

Sussex Research

Cultivating compliance: governance of North Indian organic basmati smallholders in a global value chain

Saurabh Arora, Naomi Baan Hofman, Vinod Koshti, Tommaso Ciarli

Publication date

01-08-2013

Licence

This work is made available under the **Copyright not evaluated** licence and should only be used in accordance with that licence. For more information on the specific terms, consult the repository record for this item.

Citation for this work (American Psychological Association 7th edition)

Arora, S., Hofman, N. B., Koshti, V., & Ciarli, T. (2013). *Cultivating compliance: governance of North Indian organic basmati smallholders in a global value chain* (Version 1). University of Sussex.
<https://hdl.handle.net/10779/uos.23403440.v1>

Published in

Environment and Planning A

Link to external publisher version

<https://doi.org/10.1068/a45421>

Copyright and reuse:

This work was downloaded from Sussex Research Open (SRO). This document is made available in line with publisher policy and may differ from the published version. Please cite the published version where possible. Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners unless otherwise stated. For more information on this work, SRO or to report an issue, you can contact the repository administrators at sro@sussex.ac.uk. Discover more of the University's research at <https://sussex.figshare.com/>

Cultivating Compliance: Governance of North Indian Organic Basmati Smallholders in a Global Value Chain

Saurabh Arora,^a Naomi Baan Hofman,^a Vinod Koshti,^b and Tommaso Ciarli^c

- a. School of Innovation Sciences, IPO 2.20, Eindhoven University of Technology, Postbus 513, 5600MB Eindhoven. Tel. +31-40-2474577. E-mail: s.arora@tue.nl; naomibaanhofman@gmail.com
- b. Department of Social Work, University of Delhi, Delhi-110007. E-mail: vinodkoshti@gmail.com
- c. Science Policy Research Unit, University of Sussex, United Kingdom. E-mail: t.ciarli@sussex.ac.uk

Pre-print of article published in *Environment and Planning A* Vol. 45(8): 1912-1928, 2013.

Cultivating Compliance: Governance of North Indian Organic Basmati Smallholders in a Global Value Chain

Abstract

We study (re)arrangements of a local socio-technical setting entailed in the making of a globalized commodity. Focussing on a global value chain (GVC) for organic basmati rice, we study how farmers' practices are governed through product and process standards, organic certification protocols, and contracts with buyer firms. We analyse how farmers' entry into the GVC reconfigures their agencements (defined as heterogeneous arrangements of human and non-human agencies that are associated with each other). These reconfigurations entail the severance of some associations among procedural and material elements of the agencements and the formation of new associations, in order to produce cultivation practices that are accurately described by the GVC's standards and protocols. Based on ethnography of two farmers in Uttarakhand, North India, we find that the same standards were enacted differently on the two farmers' fields, producing variable degrees of (selective) compliance with the 'official' GVC standards. We argue that the disjuncture between the standards' 'official' scripts and actual cultivation practices must be nurtured for allowing farmers' agencements to align their practices with local socio-technical relations and farm-ecology. Furthermore, we find that compliance and disjuncture was facilitated by many practices and associations that were officially 'ungoverned' by the GCC.

Abstract word count: 198 words

Article word count: 9780 (including references)

Introduction

Mangoes from Brazil, coffee from Ethiopia, soy beans from Argentina, and rice from India and Thailand, some certified organic, are only a small subset of agricultural products traded and produced in internationally dispersed assemblages of producers and buyers. These assemblages were first studied as global commodity chains (GCC's) by Gereffi and Korzeniewicz (1994) and in later incarnations as global production networks (GPNs) and value chains (GVCs), governed by public and private standards for food safety, quality and 'sustainability'.

The GCC and GVC governance literature has provided insights into lead firms' power in driving a GVC and different forms of coordination that emerge between buyers and suppliers depending on characteristics of the traded product and capabilities of their suppliers. Until recently however, 'governance in practice' was rarely studied in the GVC literature, obscuring the socio-technical practices through which standards, certification protocols and contracts are enacted in specific socio-technical settings. Recent work on GVC governance and on agro-food standards more generally has shown how standardization produces ontological transformations through a re-arrangement of existing socio-technical relations (Ouma et al, 2011; Berndt and Boeckler, 2011; Konefal and Hatanaka, 2011; van der Kamp, 2011). The present article contributes to this literature in three ways.

First, using theoretical insights from Science and Technology Studies (STS), on socio-technical *agencements* or 'heterogeneous arrangements of human and non-human agencies' (Callon 2007; 2008; Çalışkan and Callon, 2010), we view GVC governance as the severance of (some) associations among procedural and material elements of farmers' agencements and the parallel formation of new associations. Second, based on ethnographies of two farmers' practices, we show that these re-associations are supplier-specific due to, a) different roles played by (the same) human and non-human actors in farmers' agencements and b) the nature of their 'inclusive exclusions' (Mitchell, 2007). The

latter refer to practices and associations that fall outside the purview of GVC governance, but were instrumental in the making of a standardized product, blurring the boundaries between governed and ungoverned elements of the farmers' agencements. Third, in this process, the GVC's standards were differently adjusted to the farmers' fields, enacting a multiplicity of actual practices that cannot be accurately described by singular 'official' GVC standards. Then, *differently standardized*, the two farmers produced the 'same' product.

The specific product we study is basmati, the aromatic rice of North India and Pakistan. In India, the most aromatic of basmati varieties were grown in the foothills of the Himalayas, particularly in Dehradun district of Uttarakhand. Over the last decade, rapid urbanization has led to a substantial decline in Dehraduni basmati production. The local government has attempted to promote (organic) basmati cultivation in the rural periphery of the district. We study one such programme led by the Uttarakhand Organic Commodities Board (UOCB). It is organized through contract farming, in which an exporting firm signs a contract jointly with a group of small farmers to purchase organic basmati for sale in Europe and the United States.

The article is structured as follows. We begin with an overview of the literature on GCC/GVC governance without explicitly noting any differences between commodity chain and value chain approaches (for literature reviews, see Bair, 2009; Gibbon et al, 2008). We also provide an overview of relevant literature on (organic) standards and certification in the agro-food sector. Subsequently, we outline the three theoretical concepts used: sociotechnical agencements, enactment and inclusive exclusions. This is followed by a discussion of our fieldwork methods and an analysis empirical material, focusing on two farmers' cultivation practices under organic contract farming for export. A final section presents the conclusions.

Governance of Global Agro-food Value Chains

Issues of governance or ‘forms of coordination’ between buyers and suppliers have been central to the global commodity and value chain literatures.¹ In early conceptualizations of chain governance as buyer- or producer-driven (e.g. Gereffi, 1994), lead firms exercise “control through the specification of what product needs to be delivered, in what quantity and when, how it should be produced and at what price.” (Ponte and Gibbon, 2005:5, citing Humphrey and Schmitz, 2002).

A somewhat more nuanced approach to chain governance was developed by Gereffi et al (2005). Based on notions of asymmetry and complexity of information and knowledge embedded in products that are transacted, Gereffi et al listed five modes of governance: market, modular, relational, captive and hierarchy. Increasing information complexity and switching costs to new partners engenders a move from market to hierarchy.

