
The Debate on Food Sovereignty Theory: Agrarian Capitalism, Dispossession and Agroecology

Kees Jansen

This is the author's version (pre-publication version) of an Article published in The Journal of Peasant Studies, 2015 42 (1): 213-232, [copyright Routledge]. The published journal version can be obtained from the author (please, send an email) or from the publisher online at: <http://dx.doi.org/10.1080/03066150.2014.945166>

Wageningen University, Dept. of Social Sciences, The Netherlands. E-mail: kees.jansen@wur.nl

Abstract

This contribution reviews recent critiques of the food sovereignty framework. In particular it engages with the debate between Henry Bernstein and Philip McMichael and analyses their different conceptualizations of agrarian capitalism. It critically identifies tendencies in food sovereignty approaches to assume a food regime crisis, to one-sidedly emphasize accumulation by dispossession and enclosure and thereby to overlook the importance of expanded reproduction, and to espouse a romantic optimism about farmer-driven agroecological knowledge which is devoid of modern science. Alternatives to current modernization trajectories cannot simply return to the peasant past and to the local. Instead, they need to recognize the desires of farmers to be incorporated into larger commodity networks, the importance of industrialization and complex chains for feeding the world population, and the support of state and science, as well as social movements, for realizing a food sovereign alternative.

Keywords: food sovereignty; agroecology; dispossession; expanded reproduction; agrarian crisis; capitalism; farmer knowledge; productivity; GMO

Introduction

Food sovereignty as a central concept of an anti-systemic movement refers to an alternative agrarianism which contests the corporate food regime (McMichael 2013a). Within the scholarly literature, a food sovereignty approach regards the peasant as the central subject in the current food regime crisis who can develop a programmatic approach to restore the viability of the countryside (McMichael 2014) or provide the engine of continuous, sustainable agricultural growth (van der Ploeg 2014). This theorization of the peasant as the central subject has recently been critically contested (e.g. Woodhouse 2010; Agarwal 2014; Bernstein 2014). This paper builds on the debate between Bernstein and McMichael in particular, in order to clarify key issues for agrarian change. Whilst sympathetic to many of the social struggles and political activism that adopt the ‘food sovereignty’ label as signifier for a heterogeneous set of rights and objectives, Bernstein (2014) provides a systematic critique of the food sovereignty framework. Earlier, more implicit, encounters in the *Canadian Journal of Development Studies* had already flagged key contested concepts: resistance, the nature of the agrarian question, peasant/commodity producers, class and crisis (Bernstein 2006; McMichael 2006, see also Friedmann 2006). The debate on food sovereignty theory became more explicit with Bernstein’s article (2013), which was published in a revised version in this journal (Bernstein 2014).¹

In this contribution, I first review Bernstein’s analysis and outline the different views on agrarian capitalism. I then develop two major arguments. First, the food sovereignty framework emphasizes struggles related to dispossession, as for example in enclosure through land grabbing. This zooming in on dispossession and enclosure hides from view the day-to-day accumulation, re-investment and production relationships in capitalism and the farmers’ role in shaping them. In theoretical terms, I propose a better linking of the twin concepts of accumulation by dispossession and expanded reproduction. The second argument concerns the high expectations of agroecology, an issue touched upon but not systematically developed by Bernstein. The food sovereignty framework not only claims right to land and more equal economic relations, but also promotes sustainable agricultural production, more concretely labelled as agroecology. I question this uncritical technological optimism placed in agroecology and in farmer-driven agroecological knowledge as an alternative to high-input, science-driven technological innovation.

¹ I will refer mostly to Bernstein (2014), McMichael (2014) and van der Ploeg (2014), but sometimes I quote the earlier version of these papers presented at the conference on ‘Food Sovereignty: A Critical Dialogue’ held at Yale University, 14–15 September 2013. References to the conference papers concern elements that have since disappeared from but do not, in my view, contradict the final versions.

Bernstein's critique of the food sovereignty framework

Bernstein's (2014) discussion of the food sovereignty literature is an effort to unravel linkages and similarities between populist positions and world systems theory in a single critique. McMichael's work in particular is addressed. What follows is a selective summary of Bernstein's critique, which consists of three interconnected themes.² The first major theme concerns the role of differentiated agrarian classes. Contemporary agriculture is shaped by the historical development of a wide range of social class relations (forms of agrarian capital, differentiated farmers – including capitalists, petty commodity producers, subsistence/survivalist farmers and so on – and diverse types of labour relationships). According to Bernstein, food sovereignty authors neglect or overlook the contrasts and contradictions between and within agrarian classes. They bundle these together and construct a peasant (on the farmer side) who is the other of capital, and whose reproduction is endangered by capital. Agrarian populism proclaims a peasant way of life and its 'vision of peasant autonomy, diversity and cooperation' (Bernstein 2014, 11; cf. van der Ploeg 2013b, 2014) is attributed to a large part of the farming population.³ According to Bernstein, too many different categories are lumped together under the label 'peasant' (and repeasantization) as a category distinct from and opposed to capitalism and capitalist entrepreneurs. The food sovereignty framework constructs a 'common "other" to large scale farming' (2014, 12). Here, Bernstein is following a well-established critique of agrarian populism which dismisses the notion of 'community' (as hiding rural class contradictions) in favour of differentiated agrarian classes (and thus struggles between types of farmers and between capital and labour) (Byres 1979; Watts 1983; Kitching 1989; Bernstein 1990; Brass 1990). Bernstein reasons that 'there are no "peasants" in the world of contemporary capitalist globalisation' (2014, 14), since most farming operations are predominantly driven by the dynamics of commodity production, even if these operations sometimes appear to be located outside this sphere. The reproduction of the apparent 'non-capitalist peasants' or

² This summary necessarily simplifies Bernstein's critique.

³ Bernstein (2013) is concerned about that literature which lumps different types of farmers together as peasants, neglects internal class contradictions and opposes the peasant as a non-capitalist category to an external agrarian capitalism. He seems to exempt van der Ploeg's writings on the peasantry from his critique (see his notes 23 and 44), but without providing a coherent argument why. He only refers to the high quality of van der Ploeg's work. In my reading of van der Ploeg (e.g. 2014), all Bernstein's concerns are present in van der Ploeg's work. Bernstein (2014) analyses more critically the work of van der Ploeg, but several critical points still tend to remain implicit; see for example notes 28 and 30, and pp. 19–20.

petty commodity producers is only possible by their participation in commodity circuits, e.g. by selling products of the land or labour, or buying land and other inputs via generalized commodity markets.

The second theme concerns the interpretation of food sovereignty thinkers who perceive continued ‘peasant’ production as resistance. This links to the use of world systems theory and the notion of capitalism it draws on. Bernstein argues that McMichael ‘ties his analysis of food regimes, and especially the current corporate regime, to strong advocacy of food sovereignty, which connects with *celebrations of “resistance”*’ (2014, 8; my emphasis). In this context, Bernstein identifies the presence of heroism and vanguardism in the food sovereignty narrative (cf. McMichael 2014), as well as ‘aspirations to “grand theory” and its feel-goodism’. He questions the proposed continuation of peasant farming, ‘informed by agroecological wisdom and values of autonomy, community and social justice, in the face of the corrosive effects of capital’ (Bernstein 2014, 9). This critique of Bernstein’s is more suggestive than systematically elaborated. McMichael (2013a) argues that in the formulations of the agrarian question capital is taken as the point of methodological departure, thus failing to acknowledge peasant struggles as ‘embodying or foreshadowing an alternative agrarianism’ (21). However, both Bernstein and McMichael take capital as their starting point but use different terms – food regime versus differentiated social classes – and they have different views as to how it is extended and how it is driven. Below, I propose to rethink further this supposed connection, or rather opposition, between food regime/system and food sovereignty/resistance as a way out of this ‘resistance’ controversy.

