresses the hope this new relationship with the community will persist. It can also be interpreted as the starting off of a cycle of reciprocity with the agent; this is a relationship that starts out, one in which the agent will become a part of the community too, not only an outsider:

“One farmer requests that the visitors don’t leave just yet and goes into the nearby compound. Everybody remains waiting around, talking and smiling. The man returns and hands over to the agent a bag of guinea fowl eggs. It is a present, a sign of appreciation and gratitude for the forthcoming help.” [MS, Testing, task 4]

As carriers and embodiments of knowledge, agents seem to interpret gifts as a welcome, by farming communities, of advisory input into their work and they accept gifts gracefully. At the same time, in compliance with government rules, out of perception of inappropriateness and possibly as a result of ‘observer effect’, agents were observed to refuse some gifts. For instance, after assisting rice farmers with the measurement of their fields and with their enrollment in the Block Farm program, an agent was asked by two participants to go to their house say hello to their ‘old man’. The agent was happy to do so as a sign of respect to elders; when the old farmer took some money out and “dashed it out to the agent as a token to buy some water on the way” the agent was happy to accept it. Nonetheless, in another situation,

when money was offered by a young man, the agent was not comfortable accepting it and politely refused the gift:

10:23 AM Farmers ask the agent questions to clarify some things. The agent packs his books and promises to see them again. The agent gets on his motorbike. A young man offers some money to use for fuel. The agent smiles and says that is okay some other time. (Notes 110609 MAR 01)

The gift giving we observed is a symbolic expression of friendship and good will. It occurred in a context where the agents are bestowing the gift of knowledge, including material aid: as local government representatives, agents facilitate access to support services and subsidized inputs such as seeds, fertilizer, small ruminants. The asymmetry in resources can make the gifts bestowed by the agents a sign of superiority (Simmel 1950; Gouldner 1960). However modest in comparison, farmers' gifts allow them to assert their will and agency, and constitute an expression of reciprocity. Because gift giving is the main mechanism for creating social solidarity (Malinowski 2002; Mauss 1967), farmers' gifts also signal the establishment of a harmonious relation between the worlds of the agent and the traditional village culture, the start of a circle of reciprocity between farmers and agents.

Recurring strategies

The above three strategies occurred at the beginning and at the end of interactions which they thus marked as different, as more important as overtly compatible with the farmers' worldview. Another set of strategies were strewn throughout the interactions, functioning as reminders of traditional values and norms. We identified three such ritualization strategies: fable telling, affirming community values, and performing.

Fable telling

The oral culture of Ghana is strongly marked by story-telling, and our data show that many of the interactions we observed included at least one story. However, the narratives, stories and proverbs we encountered were of a particular kind, they were fables, short stories used to illustrate a moral lesson. Fables have been used as didactic tools probably since the dawn of time (W. Ferguson et al. 1992).

Telling stories is an effective way to teach aspects of nearly every task and domain. However, to be effectively remembered, a story must be told in a context that enables the hearer to index it functionally in memory. This occurs naturally when stories are told to students while they are attempting to perform the task being taught. Unfortunately, it is not always possible to engage students in a task while teaching it, so some other context must be found that facilitates appropriate indexing. We argue that this context occurs naturally in a teaching dialog, called an Aesopic dialog, in which the student asks questions and the expert answers with stories. In this dialog, the coherence of the conversation itself provides a context that enables the stories to be usefully incorporated into the student's memory. The widespread application of teaching through Aesopic dialogs requires overcoming the hurdle that experts are scarce and access to them is limited. Our solution to this problem is to broaden access to expert stories through the development of hypermedia systems designed to provide an interaction that emulates, as much as possible, the cognitively relevant aspects of an Aesopic dialog with an expert. We have constructed a number of such story-based teachers, called ASK systems, in domains as diverse as trust bank consulting, Presidential decision-making, and the determinants of a nation's industrial success in global markets (W. Ferguson et al. 1992). As we saw in the Agaasi vignette, the meeting was framed by two fables. Here is the beginning fable:

“The agent reads a short story from a print out. The story is about an NGO who implemented a project with some farmers. The project was not well suited to the community and was causing problems. But when the NGO asked the community, they did not say so. Instead, so that they don't offend, the community members said the project is good. Consequently, the NGO scaled the project and multiplied its negative effect. The agent asks for the moral of the story. Farmers explain that the moral is that the NGO was sending problems to other communities.” [MS, Testing, task 2]

Several aspects of this initial fable are of note. First, the agent used a scripted fable which he read from a piece of paper he had brought along. The presence of this artefact indicates that the value of such fables is well known to knowledge intermediaries, and that they use them often. Second, the choice of the fable is appropriate given the purpose of the meeting (to assess whether a particular program has worked or not). In the ensuing discussion farmers did express criticism freely. The fable telling helps bring closer

two different ways of providing information and of learning: the traditional way through fables, and the modern ways through criticism and feedback.

The end fable is equally rich:

“A farmer addresses the agent and asking for help, as a public service. The agent asks him if he is would like the agent to bring him fish every day, or to teach him how to fish. The farmer chooses to be taught how to fish. The agent asks what it means if after teaching him to fish, the farmer is still asking for a fishing net. The farmer agrees that he should make an effort too.” [MS, Testing, task 2]

While non-scripted, this well-known fable in development practices re-iterates self-reliance as an established value in the development domain. When asked outright for material help, the agent delivers the lesson about the need for farmers to build skills that will eliminate the need for outside help. The fable suggests that agents and their employers make significant efforts for farmers, and that farmers need to make efforts as well. The moral of the fable seems to be understood, as the farmer agrees to strengthen his efforts. The interests of the farmers and the agent seem to be aligned through their adherence to the moral of the fable.

The use of fables makes explicit the need for a shift in farmers’ worldview, from reliance on institutional assistance to self-reliance, from an ‘aid’ paradigm to a ‘market’ paradigm. It is in this respect that the significance of fables within the knowledge interactions we observed cannot be overstated. In interview, an NGO representative went so far as to state that one of her agency’s biggest contributions was providing extension agents with “plastic sheets” with the Agriculture as a Business curriculum. Such materials provide agents with a repertoire of fables on which he can draw; being familiar with local norms also allows them to use fables appropriately so that farmers can extract the intended meanings.