A third fledgling approach interprets GVC governance through the lens of governmentality, highlighting the role of expert discourses in ‘coordinating’ buyer-supplier relations and shaping production and exchange practices of chain members (Larner and Le Heron, 2004; Gibbon and Ponte, 2008; also see Lockie and Higgins, 2007 for a non-GVC setting). Governmentality entails a “set of programmatic rationalizations of the proper roles of economic agents and institutions and a set of techniques and tactics for engineering conformity to these roles.” (Gibbon and Ponte, 2008:367). Existing governmentality studies have largely focused on expert discourses, studying how programmatic rationalizations are linked to ‘techniques and tactics’ of governing (Higgins and Larner, 2010).

¹ The rise of governance as an analytical category in the last two decades is not restricted to the GCC or GVC literature. Governance, networked and beyond the state, is argued to involve “rules, structures, and institutions that guide, regulate and control social life” (Barnett and Duvall, 2005:2). The concept has been endorsed for its emphasis on processes rather than institutions of rule and criticized for its neoliberal inclinations and anti-politics (see Walters, 2004). Neoliberalism in the agro-food sector has intensified private governance through quality standards and certification protocols, supplementing and substituting governmental regulations on food (see e.g. Busch, 2010; Tallontire, 2007; Henson and Reardon, 2005).

The foregoing three approaches to GVC governance rarely discuss how supplier compliance, to desired performance characteristics (product quality) and quantity requirements, is actually achieved on the ground. In the first approach, the massive power vested in the lead firms is *assumed* to produce supplier compliance. In the second, structural variables underlying product characteristics, such as information complexity, steer chain governance toward the ‘right’ modes in which supplier compliance is automatically produced. The third approach’s discursive focus leads to a neglect of socio-material encounters in which techniques of governing (such as standards, certifications and contracts) are actually put into practice. All three leave central questions of the techniques’ entanglement with local socio-technical relations unexamined (cf. Ouma et al, 2011).

Recent work has begun to examine how a GVC’s techniques of governing get rooted in specific spatial-historical conjunctures through processes of (dis)articulation with pre-existing practices and institutions (Bair and Werner, 2011; Ouma, 2010; for older work along these lines, see Tsing, 2005; and Dunn, 2003). Producers’ entry into global commodity/value chains is argued to effect an ‘ontological transformation’ of existing institutional settings, socio-technical relations, production practices and natural orders (Ouma et al, 2011; Berndt and Boeckler, 2011; Bain and Hatanaka, 2010). The implementation of GVC standards, contracts and models of supply chain management (Busch, 2007), rearranges relations between people, things and procedures. Yet this process of rearrangement is never frictionless or uniform, but a disorderly one that requires sustained efforts and mutual adjustments (between the techniques of governing and the targets of governance) to produce desired orderings of the world (Ouma et al, 2011; Mitchell, 2007).

A similar emphasis on ontological transformations can be observed in recent literature on agro-food standards and certification (organic as well as others such as GLOBALG.A.P). The early critical strands of this literature argued that the formalization of organic practices through standards and

certification, a) dilutes agro-ecological ideals of on-farm production and recycling of materials (Guthman, 2004; 2000; Buck et al, 1997), and b) marginalizes small farmers' voice and interests as compared to their larger counterparts (González and Nigh, 2005; Tovar et al, 2005; also see Muradian and Pelupessy, 2005 for similar work within a GVC). Others argued that these negative impacts could be countered through group certification, strong smallholder associations and connections with transnational social movements (e.g. Goldberger, 2008; and Raynolds, 2008; 2004 within GVC and GPN approaches).

Research has also attempted to foreground farmers' agency in negotiating and contesting the standards, studying how farmers adapt certification protocols to gain advantages such as improved management and prioritisation of tasks, increased role of women in management, and pride for being recognized as 'good' farmers (Higgins et al, 2010; 2008). More recently, scholars have observed that farmers interpret and enact the same organic standards and certification protocols in radically different ways (e.g. Konefal and Hatanaka, 2011; van der Kamp, 2011; Hatanaka, 2010). This heterogeneity is not simply a consequence of different farm-sizes or levels of commitment to organic agriculture (cf. Guthman, 2000), but rather a result of farmers' attempts to comply by (re)assembling the desired non-human elements of organic farming in accordance with their farm-level socio-economic and material arrangements (van der Kamp, 2011; Konefal and Hatanaka, 2011). In and through this process, standards attempt to make "the realities they claim to describe" by manipulating and transforming existing farming arrangements (Busch, 2011:1; also see Timmermans and Epstein, 2010 for the same argument about standards more generally).

The present article contributes to this recent literature on the 'ontology' of organics and GVC governance in the following ways. First, we are more alert to differences between individual farmers' experiences than the GVC studies (e.g. Ouma et al, 2011; Berndt and Boeckler, 2011). Second, in our

work the source of these differences do not primarily lie in the flexibility of organic standards (van der Kamp, 2011), but also in the different types of surveillance the farmers experienced, the nature of their inclusive exclusions and the different roles played by (non-)human actors in their agencements. Third, unlike Konefal and Hatanaka (2011), in our work, farmers' agency cannot be reduced to the poles of compliance or non-compliance driven by a search for monetary benefit. By studying cultivation practices, we were able to observe different degrees of (selective) compliance which are relationally produced within individual farming arrangements.

Socio-Technical Agencements and Enactment

We analyze governing in practice as the reconfiguration of socio-technical *agencements*. The French meaning of *agencement* is close to arrangement and it “has the same root as agency: *agencements* are [heterogeneous] arrangements endowed with the capacity of acting” (Callon, 2007:320). *Agencements* are made up of a range of entities including human bodies, technological artefacts (prostheses, tools, equipments), mathematical models and algorithms, which are *associated* with each other (on associations among human and non-human entities, see Latour, 2005). Agency is distributed across multiple entities and all action is collective. Yet the mechanisms that attribute an individual or collective as the source of action vary between different *agencements* (Çalışkan and Callon, 2010:10). In fact, even when agency appears to be centred on an individual who sets goals and executes a set of actions, her ability to set goals and act on them is made possible because she is not acting alone (Callon, 2008). For instance, when a farmer transplants rice saplings from a nursery to a field, a group of heterogeneous entities participate in the collective process. These include farm workers, their deals with the farmer regarding wages and working hours, standards that specify the desired spacing between saplings, bunches of saplings tied with strings, ploughs, tractor, irrigation canals, regulations that govern access to canal water, inlets from canals to the field, etc.. Furthermore, Callon (2008:35) argues

that the sequence of smaller actions required to complete a collective action can vary depending on events (“distributed action is organized but cannot be reduced to a pre-established plan”); and none of the participating entities in this action can be considered independently of each other (for instance, a farm worker will not be able to transplant if the sludge on the field has not been prepared by a tractor, ploughs, soil and water).

An agencement is made up of three sets of intertwined elements: discursive, procedural and material that may include the corporeal (Callon, 2008). In contract farming, discursive elements may include government claims of poverty alleviation by connecting smallholders to markets, or the argument that ‘expert’ support available to farmers under contract farming can replace declining public investments in agriculture (extension services etc.). Procedural elements are quality and food safety standards, certification protocols, regulations that shape farm-labour markets, etc. And material elements refer to farmers’ and workers’ bodies and non-human things such as tools and tractors, which participate in an agencement’s collective action.