The third theme concerns the nature of productivity and technology in capitalism and their imagined alternatives. The rejection of dominant agricultural forms of production and industrial agriculture by food sovereignty movements is often connected to a delegitimization of the objective of food security. Speaking of the need for high productivity (per labour input, unit of land or other measure) is considered to be an old way of thinking; Weis (2010, 336) proposes ‘throwing out the dominant conception of agricultural productivity’. Such easy rejections of the productivity question evade the serious issue of how much food has to be produced that is accessible to the whole population. Bernstein comments upon the tendency in the food sovereignty literature to ‘view capitalism *only* as destructive’ (2014, 10; emphasis in original), thus neglecting the productive possibilities created through the dynamism of capitalist expansion. Bernstein states he does not want to return to the difficulties of pre-capitalist societies, with their low productivity of peasant farming. He raises the issue of the productivity of labour (i.e. the question of how to feed the world’s population) and doubts if the ‘peasants’, as proposed in the food sovereignty

framework, will be able to produce the quantities required and low food prices outside capitalist production and market structures. In somewhat sketchy terms, Bernstein points to the binary thinking on technology in some food sovereignty literature, in particular where this supports local farmer knowledge as against modern technology such as genetically modified organisms (GMOs), promoted by agrarian capital and imposed upon farming populations. Bernstein (2014, 23) criticizes rejectionist positions of modern techniques and the failure to address seriously the important question about how poor farmers might benefit from modern agricultural technology.

In the next section, I elaborate the first two themes and discuss the objectification, homogenization and externalization of agrarian capitalism in the food sovereignty framework: capitalism without local subjects. The third theme on productivity and technology is discussed thereafter, when I question to what extent Bernstein's acceptance of the technological content and reasoning of agroecological thinking coheres with his views on labour productivity and technology in capitalism and peasant agriculture.

Agrarian capitalism and the food regime

This section shifts the focus from Bernstein to the food sovereignty frameworks of McMichael and van der Ploeg. I argue that McMichael's interpretation of agrarian crisis, as well as his particular view on agrarian capitalism and the subjects that sustain or resist it, is problematic. A competing and more complete view of agrarian capitalism, as advanced by Bernstein among others, shows some of the limitations and difficulties of food sovereignty approaches. This competing view counterbalances the overemphasis on dispossession with a stronger concern for expanded reproduction. It acknowledges the importance of capitalism from below for understanding agrarian change. In the following quote, McMichael summarizes his own position (2014, 19; words in italics include ideas and images which Bernstein responds to or which will be discussed below):

Returning to the food regime/food sovereignty dialectic, the overall point is that while the twentieth-century *agrarian crisis* has been expressed in various forms of peasant *resistance* (...) and movements for reform of the agri-food system (...), it is only now, as a final enclosure ensues in the shadow of 'the nemesis effect', (...) rising energy and food prices and destabilization of human populations, that an ontological *alternative is universally meaningful* and

necessary. The canary imagery⁴ suggests that at a *historical moment* like this, with its destructive neo-liberal market path-dependency, a seemingly *unthinkable vision* can emerge with such power as to remind us of our agrarian foundations. The reminder is driven by *direct experience of dispossession*, and the obvious deceit of feeding the world with assurances of market efficiency. The *absent subjects* in the original agrarian question have spoken through the food sovereignty intervention, *shifting the focus from capital's expanded reproduction* to the question of stewardship of the land as an act of social provisioning and human survival.

Crisis? What crisis?

The quote above starts with the notion of agrarian crisis. The food sovereignty movement foreshadows 'an alternative agrarianism, at this moment of crisis' (McMichael 2013a, 14). 'The peasant countermovement already anticipated the recent food crisis' (McMichael 2014, 10). One could ask how people can read the future and anticipate a crisis. The word 'crisis' figures 52 times in McMichael (2014). These references to crisis create a narrative of urgency whereby the reader is asked to sustain a particular political project (Jansen 2003). This raises the question as to what crisis is being referred to. It seems to me that he tangles at least three different types of agrarian crisis: one related to food price inflation, one related to dumping and the fall in farm prices, and an ecological crisis.⁵ McMichael (2014) describes how food price inflation in the first decade of this century has led to a 'global food crisis' and food riots in a range of countries. He pictures these as rebellions against the political economy of neoliberalism and argues that the recent 'food crisis' precipitated the current food sovereignty movement. The question is whether this food price inflation really is 'a culmination of a deeper agrarian crisis' (McMichael 2014, 3) of the food regime. Against McMichael, I would argue that it is not an agrarian crisis from the perspective of agrarian producers, be they agribusinesses, entrepreneurial producers or simple and petty commodity producers. Higher prices favour agricultural production and attract investors to the agricultural sector. The recent price surge is one of the reasons for the renewed interest in agriculture by agencies like the World Bank. It is a shift in the terms of trade, and probably in the balance of power between other economic sectors and agriculture. Though price shocks might be highly problematic for some producers, higher food prices do not, in general, lead to an agrarian crisis.

⁴ McMichael uses the metaphor of the canary in the mine to characterize the role of the peasant movement in signalling the current global agrarian crisis.

⁵ The third notion of crisis, an ecological crisis, will be discussed in the section below on agroecology.

They may, however, reveal crucial contrasts. For example, ideal type peasants (who, according to the food sovereignty discourse, are able to feed the nation and thus have to produce for the market) may like higher food prices,⁶ but 'semi-proletarians' – whose own farm production is so low that they have to buy food – may not. McMichael's concepts of food crisis and agrarian crisis tend to neglect such contrasts.⁷

McMichael (2014) uses the word 'crisis' in relation not only to high food prices but also to its precise opposite, the dumping of cheap food by the corporate food regime which lowers prices and displaces unprotected farmers. Two issues are important here. First, one cannot present high food prices and the dumping of cheap food as a single agrarian crisis.⁸ Second, McMichael too easily links the crisis from dumping as being enabled with the complicity of the neo-liberal state, thereby repelling the claims of small farmers. Rather than neo-liberal ideology, however, dumping historically is often a consequence of subsidized agricultural production, subsidies which result from populist agrarian demands and social-democratic or corporatist politics to protect family farmers and provide cheap food to the urban population at the same time.

So, in what senses can we speak of a 'global agrarian crisis' at this point in time? Contemporary agrarian capital is highly dynamic in terms of product innovation and new production technologies. It sets up new businesses, encompasses many regions, attracts new capital, is adaptive to the latest lifestyle concerns, takes up ecological challenges and so on. From the perspective of capital, profits can be made and 'progress' achieved with new cost-reducing, labour-replacing technologies, productivity increases, new industrial food products, new uses of land for non-food agricultural products and new logistics (standards and certification, transport

⁶ Higher food prices support not only the corporate food regime but also local agroecological and organic farming initiatives, the favoured alternative to the corporate food regime.

⁷ One reviewer raised the important question of 'who is the sovereign?' (the urban poor, the rich and middle 'peasants' producing for the market, or other groups such as processing industrialists, retailers and financial capital). This question is not properly dealt with in the food sovereignty literature though important for formulating alternatives. One example which discusses contrasting views on food policies in 'food sovereign' Bolivia is Córdoba and Jansen (2014).