Affirming community values

The observed interactions were punctuated by frequent statements about the significance of both business and community values to the participants. As a ritualization strategy, such affirmations helped reassure the farmers in attendance that their acceptance of business values does not deny their commitment to the traditional rural values such as mutual help. Affirmations of community values were

often observed as succeeding affirmations of business values. For instance, during the Agaasi meeting, after the agent mentions the importance of financial results, of business goals, farmers mention community values and goals, and the importance of helping one another when in need or in difficulty.

We saw above, in the analysis of the Agaasi interaction, business and community values are interweaved in the group's daily functioning and history. The bereavement in community is acknowledged and respected: before the meeting in Agaasi starts, the agent and the people accompanying him are expected to pay a visit to the grieving family. Nonetheless, their service delivery objectives are also acknowledged by the community, and the bereaved family members give permission for the meeting. The explanation given is linked to the current phase of the funeral; starting with next day, no meeting would be possible, as the funeral would enter its second phase in which all the 'attention' of the community has to be devoted to the funeral.

The co-existing of business and community goals is obvious in the discussion of the Agaasi group's goals, which appear to be a mix of agriculture practicalities and community issues. The separation of business motives for organizing the group, from motivations dictated by community values and customs appears impossible:

“Farmers explain that they started the group for mobilizing funds for the purpose of getting water. The group came together in 2001. Farmers say the FBO is mobilizing funds to go into maize production. The group is to give each other help when ill or short of labor. FBO members contribute to covering certain expenses. For example, the group will collect some money and buy some Coca Cola to sympathize with the family at the burial.”
[MS, Testing, task 2]

As this excerpt shows, over the years, the group succeeded in drilling two boreholes, and was preparing for a collective maize production project— all by collecting contributions from individuals and receiving assistance from the extension service. However, the implicitly recognized and frequently declared goal of the group consisted of helping each other in cases of illness or labor shortage. Group financial resources are not exclusively for purely 'business' purposes, but they are also used towards managing social relationships. For example, buying *Coca-Cola* in order to sympathize with the grieving family, is considered appropriate use of group finances.

We can interpret the recurrent affirmations of community values as an acknowledgment of the potential tensions between the two sets of values. While business values emphasize market savviness, self-interest and financial success, traditional values emphasize community orientation, mutual assistance and support. When the two sets do clash, the community values take precedence. In the middle of a momentous change – the fragmentation of the established rural way of life and the substitution of indigenous agriculture practices – such affirmations served as reminders that some of the old values and goals are not being discarded. The recurring affirmation of community values has an incantatory and ceremonial quality that makes us interpret them as a way for the farmers to discharge their moral obligations toward their community: by articulating the values of mutual help and of agriculture as a way of life, farmers attempt to balance both the agents’ push for new values and their own aspirations for change.

Performing

Finally, the knowledge interactions had a strong performance quality. Organizational ritual is often a public performance disconnected from the audience and often devoid of meaning (Meyer and Rowan 1977; Boje 1995). However, the performing aspects of the interactions we observed – their location, audience, and the entertainment they provided – marked them apart from routine interactions and made them a focus of attention for the community.

The choice of interaction locations was highly significant. In contrast to individual farm visits, and service delivery visits (e.g. vaccinations, field measurements, etc.), group meetings tended to be prearranged and to take place at community locations, often referred to as ‘meeting places’. Such locations could be places where villagers gather to discuss or rest (*i.e. patas*³ or *roofas*⁴); gathering places outside the chief’s palace (*i.e. nayili sampaa*⁵ or ‘chief palace shed’), or meeting places at the market (*i.e. ‘market sheds’*). ‘Meeting places’ are wooden structures with no walls, which offer shaded seating on

³ Dangbani language

⁴ Hausa language

⁵ Dangbani language

non-detachable benches. They are located centrally within the community, on land provided by the chief; and are often the venues of community events such as weddings, funerals and naming ceremonies. Their management is typically organized by a community representative (e.g. “linguist” or “community chairman,” or an “assembly man” i.e. elected member of the district assembly). Sometimes a community has more than one ‘meeting place’ and access is provided and arranged via a local leader. During our observation, chiefs tended to support the work of extension agents by assisting with arrangements for use of the ‘meeting place’. As physical locations where activities central to the community are performed, ‘meeting places’ were granted symbolic significance beyond the physical space which they occupied.

The performance aspect of the interactions was evident in the audience effect and broad community interest in the interactions. Such interest is understandable considering the rural, often remote, locations of the interactions and the infrequent presence of outsiders, including foreigners. Even though interactions tended to be focused on specific farmer groups, they often attracted audiences from the community as a whole. In addition to group members and leaders, attendees included other villagers, as well as children, old people, domestic animals. As we saw in the Agaasi example, 10 men, 1 woman, and 2 children were present throughout the interaction, which was located in a communal space next to several families’ compounds.

Attracting an important community audience was particularly important when the agent’s goal was to disseminate information about government support possibilities and to campaign for farmers to take part in such initiatives. For example, in a visit to the Doba community, the MoFA extension agent’s goal was to “*sensitize [the farmers in the community] on group formation*”, as a first step in forming a group in Doba. The agent selected the area because of its relative remoteness and because he thought the people there could benefit from more information about government programs, agriculture technologies, healthcare, etc. When the visitors arrived in Doba, they waited for more than 45 minutes, until sufficient number of community members had gathered. The meeting did not start until there were 13 active farmers (9 men and 4 women) and 3 children in attendance.

14:40 “Once the two agents and the field researcher arrived in the village, they were invited to sit on some plastic chairs and wait under a canopy. A funeral is taking place nearby. So, some of the elders are at the funeral.

[14:50] Farmers start gathering around them. Men and women shake hands with the visitors and engage in polite small talk.

[15:00] From time to time, a farmer would say: By the grace of God, all are well.

People sit around and talk amongst themselves while more farmers gather for the meeting.

People join in ones and twos. A young farmer asks MS to marry him and shows her his mobile phone Nokia 1330.