The discursive or procedural elements of an agencement, as statements, describe and guide its actions. The latter may be viewed as socio-material practices.² For instance, standards and contracts, as procedural elements describe certain desired characteristics of a product and define the specific roles that different actors should play in producing the product. Not only do these descriptions and definitions act as guideposts for action, they also *participate* in it, formatting socio-material practices and the overall configuration of an agencement while themselves getting adjusted to it. Through these mutual adjustments, different socio-material practices (e.g. of farmers) and the standards are simultaneously *enacted*, acted upon and afforded by others to work (Law and Urry, 2004; Mol, 2010).

² Practices as treated here are “embodied, *materially mediated* arrays of human activity centrally organized around shared practical understanding.” (Schatzki, 2001:11, emphasis added). In practices of a socio-technical agencement, however, non-humans (including procedures and statements) do more than just mediate human activities, they themselves act.

Enactment then entails the parallel dissociations and associations which standardize or reconfigure the farmers' agencements such that the (adjusted) standards, a) produce the desired practices and products; and b) provide an accurate description of the practices.

In agencements, many associations and practices of farmers are likely to fall outside the purview of GVC standards and protocols. Enactment then actualizes a boundary between parts of a farmer's agencement that are directly governed by standards, certifications and contracts and those that are left outside the frame of GVC governance. This boundary is not uniform: as we will show later, one farmer may be more successful than another in situating some of his/her practices and associations outside GVC governance. The actual boundary is transient, ambiguous and contested. It is also porous or leaky. We analyze this shifting boundary by studying cases of what Mitchell (2007) terms 'inclusive exclusions' in which various associations that exist outside the (orderings of the) world of standards and certifications, and so of the GVC, are also partially inside. Thus, by being neither completely outside nor quite inside, the inclusively excluded blur the boundary between governed and 'ungoverned' products/practices.

The concept of agencement not only allows us to study the 'inclusive exclusions' but also foregrounds farmers' agency in dealing with GVC standards. This agency however is not reduced to rational or strategic actions by an individual farmer driven by incentives or commitments, but rather distributed across a network of human and non-human entities (including the GVC standards) that constitute the farmer's agencement. The adaptation of GVC standards by a farmer is then viewed as incorporation of the standards into her agencement. This incorporation 'localizes' the standards, adjusting them to the other elements of an agencement. The adjustments or modifications may remain confined to the farmer's world, producing no effect on the official GVC scripts of the standard. In this way, our focus on farmers' agencements allows us to study the double life of standards which

manifests when official GVC scripts are different from farmers' own interpretations/descriptions of the standards. Only the latter may be enacted and aligned with actual socio-material practices on the farm.

The relational-material perspective we have proposed above yields a detailed understanding of individual farmers' responses to the 'same' standards, which play out differently in different agencements. Furthermore, using the concept of enactment, we are able to study GVC governance (standardization, certification) in action as the re-shaping of cultivation practices through making and unmaking of associations among the elements of a farmer's agencement.

Fieldwork methods

The empirical material for the research was gathered in two phases. First, in order to map the organizational framework within which contract farming and standardization were implemented, we collected documentary evidence from the offices of the UOCB and the buyer firm. Second, we conducted detailed ethnographies from June 2010 to January 2011 on two farmers' fields in order to map their cultivation practices (e.g. for transplantation and pest control), involving interdependent human and non-human actors, as they attempted to comply with GVC standards. One of us (NAME SUPPRESSED FOR PEER REVIEW) conducted the bulk of this 'praxiographic' fieldwork (Mol, 2002). She carried out ethnographic observation, and open interviews that were oriented by the researcher's as well as the informant's concerns, in order to write chronological field notes (Emerson et al, 1995). In-depth interviews with the two farmers and a few farm-labourers, complemented by observations, allowed us to develop a thorough understanding of the interdependent roles played by different actors in the farmers' agencements. Other farmers, whose fields were not ethnographically observed, were also interviewed to form a wider impression of differences in organic cultivation in the area. Interviews with employees of the UOCB, the certification agency and the buyer firm were

conducted jointly by two authors. In all thirty two interviews were conducted, seven of which were with the first focal farmer and four with the second. Also, field activities of extension officers and inspectors from these organizations were observed as they did their interactive work on the farmers' fields.

Our presence in the field was not considered extraordinary by our informants, who wholeheartedly supported our research, perhaps because a number of social scientists (from India and abroad) had already visited the area to study Organic Uttarakhand in recent years. We did nevertheless produce some overt effects in the farmers' agencements, although we cannot be certain about the source of any of these effects. First, farmers may have allowed us to observe only those practices that they deemed largely uncontroversial. For instance, if we wanted to observe some specific pest control practices, they would give us a date on which they will perform them, but upon arriving on that date, we would be informed that they had already carried out those practices one or two days earlier. At the same time, however, the farmers openly shared some other controversial features of the wider organic agriculture programme initiated by the UOCB with us, often problematizing their own participation in it. Secondly, our discussion with the local extension officer regarding serious problems with organic cultivation faced by one of our farmer-respondents led to more frequent visits by the officer to the farmer's field (in order to assist her and perhaps to monitor her compliance more directly). Overall, we felt that farmers were too busy dealing with everyday problems of cultivating good basmati with reasonable yields, under unfavourable weather conditions (heavy monsoon and floods), to be able to significantly alter their practices for staging a particular version of organic agriculture for us only.

The two farmers are located within the same socioeconomic setting and historical conjuncture. They belong to the same farmers' federation, located in Rajnagar (pseudonym, a sub-district of Dehradun), contracted by the same firm (which buys organic basmati for export), and

supported/inspected by the same agricultural extension officers and inspectors. Yet, the farmers also differ from each other: the bigger farmer, a male, owns 4 ha of land, belongs to an ‘upper’ Brahman caste and is a prominent member of the local farmers’ federation. The second farmer, a woman, is a member of a ‘lower’ *dhobi* (washerman) caste, owns about 1 ha land and lives in a remote village that does not play an important role in running federation affairs. In this article, we do not directly invoke a prior socio-cultural context, in terms of caste, class, gender, or religion, to *explain* the two farmers’ divergent experience with GVC standards (cf. Latour, 2005:215).³ The effects of caste, class and gender remain implicit in the two farmers’ agencements.

Our detailed, and one may say rather restricted, focus on just two farmers raises questions regarding the representativeness of our sample. We do not and cannot claim that our two-strong sample is representative of farmers’ experience with organic farming in Dehradun. Our aim is to highlight the different ways in which standards are enacted in practice on farmers’ fields and through their agencements. Our praxiographies afford ample opportunities to foreground the distributed nature of these differences. This article then may be viewed as an attempted demonstration of the ontological primacy of difference over identity (Deleuze 1994:64-69). Furthermore, in addition to not being spatially representative, we cannot lay claim to temporal representativeness. The re-configuration of the two farmers’ agencements that we mapped had not stabilized at the time of our fieldwork (we do not know if they ever will). Thus, our accounts of the two farmers’ different experiences tell unfinished stories. They are perhaps best viewed as allegories that, in their unfinished state, enable “the gathering in tension of multiple, sometimes contradictory realities” (Moreira, 2012:317, citing Law, 2004:97-

³ Caste and gender however do not have to be treated as part of a social context. Ethnographically, one can observe how they are enacted and practised in every day life. We were unable to carry out ethnographies of caste and gender relations due to c) time constraints during the field work and b) strict adherence to ethnomethodological principles which led to the neglect of those issues that were not explicitly invoked by the farmers. This is a limitation we discuss at the end of this article.

