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MAKING KNOWLEDGE WORK IN PRACTICE

An integrative methodology for researching
performance in global commodity
chains and local food markets

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Introduction

Making knowledge work needs to take place among real-life practices. These usually involve the work of groups of knowledgeable actors and sets of inter-linked purposeful actions that have material consequences. This chapter examines a methodological perspective focusing on mutually constituting practices distributed in global commodity chains and in local food markets; the practices accomplished by different groups of actors are also situated at different sites across the commodity chain or market system. These practices are the sites where ‘knowing how to make things work’ emerges. Moreover, making a set

of practices work reflects emerging organisational capacity to coordinate actions in a commodity chain or food market, which do not necessarily involve a coordinating agent. Therefore, this chapter also addresses the more general methodological question of how to study the process of making knowledge work in similar types of layered organisational settings.

To answer this methodological question, we build on literature in organisational studies that shifts the research gaze from a focus on individual knowledge and capacities to a focus on knowing that transpires in practices and their interrelationships (Nicolini, 2012). The methodological choice to study practices (Nicolini, 2009) combines with methodological perspectives in the field of technology studies that focus on the use of knowledge, skills, tools, and techniques in everyday and often mundane practices (Glover et al., 2017; Jansen and Vellema, 2011; Richards, 1989). This methodological choice resonates with anthropological work on the intrinsically social nature of learning, skills, apprenticeship, and competence (Jaarsma et al., 2011; Lave, 1993). Researching knowing as the joint accomplishment of a set of distributed, stabilised, routinised, or improvised practices opens methodological space to investigate the question of how social order is jointly established, maintained, and transformed; here specifically in the economic space of commodity chains or food markets (Jones and Murphy, 2011; Nicolini, 2012, p. 122). These perspectives research *knowing* as an organisational and collective accomplishment as a social phenomenon.

The chapter scrutinises the methodological choice to focus on practice and coordination in two cases based on in-depth empirical studies: first, on the sourcing of cocoa in Ghana; and second, on the collection of oilseed in Uganda. It posits *knowing* as an emergent outcome of a set of interdependent practices organised around achieving a practical goal, such as enhancing sustainability in commodity trade or ensuring consistency in food provisioning. The two cases zoom in on concrete social-material practices: the *pruning* of cocoa trees in small-holder farms in Ghana, and the *aggregation* of oilseed in small village stores in Uganda. Zooming in on problem-solving capacities in everyday practices enables one to identify how interconnected activities in global commodity chains or local food markets handle all kinds of errors and contingencies. Moreover, both situated practices are intrinsically connected to other practices distributed in the layered organisational set-up of commodity chains and food markets. This requires expanding the research gaze to modes of collaboration and governance that make organising possible in real markets. The case examples illustrate how a focus on knowing occurring in practice enables assessing and comparing the conditions for making knowledge work in the setting of a layered and spatially distributed organisational setup.

Next, the chapter presents the methodological perspective used for researching practices and introduces how material and institutional dimensions may be integrated into the study of knowing. The two case examples serve to analyse how knowing is brought about, which informs a discussion on how knowledge-based interventions, such as sustainability standards or contractual arrangements,

may contrast or silence the processes from which knowing emerges. The chapter concludes by looking at how the methodological perspective offers a forward-looking agenda for a social science perspective to investigate the consequences of knowledge-based interferences associated with external organisations, including manuals, training, and managerial prescriptions and standards. The focus on knowing emerging from situated practices is appreciative of local problem-solving capacities; it contributes to detecting and opening spaces for inserting these capacities in the specialised knowing generated in mainstream science and technology institutes.

Methodological perspective

The methodological perspective used in this chapter includes three dimensions, which build on the systematics of doing technography (Jansen and Vellema, 2011). First, it focuses on knowing how to make practices work, which orients research towards the human capacity to make or transform, and includes materiality in the analysis. Second, it analyses knowing as a collective endeavour anchored in the configuration of distributed practices with explicit or hidden forms of coordination. Third, it associates knowing with forms of specialisation and professional rules embedded in a wider division of labour in society.