⁸ Furthermore, agrarian capitalists do not necessarily seek low prices: as producers they can make more profit with high farm-gate prices and, as marketers and retailers, calculating on the basis of proportionate profit margins, they gain more with generalized higher prices. For this reason, global food companies source and sell higher-priced organic and fair trade bananas not to 'greenwash' but as a good 'business case' (Jansen 2004, 2006). In fact, low prices as a result of competition in the food regime go against the direct interest of individual capitalists; individual capitalists would prefer monopolies with their high prices (e.g., through branding) to the dumping of food.

infrastructure, exotic consumer demand) moving products around the globe. It is difficult to envisage what the current agrarian crisis would be for capital. If this is the case, it raises serious problems for any alternative seen to be waiting for and expecting the old system to collapse under its own contradictions. In fact, the current dynamics of capital in agriculture and the success of capital accumulation outcompete peasant agriculture (whether in markets for land, labour, technology innovation or products). In this sense, it could be argued that we do *not* face an agrarian crisis (as food regime crisis); if there is a crisis it is a crisis of peasantism, a crisis of that part of the farming population which loses out in the context of a dynamic agrarian capitalism.⁹

Agrarian capital and capitalism from below

What is at stake in the debate between McMichael and Bernstein is two distinct views of agrarian capitalism. In general terms one view is of an agrarian capitalism, in the form of a global food regime, which is homogeneous, top-down, systemic, corporate, external and without subjects; the other is a view of agrarian capitalism that recognizes multiple forms, is internal and is shaped by class differentiation, complex alliances and contradictions. In my reading, McMichael (2013b, 2014) presents an image of a systemic capitalism (without reference to a subject that creates it), followed by a critique that such capitalism negates the subject.¹⁰ This systemic capitalism thus becomes an external entity constraining and subordinating the peasant, smallholder or 'steward of farming' (McMichael 2013b, 64), the latter being seen as the agent *pur sang*, the one who will shape alternatives. The only agent that is imagined here does not want to be part of structure (i.e. capitalism, state intervention/'seeing like a state' or the wider political economy). The confrontation between the two, capitalism and (peasant) farmer, is via relations of circulation (McMichael 2013b, 77). Bernstein, on the other hand, approaches capitalism in terms of class dynamics and concrete contradictions between of agrarian capitalism from the beginning. This allows for an interpretation in which capitalism is not

⁹ Bernstein (2006) calls this the agrarian question of labour. I will not go into the disagreement between Bernstein and McMichael (2013b) about the definition of 'the agrarian question', as clarifying how each misinterprets the other's use of the term would require too much space.

¹⁰ A similar perspective can be found in actor-oriented approaches which first conceptualize a structure that exists without any agency, followed by a critique of explanations that refer to structures, arguing that such explanations neglect agency (e.g. Long and van der Ploeg 1989).

necessarily external to bottom-up processes, the latter being part of the production and reproduction of capitalist social relations of production.¹¹

A focus on the social relations of production allows for the possibility that local subjects are not absent in agrarian capitalism but rather play an active part in creating it. This is implied, for example, in Bernstein's short reference to the 'relentless micro-capitalism of petty commodity production' (2014, 14). What is obscured in McMichael's long historical periods is the contradictory development of class-differentiated agrarian structures with full, though uneven, participation of farmers of all kinds. In many situations, this is a 'micro-capitalism' or a 'nickel-and-dime capitalism' where, at the village level, some farmers exploit the labour of others through multiple mechanisms; local people can experience intense differences while outsiders fail to observe crucial class contradictions (Jansen 1998). It also neglects how smallholders actively seek participation in commodity chains not as victims but as agents, such as Mayan broccoli farmers who connect to international trade infrastructure with the desire to get ahead economically (Fischer and Benson 2006). These kinds of desires for growth within capitalism receive little attention from McMichael.

Another example of how the current food regime partly builds on capitalism from below is the role of cooperative movements. Many cooperative initiatives emerged as a response to usury, trade monopolies or lack of infrastructure, among other reasons. Their subsequent successful growth has shaped agrarian capitalism by playing a key role in product innovation, research-extension-policy making interaction, restructuring and extending commodity chains and building business structures. In many cases, one can understand such a cooperative system as another form of extending capitalist relationships through exchange relationships. In the Netherlands, Finland and Denmark, cooperatives have a market share of more than 50 percent; they are particularly active in dairy and fruit and vegetables (Bijman et al. 2012). The cooperative Rabobank originally emerged from local farmer saving cooperatives, often started by farmer organizations, and is now the second bank of the Netherlands with international operations. These cooperative entities are a dynamic part of contemporary agribusiness. The key point to be made here is that the role of farmers, including smallholders, in creating agribusiness structures in many countries sits uneasily with the view of a contemporary food regime that has 'imposed a model of "agriculture without farmers"' (McMichael 2013a, 13). The food regime did not undermine farming, as McMichael suggests, but shaped it and was shaped by it. This is not to deny that many farmers were excluded, marginalized or exploited in this uneven process, or that large companies

¹¹ This summary simplifies the views of McMichael and Bernstein but the key opposition between them relates to this difference.

have become extremely dominant and powerful. But the fact that these developments often took place in the context of a strong current of capitalism from below raises the question as to how food sovereignty movements address this current. It implies building an alternative to a very dynamic dominant system which is co-produced by the same constituency (at least in part) that the food sovereignty movement targets as the agency for endogenous growth.

Within this context of agrarian capitalism from below, the notion of agrarian crisis as used by McMichael becomes even more problematic. The food sovereignty movement does not result from, or reveal, a crisis in agrarian capitalism, but reflects a crisis of those who are unable to participate in this agrarian capitalism. It becomes impossible to produce outside the capitalist sphere, not just because of circulation regimes, but also because of the deep penetration of capitalism in the sphere of production, making fellow farmers compete for resources (whether or not farming takes the form of wage labour).

Dispossession and enclosure without expanded reproduction

The crisis of peasantism may explain why food sovereignty thinkers lay relatively so much emphasis on dispossession and enclosure. For McMichael (2014), the food sovereignty movement seeks to reverse dispossession resulting from enclosure, as for example through land grabs, with an increasingly global character. Discontent with dispossession and enclosure is reflected in the popularity of the term 'accumulation by dispossession' as coined by Harvey (2003).¹² Harvey introduces the concept of accumulation by dispossession to extend Marx's notion of primitive accumulation to modern neoliberal times. For the 'normal' process of capital accumulation and economic growth, encompassing the conflict between capital and labour, Harvey uses the term 'expanded reproduction'. The new term 'accumulation by dispossession' refers to a different mechanism, which exists to solve overaccumulation/underconsumption crises in capitalism (resulting from expanded reproduction). This mechanism of grabbing or 'enclosure',¹³ 'accumulation by extra-economic means' or 'coercive expropriation' (reflecting the need for repressive force or warfare), refers to a recurrent practice within capitalism, one which becomes prominent in certain periods

¹² The concept has been used for labelling appropriation or dispossession in a wide range of contexts, for example around seeds (Kloppenborg 2010), post-communist transition (Toleubayev et al. 2010), environmental conservation (Benjaminsen and Bryceson 2012) and, in particular, land grabbing (e.g. Levien 2011 and several papers in the special issue of the *Journal of Peasant Studies*, vol. 39, nos. 3-4, on land grabbing).

¹³ The iconic case for theorizing the emergence of agrarian capitalism is the enclosure movement in England; cf. Marx (1887), Polanyi (1957) and (Wood 2000).

(e.g., in the last two decades with the grabbing of oil resource after the war in Iraq, the raiding of pension funds, the mortgage crisis and the grabbing of public resources in the transition of communism to capitalism).

This notion of accumulation by dispossession is often linked with the view of an external and systemic agrarian capitalism, thereby overlooking the internal dynamics and contradictions of agrarian capitalism. For example, Veuthey and Gerber (2012), in an otherwise valuable study, describe enclosures by an expanding shrimp farming industry in Ecuador in which customary community mangroves are privatized to build shrimp ponds (see also Latorre 2014). The blame is put on the expansion of the market (as an abstract entity) and the state with its monopoly of violence and definitions of legality. Veuthey and Gerber hardly touch on where these new shrimp farmers come from. The only agency identified is that of the environmental justice movement retaking the commons and replanting abandoned ponds. What is absent in this narrative is an understanding of how shrimp farming interacts with social differentiation within the village. The enclosure mechanism is clearly described but the process of local capital accumulation, class contradiction and local political struggles are neglected and identity formation is not fully understood.