100).

Defining an Organizational Framework

Certified organic basmati cultivation in Dehradun was incubated in a large World Bank-funded ‘Diversified Agricultural Support Project’ (DASP). Initiated in 1998 and anchored in the provincial government, DASP emphasized market-led and private-public interventions in agricultural and environmentally sustainable development (Kumar, 2004). This made contract farming for organic export, supported by a government body, an ideal activity to initiate and promote.

DASP’s organic work was later taken over by the Uttarakhand Organic Commodities Board (UOCB), the provincial government’s ‘nodal agency’ for promoting organic agriculture and horticulture. Set up in May 2003 as an independent body under the Societies Registration Act 1860, the UOCB provides marketing and training support to farmers and conducts training programmes for extension officers from government and non-governmental organizations. In addition, the UOCB provides its own organic extension services to the farmers. Its officers are also meant to assist the contracting firms to carry out their monitoring and purchasing activities in the region. In accordance with international rules for group certification of smallholders’ produce (IFOAM, 2003), the UOCB has set up an internal control system (ICS) that precedes the inspections carried out by an external certification agency.

To facilitate the certification, each farmer must keep a diary in which s/he jots down the inputs used (e.g. for plant protection) and the practices carried out in the field on a certain date. This includes the names and quantities of the bio-pesticides and fertilizers used and the place from where they are procured. The diary serves as the basis of the ICS. The official procedure of ICS requires that an identifiable internal inspector must be appointed, and farmers’ field records (diaries) and maps of their farms must be made available (IFOAM, 2003). In addition, the internal inspector must visit each

farmer's field at least once during the cultivation season of rice and prepare a report for the external inspector from the certification agency.

The external inspection has to ensure that the farmers' produce adheres to the criteria for certification specified by the National Program for Organic Production (NPOP). The certification agency should also be accredited to ensure compliance with organic standards associated with export markets of the EU and the USA (UOCB, 2007). In 2006, the Uttarakhand State Organic Certification Agency (USOCA) was accredited by the National Accreditation Board of the government of India for NPOP and for standards of the European Union (EC 2092/91, later revised to EC 834/2007) and the United States (National Organic Standards, USDA). During the external inspection, USOCA must inspect a sample of 16-22 farms from a group of 250-500 farmers (NPOP, 2005), prioritizing those farmers that are deemed to be high risk of deviating from the organic protocols (based on the ICS report).

Rajnagar organic farmers are organized into a federation that receives the group certification. The federation maintains an office in the largest, most central, town of Rajnagar sub-district. The buyer firm signs a contract with the federation, in which the UOCB acts as a third party to facilitate the buyer-seller relationship. The contract specifies quality standards including maximum moisture content of 16%; percentage of red coloured, unripe green and broken/diseased grains not exceeding 0.5%, 4% and 0.5% respectively. Food safety standards (the ISO or Codex Alimentarius), such as those on organic and inorganic contamination, are translated as prescriptions to farmers to keep their produce 'clean'.

The roles of the buyer firm include the provision of organic basmati seeds and other farm-inputs (e.g. bio-pesticides) on credit to farmers. Since 2007, the firm has promoted and sold seeds only for the longer-grain varieties of basmati such as the Taraori (HBC-19),⁴ after procuring them from fields in

⁴ The length of the kernel is perhaps the most important characteristic of basmati in Europe and the USA. For instance, the

another North Indian province. After the harvest, the firm grades the quality of the produce and collects it from Dehradun. Quality is decided on the basis of the standards specified in the contract. For grade A basmati, farmers receive an ‘organic premium’ (Rupees 400 per quintal in 2010) on the market price prevailing at the time of sale. On grade B, the premium is lower (Rupees 100 per quintal). The contract also states that the firm is not obliged to buy anything graded below B.

To ensure ‘correct’ or standard organic cultivation practices, the firm distributes and attempts to implement a package of practices among farmers. The firm claims to have designed this package of practices (PoP) based on its own research findings. It also supports farmers’ attempts to comply with the PoP through field visits by its trainer and inspector. This trainer/inspector visits fields to monitor practices and advises farmers on how to use the ‘correct’ methods (which ostentatiously follow food safety standards and organic protocols). In addition, together with a UOCB employee, he often provides training to farmers in the federation office. The UOCB promotes an alternate PoP, which is less detailed than that of the firm regarding some practices such as nursery preparation and transplanting. Both packages discuss the same plant diseases and pest incidences that can occur on a basmati field. For pest control, the UOCB’s PoP only suggests solutions that can be prepared on the farm and the use of inexpensive bio-pesticides such as *Trichoderma* and *Pseudomonas*. While the firm’s PoP also calls for additional solutions based on more expensive bio-pesticides that can be bought off-the-shelf from federation offices.

The organizational framework discussed above enunciates which associations and practices of the farmers are to be governed by the GVC’s standards and organic protocols. In this way, the organizational framework attempts to pre-determine the boundaries between governed and ungoverned

German firm Rapunzel requires a minimum kernel length of 6mm for basmati rice from its suppliers (Volkman, 2010). Basmati of course comes in many shapes and sizes and the local type-3 variety that the UOCB promotes has a shorter (uncooked) grain size.

segments of the farmers' agencements. It also aims to direct actual inspections and farmers' attempts to comply. However, the relational nature of this work of compliance ensures that the actual boundary between governed and ungoverned practices turns out to be different for different farmers, particularizing the general organizational framework to a farmer's unique agencement.

Adjusting Standards, Formatting Practices

Standardization often works by aligning standards (e.g. technical specifications) with certification and other legally-binding mechanisms such as contracts (Timmermans and Epstein, 2010; Lampland and Star, 2009). In this way, the different technologies of governing are made to work in concert with each other. First, as already noted, the buyer-seller contract states the quality standards that must be complied with. The same contract also facilitates the certification process by stating that only certified organic basmati will be bought by the firm. This need of certification makes many farmers wary of using any farm-inputs that are not endorsed by the UOCB or are certified organic. Additionally, the crop of an entire federation receives a single certification, so if one farmer is 'caught' breaking the protocols of organic cultivation, the whole group risks losing its certification. This system can facilitate compliance through social control (at the village level). Yet it may also afford collective subversion of certification protocols, especially in villages with strong internal solidarity where farmers using non-recommended practices may look out for each other in an attempt to ensure that no farmer is 'caught' during an inspection.