[15:20] Everybody waits. Children and older people gather. One old woman is shuffling grains in a pot. Fowl are walking around. AEA, BV and MS are served a glass of water each by a young woman. Everybody continues waiting and sitting around.”

[MS, Testing, task 4]

As we see from this example, the interaction is an integral part of community life. Young and old attend, and the physical meeting point is conducive to such broad participation – just like we saw in the Agaasi vignette too. The location and the broad participation create a strong audience effect; not everyone is a group member, and not everyone talks. However, everyone listens to what is being said, and is exposed to the discussions taking place.

As their location and various ritualization strategies suggest, such meetings were important events to farmers. We saw earlier how people left the all-important funeral events in order to attend meetings with the agent. Women’s appearance in these meetings also indicate the meetings’ importance: instead of wearing their work clothes, they wore their ‘good’ clothes and brightly colored headscarves, much like they would do for a holiday. Some younger women had brought along their children, and the female community took pride and joy in their presence.

The performance element of the interactions is also evident in their role as ‘entertainment’ events for rural audiences. Lighthearted humor, often linked to interactions with foreign visitors, formed part and parcel of the interactions’ entertainment value, and sometimes it was linked to the visitors. A ‘marriage proposal’ to the field researcher was considered funny by all farmers in the audience because, in order to substantiate it, the farmer who made the proposal made reference to his assets and ownership of a Nokia 3310 phone; such assets were clearly inadequate to attract interest from a foreign woman who was handling a lot of fieldwork equipment (camera, voice recorder).

The performing strategies of ritualization infusing the interactions served to bond together interaction participants. The choice to meet in significant places in the village, the lack of boundaries around the interactions, the common participation in rites such as prayer, and in discussions, all function to both embed the interactions in the community culture and worldview, and to set the interactions apart from mundane interactions. Ultimately, the goals of delivering a particular view on doing agriculture and the community values are reconciled, or at least presented and performed as compatible.

HOW RITUALIZED INTERACTIONS SUPPORT THE KNOWLEDGE TRANSFER PROCESS

The above analyses show how the marking and recurring ritualization strategies used in interactions between farmer communities and knowledge agents set apart these interactions from the numerous other mundane interactions among them. The ritualization strategies are not random; they conform to the community culture and worldview, which are thus upheld and affirmed just as the knowledge purported by knowledge agents may change this very culture and worldview. By embedding the knowledge interactions in ritual, participants are able to mutually recognize the value of their otherwise incompatible worldviews and to become receptive to changing their own practice and point of view. Consequently, the ritualized interaction create a context of mutual understanding, reciprocity and participatory engagement which paves the way for knowledge transfer to occur both within ritualized and mundane interactions, for the bridging of syntactic, semantic, and pragmatic boundaries.

Thus, during the Agaasi meeting the farmers and the field agents were able to exchange a lot of syntactic information about the history of the group, about its past accomplishments, about its administration and the current progress of its members. Similarly, the field agents and the farmers in the group were able to engage in a process of developing shared meanings and understandings. The disagreement on what is meant by the word 'plan' and should the group consider themselves as 'having a plan' indicates that the participants were contributing to the meaning-making process. Sharing both syntactic and semantic information was only made possible after the outsiders had shown respect for the

bereavement in the community and indicated that ritual was an enabler for crossing of two of the existing knowledge boundaries.

Of course, the process of knowledge boundary bridging is fraught with difficulties, and the ritualization can only go so far in supporting this process. During the Agaasi episode we clearly see the challenge of bridging the pragmatic knowledge boundary, i.e. the discrepancy between the formal knowledge inscribed within the group statutes and the community's accepted norms of solidarity. When the agent asks the group members what happens when someone doesn't pay the monthly group dues, the participants were surprised; they seemed unsure of the consequences of non-payment and had to discuss the matter among themselves. Eventually, a farmer articulated the official rule: if the person does not pay, they need to leave the group. But when the rule was announced out loud, joint laughter erupted. Such a response was not due to surprise at the novelty of the rule, but rather at its incongruence with community values. In a community that includes '*the living, the dead, and the unborn*' (Dogbe 1980), excluding a living human being from the group over the trivial matter of unpaid monthly dues appears absurd. In this case, the ritualization strategies invoked in the interaction proved insufficient in triggering a process of renegotiating and reconciling the two views.

Still, in spite of inherent and most likely strong limitations, the knowledge transfer process was often successful, as our data indicate. While the ritualization strategies help align worldviews, participatory engagement and materiality are instrumental in the bridging of knowledge boundaries. For example, International Development Enterprises (iDE) sets up demonstrations where farmers are invited to consider the benefits of treadle pump technology. By distancing themselves from the demonstration plots and instead by relying on farmers to re-inscribe technical knowledge as an authentic farming practice iDE are able to foster a context within which there is shared ownership of the knowledge and the learning process:

... We don't set it up, the farmer sets it up and we facilitate. We choose a lead farmer who hopefully knows what he is doing and we facilitate that process. [...] within a demonstration plot we don't want to create a separate demonstration plot. We want to see it used by a farmer within the community. [...] I think if anyone is going to learn from any demonstration that happens and

see that it works within their surroundings and their resources, then they need to see it working from someone within the community. [Environmental Program Manager of iDE, interview]

The iDE manager makes an important distinction between who generates the technical knowledge and how it is disseminated among farmers: while knowledge about the development of treadle pump technology is generated largely through the internal expertise of iDE, the dissemination of these materials is done by local lead farmers within their communities.

Perhaps the strongest indicator of successful transfer of external knowledge into the community is the case of farmers taking up fully knowledge intermediary roles. When community members adopt teaching roles, transfer of the teaching role is symbolic: perceptions of difference and diverging interests are alleviated, and new opportunities for further knowledge transfer open up among community members with varying levels of skills, resources and experience. Farmer communities welcome and value such cases, as this example shows:

8:50 AM A woman passing by greeted and the AEA responded and they talk about personal things for a while. AEA introduced the woman as an Extension Volunteer for the community. The volunteer helps farmers in the district with extension services. The volunteer is selected and supported by the people in the community. The community contributed money and bought her a bicycle to help her carry out her duties. [SID 110617, Bongo]

We interpret such cases as strong evidence of knowledge transfer and learning. The farmers take up the role performed by the agent, and become the carriers – indeed, the embodiments – of the new agricultural knowledge in their communities. They can then further disseminate this knowledge in ways compatible with the local culture. Farmers' aspirations to change are strong, and the fact that they contribute (very scarce) money to the individuals who are farther ahead on the journey of learning new methods demonstrates their commitment to acquiring such methods.

