

Participatory Budgeting and Vertical Agriculture: A Thought Experiment in Food System Reform

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Abstract While researchers have identified numerous problems with food systems, sustainable, just, and workable solutions remain scarce. Recent developments in the food justice literature, however, show which local food movements favor sustainability and justice as problem-solving measures. Yet, some of the ways that these approaches could work in concert are overlooked. Through focusing on how they are compatible, we can understand how such endeavors can improve the conditions for community control and reduce the detrimental effects of agribusiness. In this paper, the author proposes a participatory budgeting project that involves a relatively new process called “vertical agriculture” to alleviate some of the harm that current agricultural practices cause. In turn, we see how such a measure can improve the integrity of municipal governance and reshape the power structures that control food systems.

Keywords Participatory budgeting · Vertical agriculture · Food system reform

Introduction

From unjust farm policy to the perils of biotech corn, researchers have identified several problems with food systems.¹ As part of a solution to several such problems, recent discussions zero in on food sovereignty, a concept wherein communities have autonomy over the food systems affecting them, holding that local food movements mitigate harm (Navin 2014). Recent advancements in the literature classify these

¹ For a broad survey of such issues, see: Dieterle (2015) *Just food: philosophy, justice and food*. Lanham, Maryland: Rowman & Littlefield International.

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approaches as individual-focused (IF), systems-focused (SF), and community-focused (CF) sub-movements (Werkheiser and Noll 2014). Despite some issues, Werkheiser and Noll (2014) argue that CFs fare better for transforming food systems. They point out that CFs can work with SFs, but explaining the intricate nature of such compatibilities falls beyond the scope of their research project.

To illustrate how they can work together, I examine different conceptions of food sovereignty, revealing which ones are congruent with municipalities. After illustrating the points above, I show how coupling urban vertical farming with participatory budgeting projects improves the integrity of municipal government by including community members in the control of food-system infrastructure. I conclude this thought experiment by outlining some of the steps required for turning this idea into a project for community groups that are looking for ways to increase the control of their food supply.

Characterizing Sub-movements

Werkheiser and Noll (*ibid.*) categorize IFs as positions that rely on each person's lifestyle choices; the goal is for the well being of the individual. Such actions include a person shopping at local farmers' markets and purchasing locally grown produce, wherein the person contributes to the economic viability of their community. In turn, she or he gains a sense of civic responsibility. Striving to be environmentally considerate, individuals reduce the number of miles that some of their food must travel, based on the assumption that such actions matter in the grand scheme of ecosystem health. Mainstream works such as Pollen (2008) *A Defense of food: An eater's manifesto* serve as an exemplar of this sub-movement, holding that the long-term impacts of such choices will have profound effects (Werkheiser and Noll 2014).

While IF approaches have an ethical dimension, showing how the person can become a moral consumer, this position garners criticisms about its feasibility. For instance, one could argue that it is doubtful that relying on individuals' lifestyle changes to improve food systems through shopping habits can bring the wide-scale change that is required to improve the effects of industrial agriculture (Werkheiser and Noll 2014). In terms of relying on locally grown produce to reduce unwanted ecological impacts, critics of food miles such as Justin McWilliams (2009) exhibit how such calculations fail to consider energy concerns that determine efficiency. For example, he cites several instances showing that it is environmentally sound for certain cities to import certain crops rather than locally growing them.

Calling for greater certainty than IFs can provide, systems-focused (SF) sub-movements suggest that agricultural issues are too deep-seated for IF solutions, requiring policy decisions to combat the harmful effects of agribusiness and food security (Werkheiser and Noll 2014). While IFs urge individuals to support farmers' markets, SFs endorse policies and organizations that can restructure food systems so that sustainable, just institutions become the rule, not the exception (*ibid.*). Even though the ambitions of SFs seem as if they could change food systems due to their

enforceable policies and laws, they do not consider the larger globalized condition of food production.

For instance, it is rather naïve to think that municipal ordinances can defeat the lobbying powers of multinational agricultural conglomerates. This outlook does not dismiss the possible power of gradual changes to food policies, but it does acknowledge their limitations. This notion suggests that people lack a significant voice in determining the conditions of food and farm policy in the US, and such conditions entail far-reaching social and ecological harm. For instance, Guthman (2011), in *Weighing in: obesity, food justice, and the limits of capitalism*, argues that such measures deserve consideration because they have extensive effects for public health. When considering how food production affects ecosystems, Tilman et al. (2002) illustrates the extensive impacts of agribusiness, harming terrestrial and aquatic ecosystems.