Second, diaries are important entities in farmers' agencements, which may facilitate compliance with process standards specified in the PoPs. A UOCB employee checks the diaries on one of her/his regular visits to the farmers' fields. Upon finding the diaries empty, s/he fills in the 'correct' details, completing the diaries before the internal and external inspections take place. This diary-filling routine makes some farmers (who feel unsure about filling the diaries themselves) dependent on UOCB

employees to receive their certification, thus making them more susceptible to employees' influence. In addition, this routine transforms the certification process itself. By filling in the 'correct' farm-inputs and practices, a UOCB employee may greatly facilitate the work of inspectors who then *find* the desired evidence. Thus, the diaries serve a dual purpose: in farmers' agencements, they act as discursive entities that are generally in accord with the GVC protocols while, at the same time, (re)constituting an unequal relationship between UOCB employees and some farmers.

Third, the supply of standard seeds (and other farm-inputs such as bio-pesticides) on credit by the firm plays an important role in reconfiguring the farmers' agencements. As stipulated by the contract, all farmers must purchase seeds from the buyer firm. Farmers sow these seeds in the hope that they will harvest 'high quality' produce desired by the firm, which will fetch the organic premium. The quality of the farmers' produce is graded at the time of sale by a qualification 'expert' appointed by the firm. Many farmers fear that they will lose their organic premium if the expert found out that they had cultivated their own farm-saved seeds.⁵ In this way, upon entering farmers' agencements, the interlocked standards, certification and contracts attempt to dissociate farmers from farm-saved seeds while associating them with seeds bought on credit from the buyer firm. Yet some farmers, who are confident of the superior quality of their own seeds, purchase the firm's seeds but cultivate their own farm-saved ones. Thus, the enactment of standards does not normalize all farmers' practices equally. In the following, we illustrate this differential enactment by focusing on practices of two farmers. We also analyze the actualization of different porous boundaries between governed and ungoverned practices and associations in the two farmers' agencements. The two farmers are Shri Verma and Shrimati Sareen (pseudonyms).

⁵ Farmers reported incidents in the past when the buyer firm, claiming that the crop is contaminated or it contains more than one variety of basmati, has refused to purchase a farmer's produce (or offered a lower price). This rejection of the crop was often linked to the accusation that the farmer had used farm-saved seeds rather than those purchased from the firm.

Shri Verma

Shri Verma started cultivating organic basmati during the DASP, roughly ten years ago. He is a prominent farmer, famous for his experiments and extensive knowledge of organic techniques. He has been a member of the board of the Rajnagar organic farmers' federation and of the UOCB's advisory council. His crop is generally graded as quality A and fetches the full organic premium.

In 2010-11, the season of our fieldwork, Verma cultivated three varieties of basmati: Taraori, 386 and the local type-3. As already noted, the buyer firm actively promotes the long-grain Taraori and 386 varieties, both with an average grain length of more than 7mm.⁶ Before 2009, Verma cultivated another variety called Kasturi instead of the 386. As Kasturi is not acknowledged as proper basmati by exporting firms, Verma sold it to other buyers in the local market. Thus, the requirement of a standard kernel length, based on what qualifies as proper basmati for export, dissociated Verma from the older varieties of basmati he cultivated and their crop-sale networks (e.g. for Kasturi). This detachment proceeded at the same time as his attachment with new varieties such as 386 and Taraori. The new varieties also associated Verma with materials involved in dealing with diseases, such as the plant drooping problem on Taraori, which were only encountered on these varieties.

The above reconfiguration of Verma's practices and agencement was enacted by the product standard of long kernel length, which, on his field, manifested as process standards (e.g. permitted varieties of basmati to be cultivated). At the same time, Verma's existing agencement allowed tinkering with the process standards, for instance, by not cultivating the seeds (of Taraori and 386) sold to him by the firm but rather the seeds saved on his own farm. He claimed that the seeds sold by the firm were

⁶ The buyer firm, while promoting Taraori and 386 varieties, reluctantly purchased the local type-3 variety till 2010. During the course of our fieldwork, in November 2010, the firm announced that from 2011 it will only buy the long-grain Taraori and 386 varieties. A little earlier, in August 2010, the ministry of commerce and industry (government of India) issued a notification specifying the minimum length of basmati grain that can be exported to be 6.61 mm (Directorate General of Foreign Trade, 2010), thereby excluding many varieties of basmati from the export market.

inferior than those he saved on his farm. The foregoing represents a case of mutual adjustment in which the standard (of kernel length) transformed Verma's practices, while being adapted to his agencement (cultivating only farm-saved seeds of the long-grain varieties).

In other cases, GVC standards did not modify Verma's practices. Consider for instance plant protection practices. In each cultivation season, he uses a mixture of crushed neem leaves and cow urine as a bio-pesticide at different stages of the basmati plant's growth: in the nursery, during transplanting, when the tillers sprout, and finally during the flowering stage. According to Verma, his plant protection practices are generally quite effective and no severe pest attacks or hard to tackle plant diseases were observed on the farm during the last few years. Cow urine is a central element in Verma's agencement for pest control. For instance, in 2010, he used a mixture of cow urine, turmeric and water to tackle the leaf blast disease on basmati plants. Cow urine is considered to be an important ingredient of organic plant protection in many parts of India (Sofia et al, 2006). Since autumn 2010 however, the buyer firm has attempted to ban the use of cow urine in Rajnagar, citing the reason that US phytosanitary standards did not permit the use of urine in cultivation of food for human consumption.⁷ Many contracted farmers stopped using cow urine due to this ban. In Verma's agencement, on the other hand, the ban was defied. Thus, the cow urine proscription did not format Verma's cultivation practices and no new dissociations and associations were made in his agencement. Yet this defiance of a process standard did not hinder the successful production of a standardized product by Verma's agencement.

Cow urine then became an ungoverned yet central element of Verma's agencement. Similarly, other elements and associations from outside the purview of GVC governance played an important role

⁷ We were unable to elicit sufficient details about this US standard during our interviews with the buyer firm. We searched for the proscription on the internet, but did not find it on US government websites. As a result, we assume that it is a private standard defined by the buyer of the contracting buyer firm, which markets the rice in the US.

in the production of standardized basmati. These associations ungoverned by the GVC include his relationship with several local non-governmental organizations (NGOs) that promote organic cultivation methods. In addition to providing training to other farmers on behest of these NGOs, Verma's farm is used as a demonstration site for organic techniques such as vermicompost pits and bio-pesticide preparation. He also travels to different parts of Uttarakhand and Himachal Pradesh as an ambassador of organic farming. His successes with organic cultivation and experimentation have been featured in local newspapers, taking his fame beyond the ambit of his own travels. In fact, his travels and fame have situated him as the farmer-face of the UOCB's organic contract farming programme. This is exemplified by his membership of the UOCB's advisory council and the fact that he is one of the first farmers in Rajnagar visited by researchers like us (guided by UOCB employees). The same fame has also played a role in his selection as a seed supplier to the buyer firm in 2011-12 (which generally procured its seeds from fields outside Rajnagar). Thus, in Verma's agencement, practices and associations outside the scope of GCC governance are also in a sense inside the enacted world of contracts, standards and certifications.