As the knowledge becomes used and taught by a community member, it becomes part of the community; the other villagers can envision themselves using the same methods and can start trying them out. Development agencies are aware of the effectiveness and the symbolic significance of a knowledge transfer strategy relying on peer trainers. As described above, iDE use farmers in the promotion of irrigation technology, as a way to reconstruct scientific knowledge into authentic, grassroots knowledge.

The richness of the knowledge transfer processes in this setting is also illustrated by the cases of reverse learning we observed, by the instances where knowledge was being transferred from the farmers to agents, and their employers. During interviews, representatives of development partners shared the view that “*we learn more from our farmers than we even teach them*” (IFTC, interview). They explained that agriculture development programs and their field agents are well-equipped with scientific knowledge and are capable of giving prescriptions such as ‘*this is how it should be*’, or ‘*use this kind of thing here*’ (IFTC, interview). Nonetheless, interviewees did point out that such abstract knowledge does not perform consistently across different crops, geographies and micro climates. Rather than negating farmers’ practical knowledge and assuming the role of “*the boss on the ground*” (IFTC, interview), field agents served best the knowledge transfer process when they assumed a facilitating role, and were able to consult and to incorporate farmers’ rich local experience into ongoing operations.

The new knowledge field agents tended to be exposed to was often the result of their continuous practice, experimentation and innovation, and often pointed against the thrust of accepted agronomic knowledge. For example, a representative of an agrochemical company described the following case of innovative weedicide application by farmers:

“When we go to the communities for some of them, normally we require that they use the weedicide... Let me give you an example, like LIFOCED, before the crop germinates. But some of them can actually use LIFOCED when the seedlings are just emerging. And they do that by capping it. They cap the seedlings and spray. I’ve never seen it. I didn’t know that you can use LIFOCED when you have germinating seedlings. But when you go to some of the communities they would cap the seedlings, just when the maize is germinating, with a lot of weeds also germinating. And they would cap the maize seedlings, with these caps looking like ice-cream caps and then they spray. That is something I have learnt rather from the farmers. Not the research institutes, [they] don’t even know that. Still, it can be done that way. They are quite innovative. I think sometimes we just steal their ideas and somehow modernize it and make it ours. So they are quite innovative in terms of the way they do things.” (Golden Stork- Tamale, interview)

Other examples of reverse knowledge transfer also included very practical insights with regards to input application and tool use. Field agents were surprised to find out that in response to information about the dangers chemicals bring to their health, their crops, their soils and the environment, farmers

were able to develop a technique to protect their crops: instead of treating the crops with both a herbicide and an insecticide, they started mixing 24D, a herbicide, with groundnut oil. The sticky mixture served to control both weeds and grasshopper infestations; meanwhile it was cheaper and more environmentally friendly. All these examples constitute further evidence that mundane and ritualized interactions created an environment of listening, learning, and respect, in which knowledge transfer could take place. The process of mutual learning suggests that not only farming communities need to change with the arrival of new knowledge, but also that development agencies need to cultivate culturally sensitive strategies for collecting, documenting and disseminating the knowledge they encounter.

DISCUSSION

This study shows that interactions at the complex knowledge boundary between agricultural extension agents and farming communities become more coherent with farmers' worldview as a result of ritualization. Particularly, we show how ritualization strategies enable the emergence of knowledge transformation elements within the knowledge transfer process i.e. consensus building elements which facilitate the establishment of common ground. These findings contribute to the literature on knowledge transfer and knowledge transformation, to the theory of ritualization, and to economic sociology.

Knowledge transformation and knowledge transfer

Our study shows how knowledge transfer can take place in most challenging settings, where groups are separated by deep boundaries in terms of vocabularies, meanings and values. Their interactions were infused by sedimented relationships of inequality and colliding worldviews. In spite of numerous boundaries and obstacles, agents and farmers were able to engage in a variety of interactions, both mundane and ritualized, through which knowledge was transferred. While we focused primarily on the knowledge processes involving farmers as learners, we also showed that mutual learning is also an outcome of these participatory interactions.

By emphasizing ritualized interactions, our findings show that knowledge transformation i.e. the act of 'aligning cosmology' is a necessary first step in the knowledge transfer process, in advance of deriving

shared vocabularies or meanings. Prior to mutually engaging in mundane interactions which involve learning-in-practice, such as choosing crops for production, applying fertilizer properly, forming a group, planting in rows, etc; agents and farmers need to establish common ground in terms of their interests, goals and worldviews. This finding enhances the literature which has tended to portray the process of knowledge boundary crossing as a progression from the simple to the complex. While Carlile (2004) implies that knowledge transfer and translation need to occur before knowledge transformation can take place, our study shows that when all boundaries are present and strong, prioritizing the pragmatic boundary may be paramount.

While the situated character of knowledge has been shown and theorized (Bechky 2003; Carlile 2004; Orlikowski 1992; Barley 1986), the role of ritual in enabling knowledge processes has not been examined. Bechky's careful empirical study of knowledge transformation among technicians, assemblers, and engineers illuminates aspects of community knowledge, yet finds no role for ritualization. Nor was ritualization a factor in Carlile's (2004) detailed study of knowledge processes either. Even though knowledge differences among participants were characteristic of both studies, they did not attain the level we observed. In our setting, smallholder farmers and agriculture development agents were separated by a gulf in ideology and ritualization emerged as an important enabler of knowledge transformation and of change.

It is the mundane interactions – participative, material – that the literature has shown – Carlile, Bechky. This kind of interactions are indeed important. They were in our setting as well. But the ritualized ones have not been shown. Even more strongly, we say that in this context one needs the Ritualized 'in order to' have all the mundane ones as well.