It seems to me that this reference to ‘accumulation by dispossession’ for enclosures, the cause of much human suffering and injustice, is only a partial use of Harvey’s argument. Harvey does indeed observe that ‘capitalism internalizes cannibalistic as well as predatory and fraudulent practices’ (2003, 148) and presents enclosure of the commons as one form of accumulation by dispossession. But Harvey also ventilates a wider concern which tends to be overlooked by the literature: what he calls the dual domains of anti-capitalist and anti-imperialist struggle. It is a concern about the ‘dismissal of the “organic link” between accumulation by dispossession and expanded reproduction’ (175), which reflects a discord between social struggles within the field of expanded reproduction (the emphasis of the traditional left and unionized labour struggles) and the struggles against accumulation by dispossession, by for example, alternative globalization movements such as described by Veuthey and Gerber above. Harvey (2003, 165) comments on this tension:

While, therefore, struggles against primitive accumulation could provide the seedbed of discontent for insurgent movements, including those embedded in the peasantry, the point of socialist politics was not to protect the ancient order but to attack directly the class relations and forms of state power that were attempting to transform it and arrive thereby at a totally different configuration of class relations and state powers. This idea was central to many of the

revolutionary movements that swept the developing world in the aftermath of the Second World War. They fought against capitalist imperialism but did so in the name of an alternative modernity rather than in defence of tradition. In so doing they often found themselves opposing and opposed by those who sought to protect if not revitalize traditional systems of production, cultural norms, and social relations.

Harvey recognizes the neglect of the traditional socialist movement with respect to the relevance and the embeddedness of movement struggles against accumulation by dispossession in the politics of daily life. But he also points out a loss of focus in struggles over dispossession, away from state power and labour organization to the local, inchoate and fragmentary. He is particularly critical of approaches that seek the answer in the 'localization of everything' and which declare the struggle to command the state apparatus as irrelevant or an illusory diversion (2003, 175). Although Harvey does not provide a clear answer on how to link the different kinds of struggle, one lesson to be derived from his work is that the political search for linkages requires recognition of the analytical distinctions¹⁴ and concrete contradictions.¹⁵ In the food sovereignty literature, the framing of the key concern is much more about dispossession than about the contradictions generated within a process of expanded reproduction which Bernstein seems to refer to when he writes about agrarian change. Recognition of the importance of expanded reproduction in agrarian capitalism is in line with the question of labour that Bernstein makes central, and helps to conceptualize capitalism from below in addition to the practices of large capital. Castellanos-Navarrete and Jansen (2013) argue that 'emphasis on enclosure occludes from view the material and political responses deployed by vast numbers of peasants and farmers to new economic and technical opportunities' (17). Expanded reproduction focuses our attention on how many smallholders embrace market mechanisms and accumulation strategies and engage in multiple ways with capitalism.

¹⁴ Such an analytical distinction may be helpful in the land grabbing debate. Many reported cases are examples of brutal dispossession or privatization of common or state land made possible by corrupt and/or neoliberal states. But many other cases are the result of expanded reproduction: simple commodity producers or capitalist entrepreneurs selling or renting their land to large firms. In the context of capitalist property relations and capitalist markets, these are entirely legal land transactions. The social struggle around the former may need to differ from the development of an alternative for the latter. For more nuanced analyses in the land grabbing debate, see Borras et al. (2012) and Oya (2013).

¹⁵ Harvey (2003, 176) considers that such 'differences cannot be buried under some nebulous concept of "the multitude" in motion'.

Agroecology and the gradual disappearance of science

McMichael (2014) extends the ‘canary in the mine’ metaphor from peasant activism in the food sovereignty movement to the ecological crisis arising from the unsustainability of industrial agriculture. In the food sovereignty movement there is strong pressure in favour of agroecology as an alternative to industrialized agriculture with its high input levels and monocultures leading to soil degradation, nutrient losses, environmental pollution and loss of biodiversity (Weis 2010). Martínez-Torres and Rosset (2014, 6) consider agroecology to be one of the three key pillars in the construction of food sovereignty, alongside defence of land and territory and national and local markets. The notion of agroecology therefore deserves closer scrutiny of, amongst others, the technical claims made by social movements and scholars.¹⁶ In the technical sense, agroecology has brought together and developed knowledge on nutrient cycling, pest-plant interactions, succession (of different plant species in a natural ecosystem) (Hecht 1987), the role of plant traits in plant community structures (Garnier and Navas 2012) and energy efficiency of, and biodiversity in, agricultural systems (Altieri 1987), in particular soil biodiversity (Giller et al. 1997). Agroecology has also brought farmer knowledge back into agronomic and ecological science (Bentley, Rodríguez, and González 1994; Toledo 1990). Agroecology is a broad term, the definition of which ranges from an alternative approach to technology development to a more system-oriented approach in agronomy, a description of sustainable agriculture or a synonym for organic agriculture. The discussion below discusses some shortcomings in the uptake of agroecology in the food sovereignty framework.

Productivity and autonomy

The first problem relates to a misplaced optimism in the potential productivity of low external input farming. Altieri, a prominent agroecologist, seems to have changed his mind on the issue of productivity. In his seminal book of 1987, he assumed that modern monocultures produce a ‘high yield to humankind’ (p.40) and are more productive on a per-crop basis than traditional polycultures (though he considers the latter to be generally more stable and more energy efficient; p.41). In this early work, Altieri was mainly concerned with the trade-offs of such high productivity: lower diversity, lower energy efficiency and less stability. In his later work (e.g. Altieri 1999, 2009), however, he argues that small farms that adopt agroecological practices are more productive. The question is, more

¹⁶ Rosset and Martínez-Torres (2013, 13) rightly point out that technological choice always ‘brings political and ideological baggage with it’. This truism, however, does not prevent a critical examination of agroecology’s technical merits.

productive than what? The suggestion is that they are more productive than conventional high-input agriculture. However, the examples provided to prove the success of agroecology are often of another kind. One of the examples used by Altieri is the oft-cited introduction of velvet bean (*Mucuna pruriens*) in Guinope, Honduras, which led to a reported triplication of maize yields and a cut in labour requirements for weeding by 75 percent (Bunch 1990; Altieri 1999). Given these results, it is an enigma why such a supposedly miracle technology has not been extensively adopted elsewhere in Honduras. It may be that the reported benign effects on productivity are not so easily attained elsewhere – which makes the example an exceptional case (in fact, a limit case) – or the farmer-to-farmer knowledge transfer of agroecological practices, encouraged by the food sovereignty perspective (Martínez-Torres and Rosset 2014), has not taken place, despite the large number of non-governmental organizations (NGOs) promoting it in Honduras in the 1990s and 2000s. The data on this case are fragmentary, incomplete and lack adequate controls and replication. It is one thing to argue that agroecology offers fresh insights and can potentially contribute to improved production systems under marginal conditions; it is another to assess the costs in terms of extra labour input and external resources, and whether it can compete with high-input industrial agriculture which addresses environmental issues of sustainability and operates within capitalist markets that coordinate the flow of food from producers to consumers. Agroecological practices may not easily and dramatically improve the output of very marginal hillside farming systems without external inputs (e.g., manure from the chicken industry) or increased input of labour (Jansen 1998). The issue of productivity remains connected to the demand for adequate food production for the population at large.¹⁷ These observations do not make experimentation with agroecological practices a futile effort but they do contest the belief that agroecology, seen as an autonomous process of low external input farming, can beat capitalist conventional agriculture in terms of productivity (cf. van der Ploeg 2013b) and be capable in the near future of feeding all ‘peoples and nations’ (as claimed by Martínez-Torres and Rosset 2014). That said, effervescent beliefs in a different agronomic approach can function as utopias which sustain social movements in their search for technological alternatives to conventional agriculture.

¹⁷ One should not infer from the critique of Malthusian thinking that total food production is never a problem. Political economists face the task of combining a critique of unequal distribution with positive thinking on how much should be produced and how. Agroecology produces ingenious ideas and methods on the *how* but is silent or too optimistic on the *how much*.