To sum up, Verma's cultivation practices were formatted by some product/process standards such as grain length and variety, while the latter were modified at the same time. Through mutual adjustments, these standards became procedural and discursive elements of Verma's agencements which described his cultivation practices accurately. However, in case of other (process) standards such as the 'ban' on cow urine, no mutual adjustments took place and the standards were unable to further reconfigure Verma's agencement or change practices. In fact, these standards were simply rejected by Verma's agencement. Additionally, ungoverned discursive and material elements in Verma's agencement played an important role in the making of a standardized product. Thus, Verma's agencement exhibits 'inclusive exclusions' where officially 'ungoverned' associations and practices

help to produce the desired product, blurring the boundary between the governed and the ungoverned, the 'global' and the local.

Shrimati Sareen

Shrimati Sareen cultivates organic basmati for export on about a third of her 1 hectare. Although farming is a household profession, she is de facto in charge of the fields as her husband and son both do non-farm work outside the village. Her husband only helps out on the farm during weekend trips home. Sareen is not actively involved in decision-making and other activities of the farmers' federation in Rajnagar. According to her, the chairman of the federation only asks her to join a meeting to display the numerical strength of his organic federation when external NGO representatives or government officials are visiting. Sareen first came into contact with the chairman of Rajnagar's farmers' federation and an employee of the UOCB in 2003-4. They had visited her house to explain the advantages of organic farming. Some other farmers from her village were also present at this gathering, but Sareen was the only one who immediately switched to organic basmati. As she was already using cow-dung as a fertilizer and she has enough cattle on the farm, Sareen felt that it would be easy to make the switch from non-organic to organic cultivation. However, looking back she feels that this switch has not been smooth: her crop yields have fallen; and she spends more money per acre for hiring labourers to do manual weeding to replace the spraying of a chemical weedicides.

Sareen only cultivated the two long-grain varieties of basmati promoted by the firm: Taraori and 386. She purchased seeds on credit at the federation office in Rajnagar (the cost of the seeds was deducted from the amount she received at the time of crop sale). The buyer firm's inspector directed Sareen not to save seeds on her own farm because this might affect the quality of her produce. This is why Sareen fears that if she cultivates her own farm-saved seeds, the firm will not buy the paddy after the harvest. Thus, the reconfiguration of Sareen's agencement entailed dissociation from non-long

grain basmati varieties and from the procedures (and eventually the skills) of saving seeds on her farm.

To further illustrate the formatting of Sareen's practices through the enactment of standards, we focus on plant protection practices. During the 2010 season, Sareen's basmati plants suffered from leaf blast, leaf curl and attacks from a rice bug that left many grains empty. Several new entities were incorporated into Sareen's agencement to protect the plants: first, she approached another farmer (Verma, in this particular instance) for assistance who gave her a bio-pesticide that should be mixed with raw sugar (jaggery) and sprayed in the field. Sareen planned to return this favour with some groundnuts harvested from her fields later in the year. When the pest problems persisted, she asked her husband to buy bio-pesticides at the federation office. There he was advised to buy the Camson products, Calphomil and Calmonas, and given directions on how to use them. Note that, through its package of practices (PoP), the firm prescribes the use of these products, alongside other methods, for pest control. Back on the farm, following the instructions received at the federation office, these two packets were mixed with 100 liters of water. In order to spray the bio-pesticides, a neighbour's machine had to be borrowed. The bio-pesticides were sprayed before the ripening stage of the grain, and again after the rains in October. Sareen could not spray a third time later in the season because the spraying machine was broken by then and she was not able to borrow or rent another one. So even though the recommended biopesticides were used twice, basmati plants in Sareen's fields were inflicted by several diseases till the time of harvest, lowering the crop yield. This story illustrates how a range of governed and ungoverned entities (bio-pesticides, spraying machines, pests, basmati plants and the farmer herself) made each other act, not always collaboratively, while collectively producing the agencement's actions.

In Sareen's agencement, different product (e.g. grain length) and process (e.g. prescribed bio-pesticides) standards, channelled through mediators such as the firm's PoP, its field inspector and the

federation office, dissociated her from seeds and bio-pesticides produced on her farm as well as older exchange networks she may have had for procuring farm-inputs and selling her crop. At the same time, they associated her with seeds and bio-pesticides sold by the firm through the federation office. The new seeds and bio-pesticides also appear to have associated with different pests and diseases on the basmati plant. However, note that these new ‘governed’ associations were accompanied by ‘ungoverned’ associations such as Sareen’s gift-like exchange of bio-pesticides and groundnuts with another farmer and her borrowing of a spraying-machine from a neighbour. Importantly, similar to Verma, these (external to the GVC) ungoverned associations facilitated the production of a standardized product on her farm. Yet, unlike Verma, the inclusive exclusions in Sareen’s agencement did not afford a refusal or defiance of any process standards. Instead, they facilitated a high degree of adherence to the same.

The GVC standards therefore successfully formatted Sareen’s cultivation practices and reconfigured her agencement. Yet we did not observe any modifications of the standards themselves as they were ‘localized’ into her agencement. Thus, the enactment process in Sareen’s agencement was not based on mutual but rather unilateral adjustments.

Conclusions and implications

By analyzing the localized enactment of standards, certifications and contracts of a global value chain, we have shown that the power of these technologies of governing in formatting farmers’ practices into compliance is thoroughly relational. Different farmers’ agencements ‘localized’ the same standards differently to produce degrees of (selective) compliance. The uneven contingent nature of this standardization highlights the limitations of the programmatic frameworks employed by existing GVC governance and governmentality studies, which assume that the objects of governance are normalized without delving into how this normalization is organized and differently enacted in socio-material

practices. In our work, the different degrees of compliance observed in farmers' practices were relational effects due to, a) different roles played by the 'same' actors (extension officers, basmati plants, pests) in the two farmers' agencements, and b) the natures of their inclusive exclusions. The latter highlight that in order to fully understand *governing*, we need to look beyond the official frames of governance. Such an anthropology of standards, or standardization, demonstrates how private corporate governance extends to and encroaches upon non-contractual, non-GVC, sociotechnical relations of farmers.

The different, agencement-specific, enactment of standards and certifications produces a divide between the singularity of 'official' standards/protocols (as statements) and the multiplicity of actual practices (as actions) encountered in the field. Designed by public and private regulators in importing countries ostentatiously to meet the demands and ensure the safety of their consumers, GVC standards' official scripts are often sluggish or reluctant to respond to actual practices of farmers, particularly those from developing countries (Ponte, 2011). However, the disjuncture between singular GVC statements and plural actions is not something 'unfortunate' (cf. Lewis and Mosse, 2006:5), which is eliminated through more responsive standards or the deployment of stronger surveillance techniques geared toward producing total compliance among farmer-suppliers. Instead, this disjuncture is productive because it permits relative autonomy to farmers' practices (from the GVC standards) and highlights the mediating work of different entities which *situate* ex-situ standards in an agencement, if possible adjusting them to produce an alignment between 'localized' descriptions of the standards and actual cultivation practices. In fact, without the relative autonomy and adaptations based on farmers' in-situ experiments, agricultural practices that 'fit' her socio-material agencement are unlikely to be found. Without these situated practices, good basmati is unlikely to be produced.