The realization of the importance of ritual is largely due to our context, development, which has some marked contrasts with the highly technical contexts such as product development more commonly studied in organization theory (Metiu and Rothbard 2013). This realization allows us to re-interpret the numerous yet scattered findings in the literature on knowledge that suggests an important role for ritualized activities in knowledge-related processes. Storytelling (Orr 1996), presentation rituals (Kunda 2009),

efforts to present new technologies as culturally-congruent (Orlikowski 1992), meeting rituals, including visits to and from top managers, all can be seen as ritualization strategies that have the potential to bridge across group boundaries, contain conflict, and stimulate dialogue.

Ritual mastery, understood as the ability to deploy ritualizing schemes prevalent in the rural communities (Bell, 1992), emerges as an important tool the boundary spanners' toolkit. Agriculture agents choreograph ritual interactions by inviting participation, engaging in prayer, visiting the village chief, accepting or not a gift, opening and closing interactions in a manner that sets them apart from mundane meetings. Existing literature on boundary spanning has pointed out the need for these individuals to be culturally aware (Perrone, Zaheer, and McEvily 2003), and our findings reveal the extent of ritual mastery necessary for interactions to proceed smoothly.

In addition to ritualization, effective knowledge transformation requires participative engagement and the mobilization of materiality. In this context, materiality is multi-faceted and involves participants' minds, beliefs, and bodies. The role of such elements in knowledge transformation suggests that over and above the materiality of objects (Bechky 2003, Carlile 2002; Orlikowski 2006) there is a materiality of gestures and bodies that deserves attention. By performing the same gestures, by acquiescing the same events, interaction participants implicitly affirm their commonalities and thus the possibility of a dialogue across worldviews.

Ritual and ritualization

Our findings show that ritual, in the form of ritualization strategies, is an enabler of change and knowledge transformation. This finding stands in marked contrast with the prevailing view in organization studies, that rituals are largely obstacles to change, meaningless performances by insiders (Boje 1995), or mechanisms for solving conflicts via decoupling (Meyer and Rowan 1977).

Rituals *are* social relations (Bell 1992: 130) and as such we found that they are performative at several levels. First, ritual speaks not only to people's desire to find congruence and keep things aligned with tradition, but it also speaks to their aspirations for change. Farmers in our context were keenly interested in acquiring knowledge and material support from the agents, were eager to participate in

knowledge meetings, and were active in performing (and sometimes even initiating) some of the ritualization strategies. Second, when aspirations involve knowledge that can be antithetical to prevailing community values, ritual makes it possible for the old and the new to co-exist and enter a dialogue (Bourdieu 1977). Through ritualization, the knowledge interactions are set apart and made coherent with farmers' view of the world. Thus, while the knowledge on how to plant in rows or how to use pesticides or how to organize a group may be new, the way it is presented – respecting the village hierarchy, the way of conducting community gatherings, the place of the meeting – are all consistent with the village norms. The novelty is somehow placated. Third, ritual brings together insiders and 'others' and serves to bridge across community and group boundaries. The spectrum of such 'others' ranged from the more familiar Ghanaian agriculture extension agent to the very foreign, young Westerners – all of whom were rendered more familiar through participation in prayer, gift giving, visits to the village chief. The role of ritual in integrating communities is well accepted (Durkheim 1912). Less known, however, is its role in bridging across group boundaries, in bringing together insiders and outsiders.

Mastery of ritual strategies may be experienced as empowerment by those involved – in our case, agents and farmers. Of course, we are far from the full range of strategic behavior exposed by Goffman (1967): here, the empowerment is limited and limiting. Still, farmers are active participants in ritual strategies, not only answering agents' invitation to join in rituals, but also initiating some strategies (e.g., the gifts, the visits, the constant affirmations of community values). Bell (2006) warned that the feeling of empowerment may lead participants to assume that there is more alignment of interests than there actually is (Bell 2006). This may be the case, and the ritualized interactions we observed could have been largely ceremonial, devoid of meaning. However, our data suggests otherwise: meaningful, useful knowledge is infused into the communities through the process we analyzed, to the extent that farmers are taking up the agents' roles, and that indigenous knowledge is transferred to development agencies. Furthermore, farmers were active participants in these meetings, they were interested in the agent's knowledge (material and abstract), they initiated discussions, asked questions, etc. In any case, the

effectiveness of knowledge interactions cannot be assessed adequately if ritualization aspects are overlooked.

By taking a practice approach to ritual, understood as something people do, we uncovered the ubiquity of ritualization in secular settings of knowledge transformation. Studies have shown that secular settings such as courtroom and politics are prone to ritualization (R. Ferguson 2008; Kertzer 1988), and organizational life is rife with rituals (Van Maanen and Schein 1977; Trice and Beyer 1984). Yet, arguments in favor of ritual as an enabler of change and learning warrant further attention. We found that ritualization in the form of two complementary types of strategies, *marking* and *recurring*, served to constantly differentiate and integrate. It differentiates by setting particular interactions apart, infusing them with an importance, with the weight of their compatibility with ancestral traditions. It integrates by creating a setting in which two worldviews can co-exist and in which rich dialogues and knowledge transfer processes can occur.

Our findings suggest that the marking strategies were particularly important in differentiation, and the recurring strategies in integration. While secular, these strategies were traditional, formal, and some even carried sacral connotations; thereby fitting with anthropologists' characteristics of ritual: formalism, traditionalism, sacral symbolism, performance (C. Bell 1987).

Economic sociology on making markets

Our study has implications for the vast and rich literature on development, and for the economic sociology research on 'market-making'. As many scholars have pointed out, knowledge processes in which Western actors engage with local beneficiaries are fraught with difficulties and limited in effectiveness (Gautam 2000; Spivak 1988). Poor understanding of the knowledge processes involved (Kleerkx and Leeuwis 2008) can lead to interpretations of the process as 'dissemination' of knowledge to the 'subaltern' (McFarlane 2006b). We see our grounded study as a contribution to the detailed understanding of the complex transformation processes taking place in rural communities around the world. Our findings about the importance of ritualization can inform the practice of capacity building in development context. Thus, the nuanced adaptation of knowledge to the farmers' context (have we shown

that), the presentation of the new knowledge according to the village norms and culture and governance system, helped embed the knowledge in farmers' context and thus having it accepted and embraced. These findings also inform knowledge practices in other settings as well, because we know that respectful interactions are sorely needed in many organizations (Meyerson and Scully 1995).