Wider comparative analysis between high-input modern farming (i.e. with a focus on sustainability)¹⁸ and agroecology as low external input farming that does not rely on a few exceptional cases hardly exists to my knowledge. Probably the only source we can draw upon relates to the comparison between organic farming (with most cases in the global North) and conventional agriculture.¹⁹ In between the advocates of organic farming (Badgley et al. 2007; whose research methodology and calculations have been seriously questioned by, amongst others, Goulding et al. 2009) and the rejectionist positions (e.g. Connor 2008) lies the more impartial and comprehensive meta study of de Ponti, Rijk, and Van Ittersum (2012), covering 362 cases of comparison. De Ponti et al. find a relative yield of 80 percent for organic compared to conventional agriculture. They also point out that many questions remain to be answered before anything conclusive can be said about productivity. A reduction of worldwide production by 20 percent, in the case of full conversion to organic farming, would probably have a tremendous effect on food prices, and might lead to the kind of social and political problems described by McMichael (2014). Before food sovereignty movements adopt low external input agroecology as the single technological option, many questions should be seriously addressed. The increased yields of organic farming are often obtained with external inputs: manure and fertilizers (e.g., rock phosphate or bone meal) for organic nutrients, crop protection products and so on.²⁰ Where organic farming attains high outputs, this may be the result of a natural resource-rich environment (for example, on soils with high natural phosphorus content or through having been over-fertilized in the past under conventional agriculture), circumstances not reproducible in the marginal areas of the world. High output may also reflect a relatively higher labour input (Jansen 2000), which may be desirable in an alternative scheme (Weis 2010) but problematic for farmers if it does not increase the output of their farming. Higher labour requirements with less output, in a context where competitive capitalist agriculture determines price levels, will not keep the younger generation in agriculture. Yield comparisons are mostly calculated on a crop basis and not on a long-term system basis. Comparisons on a system basis

¹⁸ This includes precision agriculture to reduce fertilizer and pesticide application and water use, integrated pest control, recycling nutrients and residues in run-off water, biodiversity conservation, and so on.

¹⁹ While agroecology is sometimes equated with organic farming, they are not necessarily the same. However, with regard to the productivity debate, the lines of argument are often similar. Since there is much more data available on organic farming, I use this here as an example. Agroecology without external inputs would probably yield much less than the forms of organic farming discussed in de Ponti et al. (2012)

²⁰ Organic farming may be as driven by external input supply, commodity markets and agribusiness (Guthman 2004) as conventional farming.

will not necessarily favour those agroecological strategies that include fallow periods and cover crops to restore fertility naturally as this land is not then available for crop production. In short, these unresolved issues meant that claims about agroecology's higher productivity and its potential to outcompete capitalist agriculture should not be taken for granted.

Low external input farming is sometimes presented as an issue of autonomy. Autonomy in this sense is not just a political concept relating to the right to decide independently from larger powers, but a technological notion relating to type of inputs and an economic notion relating to a withdrawal from input markets. Rosset and Martínez-Torres (2013) defend a 'transition from Green Revolution-style farming – in which families depend on input markets – to more autonomous agroecological farming' (13), which they relate to struggles for repeasantization. They argue for 'a transition from input-dependent farming to agroecology based on local resources' (14). The intrinsic link between social movement struggles and the promotion of low external input farming based on local resources should be up for debate. Where low external input farming is viable and contributes to the principle of not disturbing the stability of natural ecosystems (Altieri 1987), it should not be seen as a problem, but where low external input means low output or depletion of natural resources, it may well be problematic. In many systems, high yields are currently achieved with external inputs and/or resources, in particular where conditions are adverse (e.g. soils with low phosphorus levels, acid soils, dry areas that need extended irrigation structures, crops with high disease pressure and so on). Collective action by farmers often seeks access to such external inputs and resources in order to increase productivity. This desire is not because farmers have been misled by corporate capital, but because these external inputs have an agronomic effect in their fields. And yes, the result may be, or more generally is, that their farming system becomes dependent on such external inputs.²¹ Many forms of production, of life, of existence outside agriculture are dependent upon something else. This interdependent world is a result of the division of labour and the technological complexity of modern times.

Farmer knowledge, science and modern biotechnology

The notion of autonomy has also been linked to an ideal of independence from universal science. The agroecological literature espouses a strong belief in farmer knowledge (e.g. Martínez-Torres and Rosset 2014) and the importance of a 'Neolithic legacy', 'traditional knowledge systems' and the

²¹ A lot of farmer activism has focused on organizing input delivery under control by farmer associations to become (more) independent from powerful traders or corporate capital and not to become independent from external inputs.

'ecological rationale of indigenous agriculture' (Altieri and Toledo 2011). While in terms of political representation and recognition this revaluation of farmers' knowledge is important, several problems arise.²² Agroecology is ambivalent about science, though it is less pessimistic than some contemporary relativist social constructivist approaches which also revalue farmer knowledge. Negative simplifications of science are found in the literature. For example, Martínez-Torres and Rosset (2014) write: '(t)his kind of unifying, economic and "scientific" rational is divorced from a social commitment to solve real problems of real people and the real environment (...), and imposes a knowledge monoculture that annuls diverse local and traditional knowledges' (p.5). Van der Ploeg (2014) refers to 'imperial science'.²³ But in other places, agroecology seems to emerge as much from science as from farmers' knowledge. Altieri (1987) and Hecht (1987) firmly root agroecology in the agricultural sciences, in particular in agricultural system approaches (Conway 1985), entomology and ecology.²⁴ The subtitle of Altieri's 1987 book is 'The scientific basis of alternative agriculture'. However, in the recent food sovereignty literature, this rootedness in an integrative science is absent and replaced with local knowledge, local realities and farmer networks.

However, small farmers' knowledge and practices do not necessarily fit very well into the agroecological approach. For example in Costa Rica small farmer demonstrations, organized by UPANACIONAL (*La Unión de Pequeños Productores Agropecuarios Costarricense*), a member of Via Campesina, demanded less stringent regulations on the import of generic

²² Agroecology is part of a broader trend in the late 1980s and 1990s that reevaluates indigenous technical knowledge (Jansen et al. 2004).

²³ In contrast to the centrality of science in the modernization of agriculture, authors sometimes introduce the notion of farming (by peasants) as an *art* or *craftsmanship*, which is disappearing because of the scientization of agriculture (e.g. van der Ploeg 2013b). The appeal of the art or craftsmanship metaphor can be found in many professions, as seen in such expressions as 'the art of investment banking', 'the art of science' or the 'art of the entrepreneurial marketer'. It also appeals to many deeply involved in agricultural practice. But what does it tell us? Trusler's (1810) publication on the *art of farming* is illuminating in this context. Trusler aims to give gentlemen who take up farming 'insight into the nature of farming, as will enable them to check the negligence, correct the ignorance, or detect the imposition, of servants'. As an early lesson in capitalist entrepreneurship and the technicalities of agricultural production, the book opens with a cost-benefit analysis (showing that profits can be made even in a context of rising rents and input prices) and emphasizes that the art of farming starts with proper bookkeeping. Moreover, the art of farming is about controlling servants, expressed in sentences like: 'All that is necessary for a master to take care of, is, that his ploughman does not ride upon the handles of the plough, but plough the ground as deep as the plough will effect it, or as the upper staple or layer of the land will admit', 118).

²⁴ The same Conway has been an influential advocate of genetically modified crops for poor farmers (Jansen and Gupta 2009).

pesticides with the aim of reducing their price (Jansen 2011). Such collective support for more pesticides and less risk regulation does not fit well with agroecological thinking. Another example is the generation of local farmer knowledge, autonomous from any knowledge transfer by industry or state, which denies the potential risks of pesticide use and creates false beliefs about individuals being resistant to pesticide hazards (Barraza et al. 2011; Stadlinger et al. 2011; Ríos-González et al. 2013). The same point can be made with regard to traditions in agriculture. For example, farmers' profound and very detailed knowledge of burning to clear fields – based on knowledge of local realities, passed from generation to generation, and so on (Jansen 1998) – is not wholly consistent with current agroecological thought. Farmer-to-farmer knowledge exchange, a core notion in agroecology (also labelled as social learning), does not automatically foster practices agreeable to agroecologists. For example, Stone (2007) points out that spreading of the word from farmer to farmer was the principal reason why small farmers in India planted different GMO varieties each year. In sum, autonomous farmer knowledge creation and diffusion may or may not coincide with agroecological principles. As with science in general, there is nothing inherent in farmer knowledge and local farming practices which makes them *a priori* and in a generalized way ecological. Finally, the argument that small farmer knowledge is ecological and scientific, and industrial agriculture is not, suggests an intention or plan on the part of industrialists to provoke an ecological crisis. Probably no or very few entrepreneurs or smallholders would want to set out to destroy or endanger their productive resources but, as an unintended or unwanted consequence, whether known or unknown, this happens in all forms of production.