Making practice work

A focus on knowing how to make practice happen offers an alternative perspective on knowledge (Nicolini, 2011). Following Lave (1993), learning and knowing not only happens in the mind of the learner or the user. The human capacity to solve problems and achieve practical ends is traceable in the use of knowledge in team work and emerges in interactions of humans with natural or material objects. Hence, knowledge is an integral part of the package of techniques, machines, tools, physical layout, skills, or procedures, which mediate the interactions of society and materiality in everyday life.

The focus on everyday practices aligns the ethnographic tradition reflected in work on learning, skills, apprenticeship, and performance (Lave, 1993; Richards, 1989) with organisation and management literature analysing knowing and learning as socio-material interactions ‘constituted and reconstituted’ in everyday situated practices (Fenwick, 2006; Orlikowski, 2002). Knowing how to make practice happen is not limited to cognitive knowledge, which suggests that knowing is not a static capability or stable disposition of individual actors. Rather, knowing is an ongoing social accomplishment constituted, reshaped, and transmitted in actions performed to solve situated and often unanticipated problems. Zooming in on everyday practices opens space to include materiality in the study of knowing. Knowing how to handle material dimensions then becomes an integral element of the social analysis of how a set of actors make practice work. This is particularly relevant for analysing practices that interact, for example,

with seasonal fluctuations in agricultural production, the spatial aspects of sourcing produce, or the influence of pests and diseases on yields and productivity in farms. These material dimensions make everyday practices partly unpredictable. Therefore, Lave (1993) and Barber (2007) emphasise the notion of skilled improvisation as an ongoing activity contributing to learning and knowing.

The methodological challenge is to recognise knowing, which is not always manifest in manuals or written instructions. People use prior experience to solve situated problems (Fenwick, 2006; Johri, 2011). Mastery transpires in what is done and how it is done (Nicolini, 2009). This makes it relevant to investigate knowing how to make a practice work, and to look closely at everyday activity, rather than seeking to generate an abstract conceptualisation of knowledge and its effects. A methodological consequence is that knowledge is essentially considered a tool used and reinforced in the performance of daily activities, which reflect purposeful and competent interactions with the real, social, and material worlds. The first dimension looks at knowing with an interest in handling errors and contingencies in evolving processes of (material) transformation with open-ended outcomes.

Connecting practices

The second methodological dimension shifts attention from a single practice to a bundle of practices knotted together. Multiple practices are usually located in different spaces, carried out at the same time or in a certain sequence. Hence, knowing is distributed in networks of people and material environments (Hutchins, 1995), which associates it with know-how distributed across task-oriented teams and mediated processes where activities are developed collaboratively (Paavola and Hakkarainen, 2005). This makes it relevant to investigate how interconnected groups, as small task-oriented units (McFeat, 1974), interpret, process, transmit, and transform information, both within and across the organisational boundaries of the smaller group.

Following Nicolini (2011), practices emerge around prospective outcomes, around which small groups organise their work, and around which activities are coordinated. Hence, making things work is a collective endeavour, which implies a multiplicity of paths, connections, antecedents, references, and deferrals, and brings to the fore the processes that make activities work together and establish associations. This implies a shift, from individual capacities to studying processes connecting practices, directing the movement of information, and creating relationships between practices. These configurations connect the accomplishment of local real-time practices to practices situated elsewhere (Nicolini, 2009). This raises the questions of how the combination of practices realises expected outcomes, or how it may generate unintended effects. This implies an interest in how interlinked and differently situated practices realise collaboration and collective endeavours, relying on the transmission of information, knowledge, and direction.

The methodological challenge is to expose those practices generating outcomes together, and to reveal patterns of coordination as an emerging property of global commodity trade or local food provisioning. Coordination may be the result of purposeful orchestration, but it may also emerge from a set of interconnected practices jointly producing a practical result. Accomplishing organisational knowing involves combining elements and weaving together dispersed knowing (Nicolini, 2011). Accordingly, the second dimension focuses on knowing how to organise, coordinate, form new alliances, and cooperate around specific and distributed tasks to produce order. This second dimension anchors the study of knowing on the configuration of interwoven practices performed and organised around prospective outcomes.