The case of knowledge transformation can also be seen as yet another instance of the epistemic violence that involves the destruction of non-Western ways of perceiving the world and the accompanying dominance of the Western world views (Spivak 1988). As post-colonial researchers have found, the knowledge processes we studied are often accompanied by the unlearning that needs to take place before new knowledge takes hold (Spivak 1988). Some of the processes we observed – the creation of farmer groups, the importance of planning and saving – are not new in Northern Ghana, where there exist well established customs such as '*nnoboa*' (mutual labor), and '*susu*' (saving club). Group knowledge interaction rituals build on such cultural understandings, and inscribe them within new myths and traditions such as '*group problems*', '*group projects*', '*group meetings*', and '*group marketing*'. In this respect, ritualization can be seen as the very first step in the institutionalization process by which community traditions are appropriated and recreated into actionable structures on the basis of a different worldview (Bellah 2005; Young 1994). It can be a viable strategy for the advancement of processes involving the introduction, acceptance and adoption by rural communities, of new practices in a variety of domains – agriculture, health, education, etc.

CONCLUSION

Having studied knowledge transfer interactions within the complex environment of rural Ghana, we found that rather than being a tool for the maintenance of established institutions and an instrument frustrating change, ritual forms an essential part of the mechanisms for learning and development available to change agents. Ritualization strategies employed by AEAs in rural Ghana enabled the transfer of agronomic knowledge across the syntactic, semantic and pragmatic knowledge boundaries between agent and smallholder farmers. More importantly, ritualization established learning as a morally

redemptive act and enabled two-way exchanges of understanding and experience. Ritualization was instrumental in setting in motion a transformation process comprising of mutually shaped learning and mutually shaped social change.

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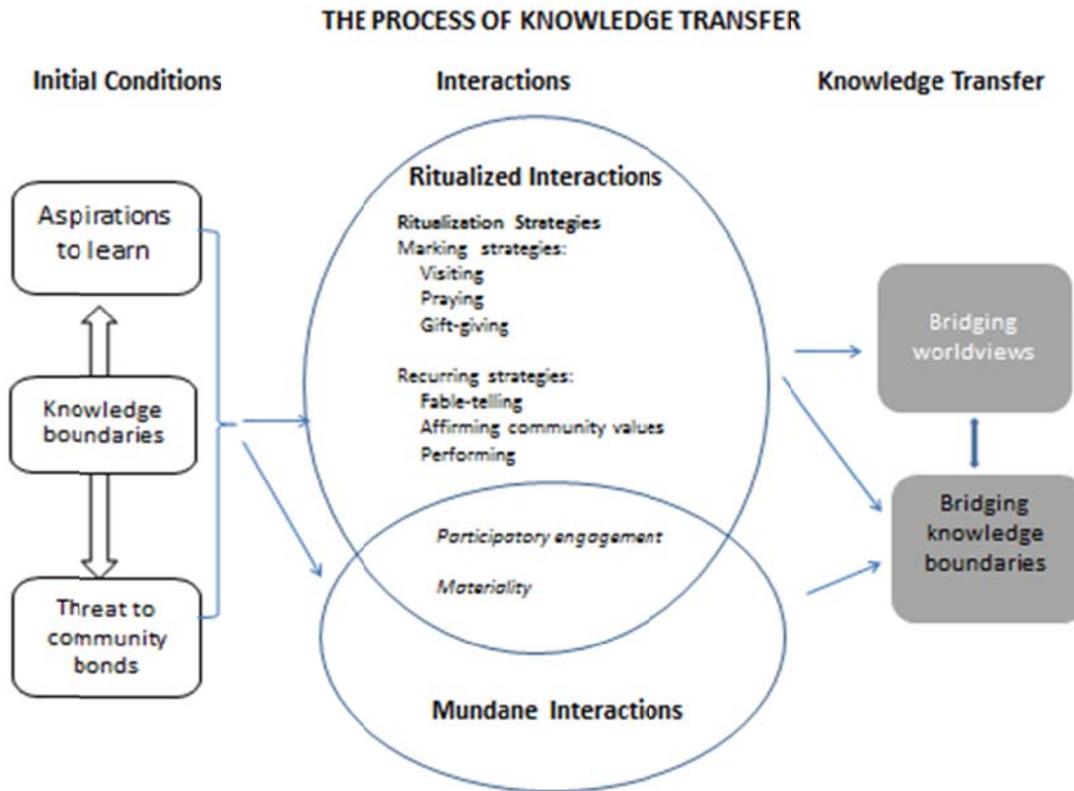
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Figure 1: Ritualized interactions and the process of knowledge transfer.



The elements in italics – participatory engagement and materiality – are common to ritualized and mundane interactions.

Table 1: Interview participants.

Public	Development partners	
	Local	International
KNE DADU (3)	Association of Church-based Development NGOs (1)	ACDI-VOCA (2)
Bongo DADU (3)	Presbyterian Agric Services (1)	Engineers without Borders- Canada i.e. EwB (1)
Tamale DADU (3)	SEND Foundation (2)	International Development Enterprises i.e. iDE (1)
Amansie West DADU (1)	Wienco (1)	
	Golden Stork (2)	
	International Tamale Food Company i.e. ITFC and OMOA (1)	
	TechnoServe (1) and CAA	
	Ghana Agricultural Associations Business and Information Center i.e. GAABIC (1)	
10 interviews	10 interviews	4 interviews

Table 2: Differences in work contexts and knowledge bases.