On GMOs

The anti-GMO position of food sovereignty movements has difficulty understanding why smallholders adopt GMOs, seeing their adoption as a matter of deception by corporate powers. Small cotton farmers of the Makhathini flats in South Africa recently adopted second-generation GMO cotton with stacked Bt and RoundUp Ready genes as a way of addressing the high labour demands of weeding. Doreen Shumba (personal communication) argues in a forthcoming work that first generation GMO cotton was adopted not so much because of beneficial transgenic traits but because of the new institutional infrastructure (credit, input supply, secured market) which was introduced alongside GMO cotton, making it an interesting option for farmers (cf. Glover 2010b, for a thorough critique of the business claims that adoption in the Makhathini flats proves the superiority of transgenics for solving smallholder cropping problems). The initial adoption of GMO cotton rapidly declined after institutional failure.

However, it was followed by the resurgence of new, stacked-gene GMOs, transferred not by large industry campaigns but through farmer-to-farmer spread of knowledge about the new GMOs' possibilities.

This raises the issue as to what, precisely, is rejected by the food sovereignty approach. In agroecology, GMOs are seen as 'false solutions' (Rosset and Martínez-Torres 2013). The food sovereignty movement is 'fighting against transgenic crops and the patenting of life forms' (Patel 2009). Although these two aspects – transgenic crops and intellectual property rights – are usually linked, they are not necessarily so.²⁵ The strongest, and probably most successful, opposition to GMOs to date with the participation of food sovereignty movements has been the campaign against the so-called Terminator gene. This gene, which makes seed reproduction by farmers impossible, caused a backlash against biotechnology business (Glover and Newell 2004). Interestingly, this case is about a particular trait – the ownership of the seed – that constrains farmer practices, rather than about a trait that may be desired by farmers. Many farmers seem less concerned about the reduction of genetic diversity (reduction of genetic diversity may also happen when landraces are being replaced by non-GMO, improved varieties) and the unwanted genetic pollution that is of concern to Altieri (2009). It is the property rights issue which heightens emotions about GMOs.

The issue now is whether the property rights question and the corporate control argument should lead to a full rejection of all forms of genetic modification or even biotechnology in general. Patel (2009, 675), for example, considers transgenic crops as one of the technologies 'that undercut our future food producing capacities, damage the environment and put our health at risk' and includes it in the list of issues that the movement is fighting against. Herring (2007a, 2007b) argues vehemently against such claims of the food sovereignty movement and refers to the bottom-up appropriation of genetic modification technologies and peasant action in India. (See Glover 2010c for a critique based on the argument that the positive effects for smallholders are not as unambiguous as Herring and other authors suggest.) One does not need to subscribe to Herring's optimistic view about the pro-poor possibilities of GMOs to accept the point that many smallholders may be interested in some of the traits in new GMOs. However, the anti-GMO stance seems to be so ingrained in the food sovereignty movement that there is little reflection, let alone strategic thinking, about how and under what conditions modern biotechnology might be useful (see also Scoones 2008). Is this a wise strategy in the long

²⁵ Corporate dominance in the production and distribution of GMOs has been well documented and need not be repeated here (see, for example, Harvey 2004; Pelaez and Schmidt 2004; Otero 2008; Glover 2010a).

term? Whatever one thinks about transgenics, it will become impossible not to use the insights of modern biotechnology. For example, some advocates of organic farming, who reject the use of GMOs in organic agriculture, are open to exploring the use of molecular markers and marker-assisted selection from the most modern biotechnological toolbox, as well as engaging in closer cooperation with molecular scientists (Lammerts van Bueren et al. 2010). Kloppenburg (2010) discusses how invoking open-source principles for technology development may alter the application of biotechnology. It will be difficult for the food sovereignty movement to develop the capacity to set its own goals and strategies within science, but a more serious engagement with recent scientific findings and the disentangling of biotechnology from corporate power has yet to begin.

In short, agroecology (in the farmer-centred sense) will benefit from better scientific study and joint farmer-science experimentation and debate about what, where and when it works. The traditional, local-knowledge narrative of agroecology may be appealing for short-term mobilization and feel-good motivational work but has serious shortcomings when addressing complex problems. Rather than making agroecology a mantra that rhetorically bypasses the problem of low system output, it may be relevant to appreciate the diversity in agroecological practices and to see science as a useful instrument for identifying, comparing, testing and discussing possible production processes and outcomes.

Conclusions

This paper has reviewed key arguments in the debate between Bernstein and McMichael in order to contribute to the thinking about food sovereignty. It identified several domains of contention. Firstly, McMichael's narrative of a corporate agrarian capitalism in crisis and of smallholders who experience the pressure of dispossession, in particular through relations of circulation, contrasts with Bernstein's narrative of differentiated agrarian classes that shape agrarian change in a process of expanded reproduction. In my view, these two narratives can be adapted so that they are not mutually exclusive. Bernstein already recognizes the need to understand the 'types (and scales) of capital in the various moments of the overall circuits of capital and its expanded reproduction – financial, productive, commercial – as well as states and supra-state bodies (the World Trade Organization (WTO), the World Bank)' (2014, 6). If the populist take on a homogeneous smallholder ('peasant') is redrawn and replaced by a recognition of the differentiated and often conflicting interests and political projects of smallholders (and other actors), then it becomes possible to include and rethink 'capitalism from below' in the search for alternatives to the current food regime.

Secondly, Bernstein's view that the 'peasant' does not exist in contemporary agrarian capitalism rejects the idea of repeasantization, at least as a supposedly anti-capitalist strategy. However, this is not to argue that the huge number of 'peasants' (in the sense of poor smallholders) in the world should be got rid of, as a sort of genocide of half of humankind (Amin 2012). Rather it is to argue that the food sovereign 're-peasant' (from the proposals for repeasantization as anti-capitalist strategy in van der Ploeg 2013b and Martínez-Torres and Rosset 2014) is as much subject to capitalist dynamics as the 'disrupted peasantry'. As explained above, many smallholders aspire to escape the marginality of rural life by becoming successful agricultural producers, who are incorporated into larger commodity networks and able to compete in wider national and international markets. Many agrarian demands of farmer associations, such as support for innovation, credit, low input prices and high product prices, as well as additional supporting policies (i.e. demands beyond the direct demand for access to land, e.g. once land has been obtained through land reform) will in the current context lead to further integration into, and reproduction of, wider capitalist commodity chains (with all their exclusionary mechanisms and subsumption of labour).

Thirdly, alternatives to current agricultural regimes cannot simply withdraw from capitalism and return to the peasant past and the local. The traditionalist rather than modernist outlook of some food sovereignty proposals has been criticized above. Amin (2012, 14) argues that the 'necessary progress of productivity' of smallholder agriculture 'needs industries to support it'. This raises serious questions about anti-agro-industrialization positions that propose farming with low external inputs. Technically, the importance of industrialization, specialization and complex and extended chains for feeding the world population cannot be denied (with all its consequences in environmental terms). Evidence showing that non-industrial, low external input agroecological agriculture can feed the world is not convincing. This is not to argue that the productivity of smallholder agricultural cannot be raised. Improvement is possible through knowledge innovation (e.g. Novo et al. forthcoming) or by removing the constraints of state regulation (van der Ploeg 2013b). But such improvements are not devoid of science²⁶ and do not reject external inputs. It also implies that one cannot reject *a priori* large-scale farming and food processing practices, and global chains. Apart from this technical dimension, the non-traditionalist outlook discussed here also involves political-economic issues. Reviving the classical, localized peasant is an impossible strategy for

²⁶ The early phase of agroecology, which thrived on new insights from ecology, entomology and complex systems theory, may provide important lessons. One point of contention is to what extent the latest molecular bioscience can be incorporated.

developing alternatives to capitalism. This paper points out the limitations of farmer-driven alternatives that introduce just another form of capitalist expansion from below. Many activities of the food sovereignty network, however, can also be related to a different approach, that of socializing the larger economy rather than focusing on niche alternatives. Protests aiming to bring global decision making (WTO, FAO [Food and Agriculture Organization of the United Nations]) under popular control and proposals to apply open-source principles to biotechnological knowledge, challenging current property rights, can be interpreted in this way. This project of socializing the larger economy and the possible role of state and science in it could be articulated more strongly.