Considering the factors above, Werkheiser and Noll (2014) champion CFs because they shift the food-system conversation away from aspects such as food security and towards food sovereignty. To reiterate, it is a concept wherein communities have autonomy over their food system, bearing in mind that having a voice in the direction of food systems can alleviate some of the harm that they cause. (Navin 2014; Grey and Patel 2015). While IFs and SFs view people and food as separate, CFs emphasize interconnections between them (Werkheiser and Noll 2014). Through gaining some control over food production, CFs advance beyond IFs and SFs. One way to put it is that they provide the possibility for community members to modify dimensions of food production, distribution, and consumption.

Consider, for example, if a community wanted to increase access to organic fruits and vegetables, they could implement the necessary measures, assuming that such actions were feasible. Viewed in this manner, one could argue that CFs might reduce the need for other sub-movements. That is to say, if people could determine several elements of agribusiness, then local food movements would not call for SFs to overhaul food systems. IFs would not have to ‘vote with their wallets’ if everyday purchases did not include the harms associated with agribusiness.

Due to such considerations, Werkheiser and Noll (2014) argue that through including the notion of food sovereignty into the framework of CFs, the sub-movement advances because they are inclined to favor sustainability and justice. Compared to other approaches, the community’s ability to influence the conditions of their food system’s operations set them apart from IFs and SFs, counting as headway for the global food movement. On the surface, all appears well with this approach, but Werkheiser and Noll only consider one conception of food sovereignty. Without an unpacked account of the term’s entailments, we must assume that it has a universal definition.

For a general interpretation, this situation is not a problem, but the term has progressed into several specialized versions. Having different kinds of food sovereignty suggests that each conception’s degree of compatibility for working with SFs could differ. For resident groups, some approaches could be more compatible than other measures, bearing in mind that communities differ. To account for such conditions, I examine several descriptions of food sovereignty in

the following section. Having a clear understanding of how these interpretations differ illustrates how such conceptions can or cannot be compatible with SFs.

The Historical Context of Food Sovereignty

At present, food sovereignty is a contentious topic within studies of food justice, and researchers cannot agree on the term's meaning (Andree et al. 2014; Werkheiser et al. 2015). Although having a shared referent provides common ground for researchers, Lucy Jarosz (2014) argues that a universal conception is problematic, considering that each movement has unique circumstances. In turn, pinpointing a rigid definition remains ill fated. This point has a relativistic ring; holding that all such cases follow a basic pattern sounds sensible. This reasonableness is evident when examining the term's origins.

For instance, as a specific term, "food sovereignty" entered the academic lexicon following its origins in the food activist movement, *La Via Campesina* (*La Via Campesina* 1996). As Michael Menser (2014) notes, this movement was a direct response to the United Nation's Food and Agriculture Organization's food security framework, a failed effort to protect small-scale farmers from international trade policies. As Philip McMichael (2014, 348) puts it, the term was "born of our crises," referring to these peasant farming movements that were protesting harmful political and economic forces, the effects of neoliberal policy on food systems. In addition to this concern, Menser (2014) argues that the limits of food sovereignty do not end with farmers and food, but they also involve subjects such as labor, human rights, gender equality, sustainability, and participatory democracy. The initial declaration of food sovereignty exhibits the complexity of the topic, covering the above issues along with other subjects.

For example, the Declaration of Nyéléni from the first global conference on food sovereignty, (2007) delineates the term:

Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers and users. Food sovereignty prioritises local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal-fishing, pastoralist-led grazing, and food production, distribution and consumption based on environmental, social and economic sustainability.

Aspects of this account remain embedded in descriptions of food sovereignty (Grey and Patel 2015). Yet, this declaration includes numerous social justice issues that fall outside of any immediate agricultural parameters, bringing grand scale

injustices into view, holding: “[that] food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes and generations (Declaration of Nyéléni 2007).” Through connecting agriculture with these deep-seated institutional problems, we enhance our view of the challenges that the original food sovereignty movement struggles to overcome.