In general, the multiplicity of farmers' practices, the plurality of types of agencements, which

lays hidden beneath singular standards is perhaps more important to nurture than the controlled production of any desired worlds. Public policy must ensure that this diversity of practices is not decimated by forcing farmers into compliance through the deployment of draconian technologies of surveillance and their associated discourses in a totalitarian programme of government. Such forced compliance may not even be a fruitful result for buyer firms: moving farmers away from their in-situ practices into formalized-standardized ones can threaten crop yields and the quality of the grains produced (as the case of Shrimati Sareen demonstrates). Thus, it may be in the interest of buyer firms to nurture the diversity of cultivation practices that are or become well-adjusted to individual farms' socio-ecological conditions, rather than promoting standard 'best' practices uniformly.

However, this raises a question about the appropriate size of the disjuncture between GVC/GCC standards and farmers' practices. While too little disjuncture may straitjacket the farmers, too much of it ends up making the standards meaningless in practice, undermining the work of other actors in the GVC and threatening to compromise the 'quality' of the product. Too much disjuncture may be particularly problematic in the case of standards/protocols that are generally considered as beneficial for the environment (organic) or for farm-workers (fair trade). One route to reducing any adverse impacts of this disjuncture may be through participatory 'democratic' deliberation of the standard-making process (before the enactment on farms), opening it up to non-experts (Busch, 2012). However, three decades of experience with participatory development in the third world has shown that even in open consultative initiatives, knowledges and exigencies of some people are marginalized (for a recent review, see Arora and Romijn, 2012). The latter generally were the less privileged members of assumed communities of the poor or smallholders. Thus, any democratization of standard-making or implementation processes, if successful, can only be partial.

Overall, the concepts of agencement and enactment were useful in studying the re-shaping of

farmers' practices through GVC governance. They allowed us to, a) fruitfully open the black box of standardization by sensitizing us to different associations and dissociations produced in the farmers' socio-material worlds; b) study the (mis)alignment between GVC standards' official scripts, their modified descriptions in farmers' agencements (written in diaries and oral) and the actual cultivation practices; c) analyze the 'inclusive exclusions'. However, in our study, unlike what Callon (2007) claims, we found that not all constituent elements of an agencement become mutually adjusted to each other. Instead, many adjustments in the GVC standards/protocols and in other socio-material elements were not mutual but unilateral. In general, the (relational) power and equipment required to make others adjust are thus not equally distributed among different elements of an agencement (cf. Çalışkan and Callon, 2010: 13-14). This highlights the importance of making 'inequality of agencies' central to future work on socio-technical agencements.

Finally, some limitations of the present article: first, we did not explicitly focus on the enactment of critical socio-cultural categories of caste and gender, which interfered with the enactment of the GVC standards (cf. Moser, 2006). Second, our explication of difference between farmers' agencement (and enactment) would have been made stronger if our analysis was not limited to two ethnographic cases. Third, during the fieldwork, we were unable to unearth the life-histories of the two agencements under focus. As a result, we focused on those elements that were ejected, modified or assimilated into the farmers' agencements as the GVC standards were 'localized'. Thus, we do not know how the pre-GVC agencements were assembled through processes of translation between different (constituent) actors' passions and interests. Such an historical picture will not only allow a better understanding of the production of difference as the immediate effect of (prior) difference (Deleuze, 1995), but also the (re)formation of inequality between agencies that constitute an agencement. We hope to take up some of these challenges in future work.

References

- Arora S, Romijn H, 2012, "The empty rhetoric of poverty reduction at the base of the pyramid" *Organization* **19** 481-505
- Bain C, Hatanaka M, 2010, "The practice of third-party certification: Enhancing environmental sustainability and social justice in the Global South?" in *Calculating the Social: Standards and the Re-configuration of Governing* Eds. V Higgins, W Larner (Palgrave MacMillan, Basingstoke) pp 56-74
- Bair J, 2009, "Global commodity chains: Genealogy and review," in *Frontiers of Commodity Chain Research* Ed. J Bair (Stanford University Press) pp 1-34
- Bair J, Werner M, 2011, "Commodity chains and the uneven geographies of global capitalism: A disarticulations perspective" *Environment and Planning A* **43** 988-997
- Barnett M, Duvall R, 2005, "Power in global governance" in *Power in Global Governance* Eds. M Barnett, R Duvall (Cambridge University Press) pp. 1-32
- Berndt C, Boeckler M, 2011, "Performative regional (dis-)integration: Transnational markets, mobile commodities and bordered north-south differences" *Environment and Planning A* **43** 1057-1078
- Busch L, 2012, "Standards and their problems: From technical specifications to world making" Paper presented at the XIII World Congress of Rural Sociology, 29 July – 4 August, Lisbon
- Busch L, 2011, "Food standards: the cacophony of governance" *Journal of Experimental Botany* **62** 3247-3250
- Busch L, 2010, "Can fairy tales come true? The surprising story of neoliberalism and world agriculture" *Sociologia Ruralis* **50** 331-351
- Busch L, 2007, "Performing the economy, performing science: From neoclassical to supply chain models in the agrifood sector" *Economy and Society* **36** 437-466
- Çalışkan K, Callon M, 2010, "Economization, part 2: A research programme for the study of markets" *Economy and Society* **39** 1-32
- Callon M, 2007, "What does it mean to say that economics is performative?" in *Do Economists Make Markets? On the Performativity of Economics* Eds. D MacKenzie, F Muniesa, L Siu (Princeton University Press, Princeton NJ) pp. 311-357
- Callon M, 2008, "Economic markets and the rise of interactive *agencements*: from prosthetic agencies to habilitated agencies" in *Living in a Material World* Eds. T Pinch, R Swedberg (MIT Press) pp

- Deleuze G, 1994, *Difference and Repetition* (Columbia University Press, NY)
- Directorate General of Foreign Trade, 2010, "Notification No. 57/2009-2014" to be published in the gazette of India extraordinary, Part II, Section 3, Subsection (ii). Ministry of Commerce and Industry, Government of India
- Dunn E, 2003, "Trojan pig: Paradoxes of food safety regulations" *Environment and Planning A* **35** 1493-1511
- Emerson R, Fretz R, Shaw L, 1995, *Writing Ethnographic Fieldnotes* (Chicago University Press, Chicago)
- Gereffi G, 1994, "The organization of buyer-driven global commodity chains: How US retailers shape overseas production networks" in *Commodity Chains and Global Capitalism* Eds. G Gereffi & M Korzeniewicz (Praeger Publishers, Westport, CT) pp 95-122
- Gereffi G, Korzeniewicz M, eds., 1994, *Commodity Chains and Global Capitalism* (Praeger Publishers, Westport, CT)
- Gereffi G, Humphrey J, Sturgeon T, 2005, "The governance of global value chains" *Review of International Political Economy* **12** 78-104
- Gibbon P, Bair J, Ponte S, 2008, "Governing global value chains: An introduction" *Economy and Society* **37** 315-338
- Gibbon P, Ponte S, 2008, "Global value chains: From governance to governmentality?" *Economy and Society* **37** 365-392
- Goldberger J, 2008, "Non-governmental organizations, strategic bridge building, and the "scientization" of organic agriculture in Kenya" *Agriculture and Human Values* **25** 271-289
- González A, Nigh R, 2005, "Smallholder participation and certification of organic farm products in Mexico" *Journal of Rural Studies* **21** 449-460
- Guthman J, 2000, "Raising organic: An agro-ecological assessment of grower practices in California" *Agriculture and Human Values* **17** 257-266
- Guthman J, 2004, "Back to the land: the paradox of organic food standards" *Environment and Planning A* **36** 511-528
- Hatanaka M, 2010, "Governing sustainability: examining audits and compliance in a third-party-certified organic shrimp farming project in rural Indonesia" *Local Environment* **15** 233-244
- Henson S, Reardon T, 2005, "Private agri-food standards: Implications for food policy and the agri-