Acknowledgements

I would like to thank Saturnino 'Jun' Borras for encouraging me to write this paper, Antonio Castellanos-Navarette and three anonymous reviewers for their comments, and Diana Kay for her editing excellence. Of course, all inconsistencies, lacunae and errors are mine. An earlier version of this paper was presented at the 'Food sovereignty: a critical dialogue' Colloquium at the ISS in The Hague.

References

- Agarwal, B. 2014. Food sovereignty, food security and democratic choice: Critical contradictions, difficult conciliations. *Journal of Peasant Studies*, (early view: <http://dx.doi.org/10.1080/03066150.2013.876996>).
- Altieri, M.A. 1987. *Agroecology: The scientific base of alternative agriculture*. London: IT Publications.
- Altieri, M.A. 1999. Applying agroecology to enhance the productivity of peasant farming systems in Latin America. *Environment, Development and Sustainability* 1, (3-4): 197-217.
- Altieri, M.A. 2009. Agroecology, small farms, and food sovereignty. *Monthly Review* 61, (3): 102-13.
- Altieri, M.A. and V.M. Toledo. 2011. The agroecological revolution in Latin America: Rescuing nature, ensuring food sovereignty and empowering peasants. *Journal of Peasant Studies* 38, (3): 587-612.
- Amin, S. 2012. *The implosion of the contemporary global capitalist system (abridged version for second South South forum)*. International Conference on Sustainability and Rural Reconstruction, 12 December 2012.
- Badgley, C., J. Moghtader, E. Quintero, E. Zakem, M.J. Chappell, K. Avilés-Vázquez, A. Samulon and I. Perfecto. 2007. Organic agriculture and the global food supply. *Renewable Agriculture and Food Systems* 22, (2): 86-108.
- Barraza, D., K. Jansen, B. Van Wendel De Joode and C. Wesseling. 2011. Pesticide use in banana and plantain production and risk perception among local actors in Talamanca, Costa Rica. *Environmental Research* 111, (5): 708-17.
-

- Benjaminsen, T.A. and I. Bryceson. 2012. Conservation, green/blue grabbing and accumulation by dispossession in Tanzania. *Journal of Peasant Studies* 39, (2): 335-55.
- Bentley, J.W. 1994. Science and people: Honduran campesinos and natural pest control inventions. *Agriculture and Human Values* 11, (2/3): 178-82.
- Bernstein, H. 1990. Taking the part of peasants? In *The food question*, eds Bernstein, H, Crow, B, Mackintosh, M and Martin, C, 69-79. London: Earthscan.
- Bernstein, H. 2006. Is there an agrarian question in the 21st century? *Canadian Journal of Development Studies* 27, (4): 449-60.
- Bernstein, H. 2013. Food sovereignty: A sceptical view. Paper presented at the Conference on Food Sovereignty: A Critical Dialogue, Yale University, September 14-15, 2013.
- Bernstein, H. 2014. Food sovereignty via the 'peasant way': A sceptical view. *Journal of Peasant Studies*, (early view: <http://dx.doi.org/10.1080/03066150.2013.852082>).
- Bijman, J., C. Iliopoulos, K.J. Poppe, C. Gijssels, K. Hagedorn, M. Hanisch, G.W.J. Hendrikse, R. Kühn, P. Ollila, P. Pyykkönen and G. Van Der Sangen. 2012. Support for farmers' cooperatives: Final report: European Commission.
- Borras Jr, S.M., C. Kay, S. Gómez and J. Wilkinson. 2012. Land grabbing and global capitalist accumulation: Key features in Latin America. *Canadian Journal of Development Studies* 33, (4): 402-16.
- Brass, T. 1990. Peasant essentialism and the agrarian question in the Colombian Andes. *Journal of Peasant Studies* 17, (3): 444-56.
- Bunch, R. 1990. *Low input soil restoration in Honduras: The Cantarranas farmer-to-farmer extension programme*: IIED Gatekeeper series no.23 London.
- Byres, T.J. 1979. Of neo-populist pipe-dreams: Daedalus in the Third World and the myth of urban bias. *Journal of Peasant Studies* 6, (2): 210-44.
- Castellanos-Navarrete, A. and K. Jansen. 2013. *The drive for accumulation: Environmental contestation and agrarian support to Mexico's oil palm expansion*. The Hague: LPDI Working Paper 43, The Land Deal Politics Initiative/IDS/ISS.
- Connor, D.J. 2008. Organic agriculture cannot feed the world. *Field Crops Research* 106, (2): 187-90.
- Conway, G.R. 1985. Agroecosystem analysis. *Agricultural Administration* 20: 31-55.
- Cordoba, D. and K. Jansen. 2014. The return of the state: Neocollectivism, agrarian politics and images of technological progress in the MAS era in Bolivia. *Journal of Agrarian Change*, (early view: <http://dx.doi.org/10.1111/joac.12036>).
- De Ponti, T., B. Rijk and M.K. Van Ittersum. 2012. The crop yield gap between organic and conventional agriculture. *Agricultural Systems* 108: 1-9.
- Fischer, E.F. and P. Benson. 2006. *Broccoli and desire: Global connections and Maya struggles in postwar Guatemala*. Stanford: Stanford University Press.
- Friedmann, H. 2006. Focusing on agriculture: A comment on Henry Bernstein's 'Is there an agrarian question in the 21st century?'. *Canadian Journal of Development Studies* 27, (4): 461-65.
- Garnies, E. and M.-L. Navas. 2012. A trait-based approach to comparative functional plant ecology: Concepts, methods and applications for agroecology. A review. *Agronomy for Sustainable Development* 32, (2): 365-99.
- Giller, K.E., M.H. Beare, P. Lavelle, A.-M.N. Izac and M.J. Swift. 1997. Agricultural intensification, soil biodiversity and agroecosystem function. *Applied Soil Ecology* 6, (1): 3-16.
- Glover, D. 2010a. The corporate shaping of GM crops as a technology for the poor. *Journal of Peasant Studies* 37, (1): 67-90.
- Glover, D. 2010b. Is Bt cotton a pro-poor technology? A review and critique of the empirical record. *Journal of Agrarian Change* 10, (4): 482-509.
- Glover, D. 2010c. Exploring the resilience of Bt cotton's 'pro-poor success story'. *Development and Change* 41, (6): 955-81.