Arguing against this view, critics such as Cornelia Flora (2011) maintain that food cannot serve as the basis for a great number of concerns, despite its connections to several issues. Similarly, Bernstein (2014) and Whyte (forthcoming) draw attention to the idea that communities striving for food sovereignty might not be able to achieve such goals, spotlighting the unfeasibility of grand undertakings. Largely, their points convince us because changing the institutional structure of the globalized world sounds far-fetched, especially if grassroots organizations are to accomplish such feats by themselves. By default, then, altering individual dimensions of agricultural production seems achievable as a means to alleviate harms from current practices.

Considering the full force of the lobbying power of multinational conglomerates, one could argue that food system reform must incrementally advance, alleviating some of agribusiness’ concomitant harms over time. Addressing all of the subjects in the Declaration of Nyéléni is unfeasible—if the proposed means requires an all-or-nothing attitude. Yet, approaching reform through piecemeal measures has benefits that could happen while working toward long-term reform efforts.

For instance, supporting individualized solutions for a multifaceted problem means that if certain measures fail and other approaches succeed, a degree of achievement remains. Researchers can study effective cases to duplicate them, if possible. When communities reshape agricultural policies and practices, giant agribusiness loses control of a small portion of the global food system. For other communities that follow suite, increasing their authority means taking power away from the institutions that inflict social harm. In turn, securing the conditions for local control reduces the harms outlined in the Declaration of Nyéléni, advancing the goals of the food sovereignty movement.

Despite such an optimistic tone, this notion is riddled with challenges. Echoing Jarosz (2014), each local food system has unique circumstances, and food activists require approaches that can alleviate specific harms associated with individual food systems. This notion suggests that communities must identify ways to gain sovereignty over their local food system. To account for such varied conditions, identifying different kinds of CFs remains paramount. A “one-size-fits-all” CF cannot address different political, religious, and cultural elements, along with (sometimes conflicting) state regulations and or funding sources. As stated earlier, food sovereignty remains a contested term, suggesting that we must address this notion to discover how such conceptions affect the possible structures of CFs, including social provisions. In the next section, I illustrate how certain advancements within the food sovereignty literature provide a way to zero-in on these different emerging movements. The goal is to identify specific conceptions of food sovereignty that will contribute to the formation of a CF that is compatible with municipalities (SFs) to facilitate food system reform. Through developing this

foundational structure, community groups and city government leaders can build on it, establishing heuristic measures that guide food-sovereignty efforts.

Kinds of Food Sovereignty Movements

Based on states' dispositions, Menser (2014) points out two different kinds of food sovereignty, state-sponsored and indigenous. To characterize the former, he holds that Cuba (after the peak oil crisis) provides a defining model (Menser 2014). Through turning several aspects of agricultural control over to local farmers, the Cuban government sponsored the people's food sovereignty, and we can argue that the state became the farmers' agricultural allies. In terms of indigenous food sovereignty, we find opposite actions from states. In such cases, states are antagonistic to local farmers and peasant movements, wherein indigenous groups must struggle to overcome states' policies and practices that impede their ability to determine and secure food sources (*ibid.*).

While most indigenous food sovereignty movements often include groups in Latin America and Asia, other cases include native tribes in the global North. For example, the struggle of the Karuk people of the northwestern United States aligns with Menser's account of indigenous food sovereignty, highlighting how their food issues range from dubious land appropriations to infrastructure's impact on salmon fishing (Werkheiser 2014). Along with health concerns that are directly related to food security, indigenous groups have cultural practices that are associated with their food systems, and state policies frequently impose on such customs, counting as acts of environmental injustice (Figueroa 2006; Whyte 2015).

In addition to state-sponsored and indigenous food sovereignty, other ways of categorizing food sovereignty movements reveal different dimensions of their character. For instance, Werkheiser et al. (2015) argues that we can classify food sovereignty in two different ways, radical and participatory. In contrast with state-sponsored or indigenous, radical does not solely focus on relationships with the state. Instead, this category accounts for the scope of change that people engaged in this approach aim to achieve. Radical describes the *La Via Campesina* movement above. Sticking with a strict conception of "radical," this category calls for a comprehensive overhaul of the systematic social structures that affect food systems. Bearing in mind that this group began with small farms and indigenous peoples who were fighting against larger, overarching political structures, the label fits.