Interferences by non-localised specialisms

The third dimension looks at the presence of rules, procedures, and routines associated with non-localised specialisms in situated practices. This refers to institutionalised forms of knowing embedded in skill-based professions in the wider division of labour in society (Durkheim, 1957/2001). These are associations of people with specialised skills and knowledge that are joined together by the bonds of their profession. Members of a similar professional guild are inclined to solve problems in similar ways or make judgments on the basis of shared professional values (Mudambi and Swift, 2009). Therefore, membership of a professional field affects how specialised knowledge is differentiated from knowing manifest in situated practices.

Non-localised specialisms can interfere, possibly at a distance, with situated actions in various forms. This may refer to audits and checklists related to sustainability standards (Ponte and Cheyns, 2013) or to conventions associated with the professional fields of supply chain management and logistics (Gibbon and Ponte, 2008). These interferences can expose contrasts between knowing that is represented in formal learning and formal theoretical schemes through hand-and-eye-knowledge, when dealing with the material or social conditions of the practices (Richards, 1993). Knowledge reproduced in professional associations can take the form of prescribed practices, guidelines in contracts or standards, manuals, surveillance and monitoring procedures, or protocols for quality assurance. This knowledge influences the language of specialists used in the social selection of recipes or intervention pathways.

The methodological challenge is to detect processes generating tensions or accords between situated practices and non-localised specialisms. Combining specialised knowing and knowing accomplished in situated practices often involves dedicated institutional work (Lawrence and Suddaby, 2006). This comprises purposive actions that can lead to adjustments, adaptations, or compromises visible in localised day-to-day practices; or vice versa, to the insertion of context-specific solutions into mainstream science and technology, therefore enriching the portfolio of options available (Fressoli et al., 2014). Researching

the practice of institutional work in layered organisational setups (Lawrence et al., 2009) makes it possible to diagnose the ways non-localised specialisms try to govern other practices, and relatedly, to what extent the blending of different practices is possible. The third methodological dimension looks at the manifestation of knowing associated with membership of professional fields and non-localised specialisms in localised practicing, which are not necessarily commensurable. The case examples below use the three methodological dimensions introduced in this section: (1) making practice work; (2) connecting practices; and (3) interferences by non-localised specialisms.

Knowing how to prune cocoa trees (Ghana)

In cocoa chains, sustainability standard and certification schemes drive sourcing and chocolate companies to organise training and extension services targeting smallholder producers and focusing on good agricultural practices such as pruning (Asare et al., 2018). These knowledge-oriented interventions connect on-farm pruning practices to the selection of pruning techniques higher up in the commodity chain and to research. A focus on practices exposes how pruning moves up and down this layered setting (Glover et al., 2017) and what institutional features enable or constrain fruitful interactions between knowledgeable actors at different sites.

Making practice work

Pruning is a skilful and essential management practice in tree crops (Govindaraj and Jancirani, 2017). It involves knowing which pruning techniques to apply and how to prune trees under specific local conditions. In cocoa, pruning can be undertaken to get young cocoa trees into shape, to shape the canopy of matured cocoa trees to a desired size and architecture, or to remove diseased and unnecessary branches and to control pests and diseases. Interviewed farmers explained that the choice of which type of pruning to do was highly situational and informed by their assessment of the state of the trees, the conditions in the farm, soil conditions, other trees in the farm, the presence of sunlight, and so on. Interviewed farmers highlighted the importance of learning from mistakes and looking closely at how other farmers were pruning. They explained that none of the farms in the area had similar conditions, and even in the same farm, different agro-ecological conditions need to be considered when pruning cocoa trees. Timing of pruning and maturity of trees were important, while knowing how trees have grown informed the selection of tools and techniques.