food system” *Food Policy* **30** 241 - 253

- Higgins V, Dibden J, Cocklin C, 2008, “Neoliberalism and natural resource management: Agri-environmental standards and the governing of farming practices” *Geoforum* **39** 1776 – 1785
- Higgins V, Dibden J, Cocklin C, 2010, “Adapting standards: the case of environmental management systems in Australia,” in V Higgins & W Larner, eds., *Calculating the Social: Standards and the Reconfiguration of Governing* (Palgrave Macmillan, Basingstoke) pp 167-184
- Higgins V, Larner W, 2010, “Standards and standardization as a social scientific problem,” in V Higgins & W Larner, eds., *Calculating the Social: Standards and the Reconfiguration of Governing* (Palgrave Macmillan, Basingstoke) pp 1-18
- Humphrey J, Schmitz H, 2002, “How does insertion in global value chains affect upgrading in industrial clusters?” *Regional Studies* **36** 1017-1027
- IFOAM, 2003, *Smallholder group certification, compilation of results* (Tholey-Theley, IFOAM)
- van der Kamp M, 2011, *Enacting standards in organic agriculture*, PhD Thesis (Lancaster University Management School)
- Konefal J, Hatanaka M, 2011, “Enacting third-party certification: A case study of science and politics in organic shrimp certification” *Journal of Rural Studies* **27** 125-133
- Kumar P, 2004, “Role of Self Help Groups in Agricultural Diversification in Uttaranchal: Learnings emerged from DASP, UA” Technical report (DASP, Dehradun, India)
- Lampland M, Star S L, “Reckoning with standards” in *Standards and their stories: how quantifying, classifying, and formalizing practices shape everyday life* Eds. M Lampland and S L Star (Cornell University Press, Ithaca) pp 3-24
- Larner W, Le Heron R, 2004, “Global Benchmarking: Participating ‘at a Distance’ in the Globalizing Economy,” in *Global Governmentality: Governing International Spaces* Eds. W Larner and W Walters (Routledge, London) pp 212-232
- Latour B, 2005, *Reassembling the Social: An Introduction to Actor-Network Theory* (Oxford University Press, Oxford)
- Law J, Urry J, 2004, “Enacting the Social” *Economy and Society* **33** 390-410
- Law J, 2004, *After Method: Mess in Social Science Research* (Routledge, London)
- Lewis D, Mosse D, 2006, “Encountering order and disjuncture: Contemporary anthropological perspectives on the organization of development” *Oxford Development Studies* **34** 1-13
- Lockie S, Higgins V, 2007, “Roll-out neoliberalism and hybrid practices of regulation in Australian

- agri-environmental governance” *Journal of Rural Studies* **23** 1 – 11
- Mcfall L, 2009, “Devices and Desires: How Useful Is the ‘New’ New Economic Sociology for Understanding Market Attachment?” *Sociology Compass* **3** 267-282
- Mitchell T, 2007, “The properties of markets,” in *Do Economists Make Markets? On the Performativity of Economics* Eds. D MacKenzie, F Muniesa, L Siu (Princeton University Press, Princeton NJ) pp 244-275
- Mol A, 2002, *The Body Multiple: Ontology in Medical Practice* (Duke University Press, Durham NC)
- Mol A, 2010, “Actor-network theory: sensitive terms and enduring tensions” *Kölner Zeitschrift für Soziologie und Sozialpsychologie* **50** 253-269
- Moreira T, 2012, “Healthcare standards and the politics of singularities: Shifting in and out of context” *Science, Technology and Human Values* **37** 307-331
- Moser I, 2006, “Sociotechnical practices and difference: On the interferences between disability, gender, and class” *Science, Technology and Human Values* **31** 537-564
- Muniesa F, Millo Y, Callon M, 2007, “An introduction to market devices,” in *Market Devices* Eds. M Callon, Y Millo, F Muniesa (Blackwell Publishing, Oxford) pp1-12
- Muradian R, Pelupessy W, 2005, “Governing the Coffee Chain: The Role of Voluntary Regulatory Systems” *World Development* **33** 2029-2044
- NPOP, 2005, *National Program for Organic Production* (Ministry of Commerce and Industry, New Delhi)
- Ouma S, 2010, “Global Standards, Local Realities: Private Agrifood Governance and the Restructuring of the Kenyan Horticulture Industry” *Economic Geography* **86** 197-222
- Ouma S, Boeckler M, Lindner P, 2011, “Extending the margins of marketization: Frontier regions and the making of agro-export markets in northern Ghana” Forthcoming in *Geoforum*
- Ponte S, 2011, “Upgrading value chains,” in *Agribusiness for Africa's Prosperity* Eds. K K Yumkella, P M Kormawa, M Anthony, T M R Hawkins (United Nations Industrial Development Organization)
- Ponte S, Gibbon P, 2005, “Quality standards, conventions and the governance of global value chains” *Economy and Society* **34** 1-31
- Raynolds L, 2004, “The Globalization of Organic Agro-Food Networks” *World Development* **32** 725-743
- Raynolds L, 2008, “The Organic Agro-Export Boom in the Dominican Republic: Maintaining

- Tradition or Fostering Transformation? *Latin American Research Review* **43** 161-184
- Schatzki T, 2001, "Introduction: Practice theory," in *The Practice Turn in Contemporary Social Theory* Eds. T Schatzki, K Knorr Cetina, E von Savigny (Routledge, London) pp 10-23
- Sofia P K, Prasad R, Vijay V K, 2006, "Organic farming: tradition reinvented" *Indian Journal of Traditional Knowledge* **5** 139-142.
- Tallontire A, 2007, "CSR and regulation: towards a framework for understanding private standards initiatives in the agri-food chain" *Third World Quarterly* **28** 775-791
- Timmermans S, Epstein S, 2010, "A world of standards but not a standard world: Toward a sociology of standards and standardization" *Annual review of Sociology* **36** 69-89
- Tovar L, Martin L, Cruz M, Mutersbaugh T, 2005, "Certified organic agriculture in Mexico: Market connections and certification practices in large and small producers" *Journal of Rural Studies* **21** 461-474
- Tsing A, 2005, *Friction: an ethnography of global connection*, (Princeton University Press, Princeton NJ)
- UOCB, 2007, *Annual Report 2006-2007* (Uttarakhand Organic Commodities Board, Dehradun)
- Volkman S, 2010, *Quality Standards and Global Retail Chains: From Indian Producers to German Consumers of Basmati Rice. An Analysis of Standard Setters and German Retailers*, Master's thesis (Wirtschaftswissenschaftliche Fakultät, Friedrich-Schiller Universität and the Max Planck Institute of Economics, Jena)
- Walters W, 2004, "Some Critical Notes on "Governance"" *Studies in Political Economy* **73** 27-46