While it is possible for state-sponsored radical food sovereignty movements to exist, one could argue that such an event is highly unlikely. It would require the state to dismantle and reassemble itself (with the help of the people), considering that the human-rights issues tied to food sovereignty stem from the institutional structure of political society. If such an event were to happen, one could speculate that it must incrementally advance to preserve social order and prevent additional injustices. Yet, one problem is that we do not question what we mean when saying that a radical event happens. "Happens," in this context, remains vague. Introducing this idea suggests that we must examine the notion of time in regards to our

conception of what counts as radical because it adds another dimension to how we conceive of the term.

For instance, altering the institutional structure of society in an incremental fashion still counts as “radical,” due to the degree of change that would occur to its foundation, but it would happen over time. Achieving food sovereignty, then, would not seem “radical” because it does not attack the problem at its foundation in a single instance or series of closely connected events. Such complete changes could take several years, perhaps decades. Consider, for example, if we were to eliminate one policy that dealt with seed regulations, per the concerted efforts of policymakers and community members. Doing away with one statute hardly counts as a radical shift. Conceptually, such measures cannot achieve a comprehensive overhaul. However, if such an action were part of a larger agricultural reform process that took several years, the label “radical” might sound appropriate.

On the surface, calling for radical, gradual change to food systems sounds contradictory. Yet, radically changing society without “revolution in the streets” suggests an incremental approach wherein government leaders and the polis overhaul the government together, over time, partly due to the nature of cooperation. A progressive approach to food sovereignty could deal with individual issues within the Declaration of Nyéléni on a case-by-case basis as they relate to food production, trade, and consumption.² Being mindful of the challenging nature of applying the term “radical,” a different kind of food sovereignty could be more effective for building a CF. I argue that participatory food sovereignty fits the bill.

To illustrate the entailments of participatory food sovereignty, Werkheiser et al. (2015) cites a case in Nicaragua wherein activists, NGOs, and government officials worked together on legislation that would protect and promote the use of traditional seeds, limit food imports, ban genetically modified foods, and land reform. The central element in this approach is that people participate in the decisions that determine their food security. Because participatory food sovereignty measures work with the dominant social framework, they are unlike most efforts in the radical food sovereignty movement that oppose the status quo.

With participatory food sovereignty, pinpointing immediate problems and proposing solutions are feasible goals because the people who are harmed are involved in finding a solution, offering a first-hand account of a solution’s possible impacts. However, one could argue that working within dominant social institutions means that residents and reformists could inadvertently support the neoliberal policies and forces that they are working to overcome (Schanbacher 2010). Such views, however, neglect to consider participatory food sovereignty’s possible long-term effects that could disrupt such policies’ effectiveness and how such policies would no longer disproportionately benefit agricultural conglomerates.

For example, a CF employing a participatory food sovereignty measure that produces food could take away from the bottom line of agribusiness, weakening its

² In addition to the notion of time within radical sovereignty, the possibility exists that a complete overhaul is unnecessary or impossible. For instance, there could be parts of the system that work exceptionally well, and removing them might hinder people’s wellbeing. For instance, the structure of a municipal democracy could facilitate justice and human flourishing. Yet, under a system of radical reform, replacing it with an untested political device might not be in the best interest of residents.

stranglehold on food systems. In turn, the CF could determine some of the conditions of its members' food security, such as supportive policies. One could counter this claim, arguing that the economic impacts would be minimal. Yet, if such an approach became the norm, it could have a significant effect, considering that numerous cities could adopt similar measures. In this manner, participatory food sovereignty movements could weaken the global food system that indigenous (radical) food sovereignty movements are fighting. To achieve such ends, in the following section, I examine the idea of employing "participatory budgeting" (PB) to fund a vertical agriculture project that would count as a humble step towards mitigating some of the harm that the giant agribusiness cause. Community leaders that are faced with the task of making budgetary decisions that are consistent with just, sustainable solutions to food systems should take a close look at the operational structure of PB, along with its success, to determine if it is a good fit for them.

The Promise of Participatory Budgeting

As an alternative form of governance, Participatory budgeting (PB) involves city council members redistributing discretionary funds to community groups for public projects that they approve through a democratic process (Menser 2012). Since 2009, the Participatory Budgeting Project (2015) has brought together 84 elected representatives with over 100,00 people in the US, engaging in 440 projects. These projects account for over 45 million dollars. Community members decide and vote on the kind of projects that they desire, and their elected representatives provide funding and resources. Some successful PB projects include bike lanes, meals-on-wheels programs, new streetlights, playgrounds, technology in libraries, and community gardens. Considering the latter, the city of Vallejo, California, has funded several community gardens through PB, and they will continue with such projects to meet the increasing demand (City of Vallejo 2013).