This technical knowing indicates that pruning entails the use of a combination of skills, tools, techniques, and knowledge, all of which is highly situational. At farm level, agricultural producers use and combine know-how, tools, techniques, and skills to achieve practical ends, such as controlling pests and diseases for producing enough beans. Pruning is one of the specific actions for achieving

this, which assembles together with other actions for managing the agro-ecological conditions under which cocoa trees grow; the anticipated effect also depends on other practices, such as fertilisation. Moreover, pruning is labour intensive and requires skilful workers, which connects the practice to employment and market conditions in the environment of cocoa farmers.

Connecting practices

Achieving sustainable cocoa farming involves more than the application of good agricultural practices: it emerges from a web of practices, which jointly generate a steady supply of cocoa beans. Producing enough beans also includes managing workers available in the neighbourhood, some of whom may not be skilled to conduct the delicate task of pruning. Being able to sell cocoa beans entails connecting to purchasing clerks who mobilise working capital for making payments and maintain connections to the buyers licensed to operate in the Ghanaian cocoa market. At farm level, these practices, including work of land owners, farm managers, workers, and purchasing clerks, are knotted together, which reinforces a relatively stable configuration of institutional arrangements regarding land tenure, labour management, and local buying transactions.

Actions downstream in the cocoa chain involve the implementation of sustainability standards, accompanied by private and public investments in knowledge transfer and training targeting smallholder producers. This induces a stronger connectivity of local practices to sites located elsewhere. Manuals, audits, and checklists illustrate the governance mechanisms associated with standard setting and the associated form of knowledge transfer. A review of manuals produced in the Ghanaian cocoa sector since 1987 shows a bias towards one particular type of pruning, along with the absence of contextual factors to be considered during pruning. The orientation of manuals translated into the twofold purpose of extension and audits thus shapes the interaction between cocoa farmers and specialists. Mass training and coaching directs farmers towards one type of pruning and, in some instances, pruning was taken over by workers recruited by government or major firms. The members of these so-called 'pruning gangs,' according to farmers interviewed, did not have the skills and experience needed for proper pruning. Zooming out from on-farm pruning demonstrates how practices at sites downstream in the cocoa chain funnel pruning towards a narrower set of techniques, affecting productivity and sustainability levels in sourcing cocoa beans.

Interferences by non-localised specialisms

Public pressure for sustainability in global cocoa chains has led to the rise of standards and certification schemes, which are accompanied by trainings of smallholder producers in Good Agricultural Practices (Ponte and Cheyns, 2013). Sustainability standards and certification schemes prescribe pruning as a positive agricultural practice and consider it a low-cost choice for boosting

productivity (Asare et al., 2018). Accordingly, knowledge is considered as a transferable item that brings scientific insights and prescribed ways-of-doing to farm management in multivariate agro-ecological conditions. The knowledge dimension is manifest in manuals, prescribed practices, check lists, and expert language appearing in the work of auditors and certifiers that monitor compliance to standards.

Agronomists employed at research institutes specialised in cocoa production acknowledged the situatedness of pruning and emphasised the contribution of pruning to conditions increasing productivity, which relate to aeration, light capture, and nutrient use. They also warned of the adverse effects of pruning when the practice is not learnt through hand-and-eye; a skilful pruner needs to carefully assess the status of the tree and its growing conditions before acting. Although these agronomic insights and the contextual understanding of pruning shared by farmers seem to be compatible, the real interactions between situated knowing and non-localised specialisms induced by standards and certification schemes indicate the opposite. The combination of training, monitoring, and auditing reduced the space for including context-specific practices.

The inclusion of pruning in protocols and procedures linked to standard setting and certification illustrates the institutional conditions for configuring skilful practices at one level in the layered organisational architecture, with knowledge-driven practices of controllers and managers at another level. The emphasis in the interactions seems to be on the adoption of prescribed practices, which limits space to jointly search for practices fit for the specific and variable conditions encountered in cocoa farming. Research on extension services in the cocoa sector in Ivory Coast (Muilerman and Vellema, 2017) exposes how institutional work embedded in the established cocoa bureaucracy created space for alternate arrangements, connecting the diversity at farm level and the *modus operandi* in the professional field of extension.