	<i>Farmers</i>	<i>Agents</i>	<i>Development partners</i>
<i>Source of norms and identity</i>	Community; rural culture, relational	Both	Formal organization; rational
<i>Work</i>	Grow crops, agricultural production	Administer support and deliver advisory services in the field	Design and implement government programs and NGO projects
<i>Locus of practice</i>	Physical, material, embodied	Both	Abstract, conceptual
<i>Conceptualization of extension service</i>	Aid paradigm: how to access and use improved inputs in farming?	Operational: how to administer support services and trigger learning?	Market paradigm: how to improve farming practices and business attitudes?
<i>View of agriculture</i>	Way of life	Blended understanding	Business

APPENDIX A

Table 3: Further examples of ritualization

Quote	Interpretation	Ritualization Strategies	Source
<p>29.03 Samson: <i>Sometimes, when we go to a new community it is difficult to organize the farmers. They normally would trust somebody they know. So the extension agents come in handy. We need them [AEAs] to help us organize farmers in the communities.</i> MS: <i>So you use them as a local presence?</i> Samson: <i>Yes. [Like a bridge] to reach the farmers.</i></p>	<p>Linking with trusted people as a community entry strategy</p>	<ul style="list-style-type: none"> • Visiting important community events or individuals 	<p><i>Interview</i> (Golden Stork-Tamale)</p>
<p>DP: <i>With farmers in those communities. So we will set up an irrigation technology on someone's farm in the community, generally a lead farmer because they know the community. So we will try and get someone who is respected by the community, who is generally seen as a very good farmer, and we will ask his permission if we can demonstrate this technology in their fields. And we will set up the technology, and...</i></p>	<p>Linking with trusted people as a community entry strategy</p>	<ul style="list-style-type: none"> • Visiting important community events or individuals • Gift giving 	<p><i>Interview</i> (iDE)</p>
<p>8:18 AM <i>AEA starts the day's activities with IDD on his motor bike. AEA stops to buy a crate of star beer for the funeral. AEA uses his own money to buy the drinks. We meet the supervisor of the AEA on the way and he asked the AEA to inform the farmers to shape their beds for transplanting of sweet potatoes.</i></p>	<p>Personal connection to events in the community</p>	<ul style="list-style-type: none"> • Visiting important community events or individuals 	<p><i>Observation field notes</i> (110607-IDD-01)</p>
<p><i>We can stay in one particular district for maybe one whole week, and within the week we would go to the various extension zones. Plan that with the agric officers. [...] And when you go to the community, participation is usually very good. The peak days when the farmers would be able to attend are... they have these that are called 'taboo days'. On 'taboo days' farmers usually do not go to the farm. They have specific days within the week, called 'taboo days' when farmers do not go to the farm and you can get so many to come. So we go and display most of the products, the relevant products; and then you talk about the products, one after the other. How to use it? What it does? Various precautions to take, and what not...</i></p>	<p>Leveraging community events in knowledge transfer</p>	<ul style="list-style-type: none"> • Visiting important community events or individuals 	<p><i>Interview</i> (Golden Stork- Tema)</p>
<p>11:08 AM <i>DAO took his seat and the meeting was started with a prayer. After the prayer, AEA introduced DAO, the two RAs (SHA and SID) and a woman volunteer at the</i></p>	<p>Ceremonial use of time</p>	<ul style="list-style-type: none"> • Praying together 	<p><i>Observation field notes</i></p>

<u>high table.</u>	and space		(110622-SHA- 01)
15:25 PM <u>AEA finishes and sets off to go home. Two members of the group accompanied him. They requested their house is close by and that AEA should go and say hello to their old man. AEA get to the old man and farmer introduces him to old man. Farmer gets to the room and comes out with some money in his hand, dashed it out to AEA as a token to buy some water on the way. AEA thanks them and set off to his house.</u>	Invoking reciprocity	<ul style="list-style-type: none"> • Gift giving • Affirming community values 	Observation field notes (110607-MAR-04)
<u>That is a different question. And that is the challenge [...] because it is one thing to teach somebody something and [it is] another thing practicing it. And there are a lot of factors. If you get the peer teachers [...] let me start from there. Quite a number are [...] doing, others are not. Because they will tell you, 'OK. Once you've trained us, give us something. What is our motivation for doing that work. Should I do it free? If you could add a bicycle to it, then I would be able to do it. Do you understand it? So those are the challenges.</u>	Gift giving as motivation for assistants in the community	<ul style="list-style-type: none"> • Gift giving 	Interview (ACDEP: 18:13)
<u>"When a bird approached the bat and asked for help, he showed his teeth and said that he's an animal so he won't help. When an animal approached the bat and asked for help, he showed the animal his wings and said he's a bird so he won't help. Later the bat had a death in the family. He went to the animals for help. The animals said no. He went to the birds for help. The birds said no."</u>	Invoking mutual help	<ul style="list-style-type: none"> • Fable telling • Affirming community values 	Secondary document EwB, Agriculture As A Business, Curriculum 2.0
<u>"One person cannot move a mountain!"</u> <u>"[...] united we are rock and divided we are sand."</u>	Invoking the significance of unity	<ul style="list-style-type: none"> • Fable telling • Affirming community values 	Secondary document (Agriculture As A Business, Curriculum 2.0, EwB)
11:24 AM <u>Talking about tinning, the DAO also throw more lights about it and related it to our real life situations by saying that, if you give one Full bowl of food to 5 children to consume and same quantity to only 1 child to consume, in about one week time you will realised the one child who consume the full bawl of food will be growing well and feeling better than the 5 children who took the same quantity. This he said same applied to the crops or plants, if you have more than 2 plants in one hole; these plants will be competing and at the end of the day they will not get the right nutrient since all of them will be shearing and that could result to low yield.</u>	Drawing parallels to accepted wisdom as a teaching strategy	<ul style="list-style-type: none"> • Fable telling 	Observation field notes (110617-SHA -02)