At present, PB-sponsored community gardens such as the ones found in Vallejo are the most prevalent form of CFs that includes participatory food sovereignty in their compositions. While not all community gardens have the same effects for neighborhoods or have equal degrees of autonomy, through deciding which vegetables and fruits to grow and by directing the growing process, community gardens provide residents with the means to self-determine some of the conditions of their food supply. In addition to such measures, community gardens offer several advantages for urban centers, from reducing crime rates to increasing property values (Voicu and Been 2008). For food security issues, they can alleviate some of the harm that food systems cause, increasing residents' access to fresh fruits and vegetables (Grewal and Grewal 2012). During the last few decades, the presence of community gardens has dramatically increased. New York City, for example, now has over 1500 community gardens, as well as several other cities (Mitchella et al. 2014).

Despite such positive aspects, urban farming has several drawbacks. Community gardens, for instance, have yield and seasonal constraints, due to topographical conditions (Despommier 2009). Insects and viruses can cause trouble for farmers

(Despommier 2013). Aside from pests, several of the soils available are not fit for agriculture. For example, recent studies revealed that several community gardens tested in New York City exceed the State's safe levels for lead contamination (Mitchella et al.). Community gardens also face financial and political impediments (Drake and Lawson 2015; Cabannes 2012).

Overcoming such obstacles requires that we rethink our approach to food production in cities, finding solutions that account for the plethora of environmental, economic, social, and political conditions mentioned above. One could hold that any such solution would require an interdisciplinary approach to engineering and architecture, along with an economically feasible and politically savvy plan that lets residents work with municipal leaders. In the next section, I argue that using PB to develop vertical agriculture provides one possible way forward for communities to increase the quality and quantity of their food supply. While other means are available through the IF and SF measures as described above, the technology behind vertical agriculture suggests that if community groups pursue such undertakings, they have a direct way to gain a greater degree of control over their food system.

Participatory Budgeting and Vertical Agriculture: The Way Forward

If community groups are concerned about vertical agriculture's productivity, some of the emerging designs in vertical agriculture suggest that they can increase yields that far exceed community gardens. Jack Ng, for instance, exhibits how each of his twenty-two vertical towers produces 5 times amount of vegetables that one could harvest on the same amount of land, while consuming only one kilowatt of electricity per hour. (Sky Greens 2015). Although one could argue that his operation, Sky Greens, represents the latest in eco-architecture, vertical farming remains in its infancy (Sky Greens 2015). Assumingly, engineers and architects could develop more efficient, less expensive models. What is more, in addition to overcoming pests, weather, and bad soil, through advancing to a climate-controlled environment, future designs could include protein sources such as tilapia, poultry, and eggs.

While such plans show how to produce more food with less materials and resources, technology does not eliminate the social harms specified in the Declaration of Nyéléni. By backing inventive designs with innovative forms of participatory control, however, we avoid much of the harm found in current agricultural practices. Through coupling advanced eco-architecture with participatory governance, residents take power away from giant agribusiness because they reduce their dependence on those entities for their food security. While these actions might sound like lofty ambitions, such a transformative project could demonstrate how communities can reshape several dimensions of food systems. In the next section, I outline some suggestive steps that community groups could take to turn this thought experiment into reality.

Toward a Transformative Participatory Budgeting Project

Due to the logistics of such a project, one could argue that developing a comprehensive plan would be a daunting task, while managing its operations might be a continuous burden. This criticism is fair, but it does not diminish the possibility that such a project could be a worthwhile undertaking—if it advances food-system reform efforts. To achieve success in this regard, a primary challenge for constructing a vertical agricultural structure using participatory measures requires work from engineers and architects, along with municipal workers and residents. For the community that desires to pursue this goal, securing funding is essential.

As a non-profit organization, the Participatory Budgeting Project (PBP) provides free guidance to communities that want to implement PB into municipal governments (PBP 2015). To initiate the above project, the PBP could facilitate the process (or residents could examine the PB process in a effort to duplicate its success). Working in concert, PBP and stakeholders could develop a plan of action, including a budget, and meet with municipal leaders to determine how to proceed with hiring engineers and architects who will work with residents and municipalities.