Knowing how to move produce from farm to market (Uganda)

In the case of oilseed, sourcing companies try out contractual arrangements for including smallholder farmers in agribusiness, which is combined with the provision of agricultural inputs and extension services. In addition to agricultural production, knowing how to ensure a consistent flow of produce to local markets is essential for food security. The following case focuses on intermediation between smallholders and downstream players within agri-food chains (Poulton et al., 2010). Access to food results from the intertwined practices of retailers, intermediary village traders, collecting agents in rural communities, and (smallholder) producers, which ensure a consistent flow of food from farms to markets often under conditions of scarcity and volatility.

Making practice work

Collecting and aggregating produce in this case is realised at sites where farmers bring their produce—oilseed—to village traders or collecting agents in rural communities (Vellema and Nakimbugwe, 2012). In the oilseed example, intermediary traders participated in local food markets through the practice of conduction (Legun and Bell, 2016): transporting, making payments, processing, and warehousing. The doorstep traders also knew where and when to get the supply. Given they were not able to be present everywhere all the time, they relied on close communication with informed farmers or sub-agents close to the farms informing them about oilseed ready for transport. This entailed securing presence in the villages in combination with the skills to handle the administering tasks associated with the transaction, such as weighing, writing down weights on bags and in notebooks, documenting any debts or remaining payments. Knowing how to organise storage capacity and transport was another crucial ingredient of the everyday work of the intermediary traders.

Besides the spatial dimension of conduction, traders also coped with the temporal dimension for ensuring consistency of supply. Seasonal fluctuation affected volumes available for trading. In addition, trading oilseed depended on choices made by farmers: reliability of the farmers' agent in the market formed an important consideration for what to plant. Farmers shifting to other crops or opting for a mixture of crops to spread risks generated a degree of uncertainty that local buying agents had to deal with. Traders themselves also diversified 'on-trade' and 'off-trade' practices, such as farming themselves, or renting out houses; or decided to diversify or specialise in certain crops, for example sesame or soybeans. Demonstrated capacity to ensure a consistent supply of oilseed under conditions of scarcity and seasonality, and therefore to sustain relationships with smallholder farmers, represents knowing how to bring food stuff from one place to another.

Connecting practices

Knowing how to bring food from farm to market entails addressing a variety of coordination problems relevant to staple food markets. Traders in the Ugandan markets for oilseed, which is linked to the edible oil food industry, face coordination problems due to the large number of small transactions, fluctuating production, and the need to travel long distances compounded by poor roads (Fafchamps and Minten, 2001). One important aspect of the practice of conduction is to be able to pay smallholder farmers for produce delivered. Timely and predictable payments to low-income farmers require availability of working capital. In an area where production is scattered over a large area with small farms, the doorstep traders need to pay on the spot and thus have cash readily available. The smaller village traders strongly rely on pre-financing by larger traders further downstream in the supply chain. The reliability of the village traders is constantly

assessed by larger traders who make advanced payments. This usually starts with giving out small amounts to examine whether the receiving trader can be trusted and is able to handle larger amounts and handle financial risks intrinsic to buying and selling produce. More experienced village traders gradually receive higher amounts, which generate a degree of stability in the institutional arrangements in local markets. Mangnus and Vellema (2019) have observed similar processes shaping membership and inclusion in trading networks in Mali.

Knowing how to bring food from farms to markets emerges within a set of connected practices without the presence of a controlling agent. Trading oilseed encompasses several tasks performed by different people at different sites and entails less visible forms of coordination. Consequently, by knowing how to make the practice of conduction work, the intermediary village traders contribute to reliable and predictable market access at the farmer's doorstep (Chamberlin and Jayne, 2013). These skilful practices are part of a wider set of practices linked to an urban agri-food cluster assembling a stable group of larger traders in nearby towns (Schoonhoven-Speijer and Vellema, 2020). In dynamic market conditions, being able to rely on and partner with the practices of other actors proves to be instrumental for ensuring a continuous flow of produce. Knowing how to handle coordination problems is key to this.