- Glover, D. and P. Newell. 2004. Business and biotechnology: Regulation and the politics of influence. In *Agribusiness and society: Corporate responses to environmentalism, market opportunities and public regulation*, eds Jansen, K and Vellema, S, 200-31. London: Zed.
- Goulding, K.W.T., A.J. Trewavas and K.E. Giller. 2009. Can organic farming feed the world? A contribution to the debate on the ability of organic farming systems to provide sustainable supplies of food. *Proceedings-International Fertiliser Society* 663: 1-27.
- Guthman, J. 2004. Room for manoeuvre? (In)organic agribusiness in California. In *Agribusiness and society: Corporate responses to environmentalism, market opportunities and public regulation*, eds Jansen, K and Vellema, S, 114-42. London: Zed.
- Harvey, D. 2003. *The new imperialism*. Oxford: Oxford University Press.
- Harvey, M. 2004. The appearance and disappearance of the GM tomato: Innovation strategy, market formation and the shaping of demand. In *Agribusiness and society: Corporate responses to environmentalism, market opportunities and public regulation*, eds Jansen, K and Vellema, S, 68-90. London: Zed.
- Hecht, S.B. 1987. The evolution of agroecological thought. In *Agroecology. The scientific basis of alternative agriculture*, ed. Altieri, M, 1-20. Boulder: Westview.
- Herring, R.J. 2007a. The genomics revolution and development studies: Science, poverty and politics. *Journal of Development Studies* 43, (1): 1-30.
- Herring, R.J. 2007b. Stealth seeds: Bioproperty, biosafety, biopolitics. *Journal of Development Studies* 43, (1): 130-57.
- Jansen, K. 1998. *Political ecology, mountain agriculture, and knowledge in Honduras*. Amsterdam: Thela Publishers.
- Jansen, K. 2000. Labour, livelihoods, and the quality of life in organic agriculture in Europe. *Biological Agriculture and Horticulture* 17, (3): 247-78.
- Jansen, K. 2003. Crisis discourses and technology regulation in a weak state: Responses to a pesticide disaster in Honduras. *Development and Change* 34, (1): 45-66.
- Jansen, K. 2004. Greening bananas and institutionalizing environmentalism: Self-regulation by fruit corporations. In *Agribusiness and society: Corporate responses to environmentalism, market opportunities and public regulation*, eds Jansen, K and Vellema, S, 145-75. London: Zed.
- Jansen, K. 2006. Banana wars and the multiplicity of conflicts in commodity chains. *European Review of Latin American and Caribbean Studies* 81: 97-113.
- Jansen, K. 2011. 'Generics' versus 'brands': Corporations, ownership of knowledge and justice claims in pesticide risk governance. Paper presented at the WASS Research Day 'Knowledge in Society: Contestation, Boundaries and Bridges', 1 November 2011.
- Jansen, K. and A. Gupta. 2009. Anticipating the future: 'Biotechnology for the poor' as unrealized promise? *Futures* 41, (7): 436-45.
- Jansen, K., C. Leeuwis, S. Mani, E. Roquas, M. Skutsch and G. Verschoor. 2004. Unpacking and re-packing knowledge in development. In *Globalization and development. Themes and concepts in current research*, eds Kalb, D, Pansters, W and Siebers, H, 163-90. Dordrecht: Kluwer.
- Kitching, G. 1989. *Development and underdevelopment in historical perspective. Populism, nationalism and industrialization*. revised ed. London: Routledge.
- Kloppenborg, J. 2010. Impeding dispossession, enabling repossession: Biological open source and the recovery of seed sovereignty. *Journal of Agrarian Change* 10, (3): 367-88.
- Lammerts Van Bueren, E.T., G. Backes, H. De Vriend and H. Østergård. 2010. The role of molecular markers and marker assisted selection in breeding for organic agriculture. *Euphytica* 175, (1): 51-64.
- Latorre, S. 2014. Resisting environmental dispossession in Ecuador: Whom does the political category of 'ancestral peoples of the mangrove ecosystem' include and aim to empower? *Journal of Agrarian Change*, (early view: <http://dx.doi.org/10.1111/joac.12052>).

- Levien, M. 2011. Special economic zones and accumulation by dispossession in India. *Journal of Agrarian Change* 11, (4): 454-83.
- Long, N. and J.D. Van Der Ploeg. 1989. Demythologizing planned intervention: An actor perspective. *Sociologia Ruralis* 29, (3/4): 226-49.
- Martínez-Torres, M.E. and P. Rosset. 2014. Diálogo de saberes in la Vía Campesina: Food sovereignty and agroecology. *Journal of Peasant Studies*, (early view: <http://dx.doi.org/10.1080/03066150.2013.872632>).
- Marx, K. 1887. *Capital: A critique of political economy, volume I*. Moscow: Progress Publishers.
- McMichael, P. 2006. Reframing development: Global peasant movements and the new agrarian question. *Canadian Journal of Development Studies* 27, (4): 471-83.
- McMichael, P. 2013a. Historicizing food sovereignty: A food regime perspective. Paper presented at the Conference on Food Sovereignty: A Critical Dialogue, Yale University, September 14-15, 2013.
- McMichael, P. 2013b. *Food regimes and agrarian questions*. Halifax: Fernwood Publishing.
- McMichael, P. 2014. Historicizing food sovereignty. *Journal of Peasant Studies*, (early view: <http://dxdoi.org/10.1080/03066150.2013.876999>).
- Novo, A., K. Jansen and M. Slingerland. forthcoming. The novelty of simple and known technologies and the rhythm of farmer-centred innovation in family dairy farming in Brazil. *International Journal of Agricultural Sustainability*, (pages and issue numbers awaiting issue release).
- Otero, G. ed. 2008. *Food for the few: Neoliberal globalism and biotechnology in Latin America*. Austin: University of Texas Press.
- Oya, C. 2013. The land rush and classic agrarian questions of capital and labour: A systematic scoping review of the socioeconomic impact of land grabs in Africa. *Third World Quarterly* 34, (9): 1532-57.
- Patel, R. 2009. Food sovereignty. *Journal of Peasant Studies* 36, (3): 663-706.
- Pelaez, V. and W. Schmidt. 2004. Social struggles and the regulation of transgenic crops in Brazil. In *Agribusiness and society: Corporate responses to environmentalism, market opportunities and public regulation*, eds Jansen, K and Vellema, S, 232-60. London: Zed.
- Polanyi, K. 1957. *The great transformation*. Boston: Beacon Press.
- Ríos-González, A., K. Jansen and H.J. Sánchez-Pérez. 2013. Pesticide risk perceptions and the differences between farmers and extensionists: Towards a knowledge-in-context model. *Environmental Research* 124: 43-53.
- Rosset, P. and M.E. Martínez-Torres. 2013. Rural social movements and diálogo de saberes: Territories, food sovereignty, and agroecology. Paper presented at the Conference on Food Sovereignty: A Critical Dialogue, Yale University, September 14-15, 2013.
- Scoones, I. 2008. Mobilizing against GM crops in India, South Africa and Brazil. *Journal of Peasant Studies* 8, (2/3): 315-44.
- Stadlinger, N., A.J. Mmochi, S. Dobo, E. Gyllbäck and L. Kumblad. 2011. Pesticide use among smallholder rice farmers in Tanzania. *Environment, Development and Sustainability* 13, (3): 641-56.
- Stone, G.D. 2007. Agricultural deskilling and the spread of genetically modified cotton in Warangal. *Current Anthropology* 48, (1): 67-103.
- Toledo, V.M. 1990. *The ecological rationality of peasant production*: M. Altieri & S. Hecht (eds.) *Agroecology and Small Farm Development*. CRC Press. Florida p.51-58.
- Toleubayev, K., K. Jansen and A. van Huis. 2010. Knowledge and agrarian de-collectivisation in Kazakhstan. *Journal of Peasant Studies* 37, (2): 353-77.
- Trusler, J. 1810 [1st edition 1799]. *Practical husbandry, or, the art of farming, with a certainty of gain; as practised by judicious farmers in this country. The result of experience and long observation*. London: Brockwell.

- van der Ploeg, J.D. 2013a. Peasant-driven agricultural growth and food sovereignty. Paper presented at the Conference on Food Sovereignty: A Critical Dialogue, Yale University, September 14-15, 2013.
- van der Ploeg, J.D. 2013b. *Peasants and the art of farming*. Halifax: Fernwood Publishing.
- van der Ploeg, J.D. 2014. Peasant-driven agricultural growth and food sovereignty. *Journal of Peasant Studies*.
- Veuthey, S. and J.-F. Gerber. 2012. Accumulation by dispossession in coastal Ecuador: Shrimp farming, local resistance and the gender structure of mobilizations. *Global Environmental Change* 22, (3): 611-22.
- Watts, M. 1983. "Good try, Mr. Paul": Populism and the politics of African land use. *African Studies Review* 26, (2): 73-83.
- Weis, T. 2010. The accelerating biophysical contradiction of industrial capitalist agriculture. *Journal of Agrarian Change* 10, (3): 315-41.
- Wood, E.M. 2000. The agrarian origins of capitalism. In *Hungry for profit. The agribusiness threat to farmers, food, and the environment*, eds Magdoff, F, Bellamy Foster, J and Buttel, FH, 23-41. New York: Monthly Review Press.
- Woodhouse, P. 2010. Beyond industrial agriculture? Some questions about farm size, productivity and sustainability. *Journal of Agrarian Change* 10, (3): 437-53.