One problem that could arise is that engineers or other professionals might not be accustomed to working with resident groups who want to be included in the decision-making process. Consider, for instance, that it is customary for engineers to only consult with stakeholders after they make major decisions (Mostashari 2005). This point highlights a historic tension between community members and practitioners in the history of engineering and planning when it comes to top-down approaches. Although such traditions have held steady as the norm, their constancy alone cannot justify their place within engineering and planning practice.

Alternatively, PB supports the community's aims through its inherent quality of inclusiveness. Achieving such ends means that specialists (engineers, architects, city officials, etc.) must effectively communicate with residents, keeping their interests firmly in view. If they neglect to include community members' into the decision-making process, then they are working against the notion of food sovereignty.

To reduce the likelihood of such events, a philosopher could consult with all relevant parties to determine a proper, just course of action. For example, the philosopher could suggest that restorative, distributive, or environmental justice paradigms could serve as a guide to ensure that all views remain respected. Together, these parties would form a “trans-disciplinary team,” demonstrating how philosophically grounded initiatives that include engineering, architecture, and environmental science can work with the public sector to reform food systems, making them more sustainable and just.

Conclusion

If the project described above were a success, it would show how to alleviate some of the social, economic, and ecological harms that current agribusinesses cause, as outlined in the Declaration of Nyéléni. What is more, it would also increase

transparency in municipal government because residents see how some of their public funds are distributed in a fashion that is conducive to self-determined human flourishing. These points should hold prominence because they elucidate the relationship between agriculture, sustainability, and the quality of democracy. Yet, this connection also hints that food-system issues are not isolated problems, but they are symptomatic of a much more extensive underlying social affair.

For instance, Burkhardt (1988) argues that the agricultural crisis remains part of a much larger socio-political crisis, one wherein people do not readily have the ability to change the political or economic systems that determine the quality of their lives. Considering this notion as it applies to other areas of concern for topics such as human rights and wellbeing, there are (at least) two ways to think about the issues stemming from this crisis. The first is to see them as inevitable situations emerging from unjust or ill-conceived social frameworks. Volumes of scholarship from Karl Marx to Enrique Dussel have wrestled with this option.³ The second choice, to approach such issues on a case-by-case basis, is relatively less explored. Bearing in mind that human beings often endure hardships and suffering due to such conditions, perhaps it is time to consider this option, examining concerns such as energy, transportation, and housing.

In the same manner wherein vertical-agricultural projects (backed by participatory budgeting) could support incremental food-system reform, separately addressing the topics above provides a manageable way to make them more just and sustainable. Working on several of the areas that affect human wellbeing suggests that we could eventually overhaul the social systems that influence quality-of-life issues, one project at a time. Such enterprises mean taking philosophy in dangerous directions, considering that doing so challenges that status quo. By good fortune, the history of the discipline shows what to expect.

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References

- Andree, P., Ayers, J., Bosia, M., & Massicotte, M. (2014). Food sovereignty and globalization: Lines of inquiry. In P. Andree, J. Ayres, M. Bosia, & M. Massicotte (Eds.), *Globalization and food sovereignty: Global and local change in new politics of food*. Toronto: University of Toronto Press.
- Bernstein, H. (2014). Food sovereignty via the 'peasant way': A sceptical view. *Journal of Peasant Studies*, 41, 1031–1063.
- Burkhardt, J. (1988). Crisis, argument, and agriculture. *Journal of Agricultural and Environmental Ethics*, 1, 123–138.
- Cabannes, Y. (2012). Financing urban agriculture. *Environment and Urbanization*, 24(2), 665–683.
- City of Vallejo. (2013). Community gardens. http://www.ci.vallejo.ca.us/city_hall/departments___divisions/city_manager/participatory_budgeting/cycle_1_projects/community_gardens/. Accessed 4 Feb 2016.
- Despommier, D. (2009). The rise of vertical farms. *Scientific American*, 301(5), 80–87.

³ See Karl Marx, *Karl Marx: A Reader* (ed.) Jon Elster, (Cambridge: Cambridge University Press, 1986). Enrique Dussel, *Philosophy of Liberation*, (trans.) Aquilina Martinez and Christine Morkovsky (Maryknoll, NY: Orbis Books, 1985).