Interferences by non-localised specialisms

In the early 2000s, one of Uganda's main food manufacturing companies supplying consumer markets with cooking oil decided to shift from importing palm oil to processing locally sourced sunflower seed. Initially, the company set up a contract farming scheme, provided farmers with hybrid sunflower seeds for planting, and started to source the produced oilseeds via their own agents. This initial step reflected the interventions and models proposed by NGOs, governments, and researchers, who aspire to shorten supply chains and replace intermediary traders. Eventually, the company recognised the role of intermediary traders in ensuring a consistent supply of oilseeds needed for meeting their increased processing capacity. Moreover, teaming up with the intermediary traders gave them access to actors knowing how to source from farmers, which was useful in an expanding competitive playing field after other companies arrived in the area.

In that sense, the processing company was added to the durable network of trading practices that already demonstrated the ability to handle a variety of coordination problems. The company recognised the skilful nature of knowing how to organise produce and cash flows; building and maintaining complex relationships; and handling unanticipated problems in food markets (Schoonhoven et al., 2017). They refrained from imposing alternate organisational models that are more favoured in the professional fields of market development and supply chain management. Seemingly, a functional relationship is conducive for productive interactions between the new demands of larger processing companies shifting to local sourcing and knowing accomplished in the situated practices

of conduction responsive to changes in supply and fluctuating circumstances of farmers.

Conclusions

This chapter examined the methodological choice to take practices as an entry point for researching knowledge in the setting of layered commodity chains or food markets. Practices, such as pruning cocoa trees or sourcing oilseed, were investigated as situated and knowledgeable accomplishments, which reflect a form of mastery: pruning entails the mastery of selecting pruning techniques and assessing what works under specific agro-ecological condition; sourcing oilseed involves the mastery of handling coordination problems under conditions of fluctuation and scarcity. Zooming out from these time and place-specific practices reveals how they were part of a net of mutually constituting practices. The cases exemplify processes that are not always visible in making the distributed practices combine.

Unpacking the texture of practices is valuable for analysing whether and how a layered organisational set up, such as commodity chains or food markets, realises certain outcomes, such as sustainability or consistency in the sourcing of raw materials. Taking a specific practice as an entry point for research makes it possible to trace relationships in space and time that underlie organising. Hence, realising sustainability in commodity chains or consistency in food markets becomes a matter of knowing how to connect to established local practices, rather than transferring codified knowledge; for example, in the form of so-called good agricultural practices in standards, or prescribed use of inputs in contractual arrangements.

The chapter shows how to detect effects of interferences through knowledge-based interventions by non-localised specialisms. This offers a perspective on the politics of knowledge, which concentrates on rules and routines associated with knowing in professional fields anchored in evolving division of labour in society. The cases demonstrate that making the connection between the net of practices situated in specific contexts and non-localised specialisms is not automatically productive. Non-localised professionals, such as auditors, certifiers, or supply chain managers, are inclined to bring established practices in line with their preferred models and routines. In the case of the cocoa commodity chain in Ghana, training and extension were associated with the knowing included in standards and auditing and certification protocols. Their rigidity constrained making the connection to localised practicing and the knowledgeable activities of smallholder cocoa farmers. In the case of sourcing oilseed in Uganda, the leading food manufacturing company navigated different management styles and eventually opted for aligning with the net of established trading practices rather than concentrating on capturing efficiencies by way of direct control over the sourcing via induced contractual arrangements with smallholder farmers. Seemingly, the company recognised a proven capacity to handle coordination problems in the established network of trading practices.

The methodological perspective central to this chapter focuses on knowing how to make practice work. The perspective integrates a focus on localised attempts to repair errors, improvise workable action, and navigate unanticipated problems with a broader interest in explaining why and how a bundle of practices gains stability and permanence in dynamic markets and in agro-ecological environments. It enables discovering the trails between distributed practices and identifying the space for institutional work that make situated knowing and non-localised specialisms commensurable. This goes beyond contrasting, for example, local and scientific knowledge *per se* and encourages researchers to unravel the functional connections between knowing how to make practices work and durable processes shaping relationships between distributed practices from which social order emerges.

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