<p>11:37 AM Moreover, DAO also throw more light on the importance and the needs to form a group. To begin with, DAO ask the farmers what are the things to be considered in order to select a leader. <u>One of the farmers said, the leader must be someone trust worthy, someone who has initiative. DAO said he is happy to hear that. DAO mentions that they should try and form a serious group, not a group without an objective. After forming the group they should try and have a common objective make sure that they open an account and start a serious savings so that if possible MOFA Bongo can link them to back to be able to have access to loan to carry out their farming activities, but as a group if they don't have bank account or having zero account nobody will be willing to give them loan.</u></p>	<p>DAO expands understanding s of leadership</p>	<ul style="list-style-type: none"> • Affirming community values 	<p>Observation field notes (110622 SHA-01)</p>
<p><u>The group appointed two 'old men' in the group to be the group 'Trustees' and advise the group. Group members complained of high mortality rates for the chicks of their guinea fowls and AEA advised them to see the VET as early as possible.</u></p>	<p>Respect for elders as leaders</p>	<ul style="list-style-type: none"> • Affirming community values 	<p>Observation field notes (110618 IDD-01)</p>
<p><u>Some farmers told AEA that an NGO registered and promised them fertilizer and they could not fulfill the promise on time. Eventually they ended up giving them money to buy the fertilizer after the application period has passed. So AEA should endeavor to note the offer on time. AEA asks for permission to leave and attend to another group. Farmers clap for AEA. He thanks them and gets on his motorbike and leaves.</u></p>	<p>Mutual respect through ceremony</p>	<ul style="list-style-type: none"> • Performing • Affirming community values 	<p>Observation field notes (110609 MAR-03)</p>
<p>11:23 AM However, talking about how to get the remaining balance, DAO said that, those who will not benefit this year that doesn't mean they will not pay the money back, at a particular time they will come over those who will refused to be back or the rest of the money will be handed over to the police for prosecution. <u>DAO related the issue of recovery to our real life situation by saying that, if you go to a beer bar operator and buy 1 gallon of Akpetashie for credit to give to your labours in your farm to later pay back, if after that you refused to pay back do you think if you go back again you will get it? All the farmers burst in to laughter.</u></p>	<p>Invoking loan repayment as appropriate behavior</p>	<ul style="list-style-type: none"> • Performing • Affirming community values • Fable telling 	<p>Observation field notes (110622 SHA-01)</p>
<p>26:40 Group dynamics basically looks at the <u>processes involved in making sure the groups become very cohesive, that the groups organize regular meetings, and using the nnoboa concept. Groups are helped to draw plans that guide them in knowing which farm they work on during the various periods of the year. Under this is the conflict resolution; what should be done to prevent conflicts, how to deal with the conflicts when it arises [...].</u></p>	<p>Invoking group cohesion</p>	<ul style="list-style-type: none"> • Affirming community values 	<p>Interview (TechnoService)</p>
<p>36:16 [...] When we have the focus group discussions, we split them into those groups. But when we now start the field process, selection of the site... we meet together, the whole 50 farmers. We select the site together. But we realize that even the tomato farmer would still have to cultivate maize. The maize farmer would grow tomatoes. <u>They try to be self-sufficient. So we do it together. When we are selecting a site for tomato production, all the</u></p>	<p>Audience effect</p>	<ul style="list-style-type: none"> • Performing 	<p>Interview (Golden Stork-Tamale)</p>

<u>50 farmers would be there. We are selecting a site for maize production, they would all be there. Because they end up growing almost all the different kinds of crops themselves.</u>			
<p>MS: So you set up for the whole crop cycle?</p> <p>DP: We don't set it up, the farmer sets it up and we facilitate. We choose a lead farmer who hopefully knows what he is doing and we facilitate that process. [...] within a demonstration plot we don't want to create a separate demonstration plot. We want to see it used by a farmer within the community.</p> <p>MS: Can you explain?</p> <p><u>We believe that with demonstrating, it has to be demonstrated by someone in the community; and not having a separate iDE demonstration plot that is set up by us and that is run by us. [...] I think if anyone is going to learn from any demonstration that happens or at least see that it works within their surroundings and their resources, then they need to see it working from someone within the community.</u></p>	Relying on farmer peers in order to produce a convincing demonstration	<ul style="list-style-type: none"> • Performing • Visiting important community events or individuals 	Interview (iDE)
11:52 AM <u>AEA ended the discussion and a closing prayer was said. AEA and SID moved away. AEA said he was going to be visiting farmers in their farms to see what they were doing and also to offer technical advice where necessary.</u>	Prayer as ceremony	<ul style="list-style-type: none"> • Praying together 	Observation field notes (SID 110621-02)
9:40 AM <u>AEA prays to commence the meeting. AEA introduces MAR to the group. AEA began the meeting with where they ended in their last meeting. He explained that the block farm assistant is in three areas aspects. The seed, fertilizer and/or land preparation.</u>	Prayer as ceremony	<ul style="list-style-type: none"> • Praying together 	Observation field notes (MAR 110613-02)
12:00 PM <u>DAO said in absence of any comment, he is actually disappointed that, the farmers did not applied all the technologies especially planting in rows. The meeting ended without any prayer. But after the meeting DAO asked the accompanied AEA to distribute the kapaala seeds to the farmers as a way of monitoring the AEA.</u>	Praying together as a reward for actions	<ul style="list-style-type: none"> • Praying together 	Observation field notes (SHA 110617)
8:51 AM <u>AEA asked them to use the small lands they have to plant groundnut rather than millet since the rains are not coming. One of the group members said a closing prayer and the meeting ended. AEA and SID moved to the next community to inspect and observe the activities of the group.</u>	Prayer in adverse weather	<ul style="list-style-type: none"> • Praying together 	Observation field notes (SID 110607)
11:09 AM <u>The supervisor arrived with the colleague AEA and a research assistant from EWB. The supervisor and the farmers shook hands after which an opening prayer was said and the meeting commenced. AEA welcome all the farmers after which he introduced his supervisor to the farmers. All the farmers knew the supervisor already.</u>	Prayer as an enactment of togetherness	<ul style="list-style-type: none"> • Praying together 	Observation field notes (SID 110622-01)

ESSEC Business School

Avenue Bernard Hirsch
CS 50105 Cergy
95021 Cergy-Pontoise Cedex
France
Tél. +33 (0)1 34 43 30 00
Fax +33 (0)1 34 43 30 01
www.essec.fr

ESSEC Executive Education

CNIT BP 230
92053 Paris-La Défense
France
Tél. +33 (0)1 46 92 49 00
Fax +33 (0)1 46 92 49 90
www.executive-education.essec.fr

ESSEC Asia-Pacific

100 Victoria Street
National Library # 13-02
Singapore 188064
Tél. +65 6884 9780
Fax +65 6884 9781
www.essec.edu/asia

Contact:

Research Center
+33 (0)1 34 43 33 58
research.center@essec.fr

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