- Despommier, D. (2013). Farming up the city: The rise of urban vertical farms. *Trends in Biotechnology*, 31(7), 388–389.
- Drake, J., & Lawson, L. (2015). Results of a US and Canada community garden survey: Shared challenges in garden management amid diverse geographical and organizational contexts. *Agriculture and Human Values*, 32(2), 241–254.
- Figueroa, R. (2006). Evaluating environmental justice claims. In J. Bauer (Ed.), *Forging environmentalism: Justice, livelihood, and contested environments* (pp. 360–376). New York: M.E. Sharpe.
- Flora, C. (2011). Review: Schanbacher, William D.: The politics of food: The global conflict between food security and food sovereignty. *Journal of Agriculture and Environment Ethics*, 24, 545–547.
- Grewal, S., & Grewal, P. (2012). Can cities become self-reliant in food? *Cities*, 29(1), 1–11.
- Grey, S., & Patel, R. (2015). Food sovereignty as decolonization: Some contributions from indigenous movements to food system and development politics. *Agriculture and Human Values*, 32, 431–444.
- Guthman, J. (2011). *Weighing in: Obesity, food justice, and the limits of capitalism*. Oakland, CA: University of California Press.
- Jarosz, L. (2014). Comparing food security and food sovereignty discourses. *Dialogues in Human Geography*, 4(2), 168–181.
- McMichael, P. (2014) Conclusion: The food sovereignty lens. In P. Andree, J. Ayres, M. Bosia & M. Mássicotte (Eds.), *Globalization and food sovereignty: Global and local change in the new politics of food* (Vol. 42). Toronto: University of Toronto Press.
- McWilliams, J. (2009). *Just food: Where locavores get it wrong and how we can truly eat responsibly*. New York: Little, Brown and Company.
- Menser, M. (2012). *The participatory metropolis, or resilience requires democracy*. Center for Humans and Nature. <http://www.humansandnature.org/democracy>. Accessed 29 May 2015.
- Menser, M. (2014). The territory of self-determination: Social reproduction, agroecology, and the role of the state. In P. Andree, J. Ayres, M. Bosia, & M. Massicotte (Eds.), *Globalization and food sovereignty: Global and local change in new politics of food*. Toronto: University of Toronto Press.
- Mitchella, R., Spliethoffa, H., Ribaudoa, L., Loppb, D., Shaylerc, H., Marquez-Bravoa, L., et al. (2014). Lead (Pb) and other metals in New York City community garden soils: Factors influencing contaminant distributions. *Environmental Pollution*, 187, 162–169.
- Mostashari, A. (2005). *Stakeholder-assisted modeling and policy design for engineering systems* (Doctoral dissertation, Massachusetts Institute of Technology).
- Navin, M. (2014). Local food and international ethics. *Journal of Agricultural and Environmental Ethics*, 27, 349–368.
- Participatory Budgeting Project. (2015). Our impact. <http://www.participatorybudgeting.org>. Accessed 14 Feb 2015.
- Pollen, M. (2008). *A defense of food: An eater's manifesto*. New York: Penguin Press.
- Sky Greens. (2015). Technology. <http://www.skygreens.com>. Accessed 8 Feb 2015.
- Schanbacher, W. (2010). *The politics of food: The global conflict between food security and food sovereignty*. Santa Barbara: Praeger.
- Tilman, D., Cassman, K. G., Matson, P. A., Naylor, R., & Polasky, S. (2002). Agricultural sustainability and intensive production practices. *Nature*, 418(6898), 671–677.
- Via Campesina (2007). (27 February 2007), Declaration of Nyéléni, Sélingué, Mali. <https://nyeleni.org/spip.php?article290>. Accessed 14 Feb 2016.
- Voicu, I., & Been, V. (2008). The effect of community gardens on neighboring property values. *Real Estate Economics*, 36(2), 241–283.
- Werkheiser, I. (2014). Food sovereignty, health sovereignty, and self-organised community viability. *Interdisciplinary Environmental Review*, 15(2/3), 134–146.
- Werkheiser, I., & Noll, S. (2014). From food justice to a tool of the status quo: Three sub-movements within local food. *Journal of Agricultural and Environmental Ethics*, 27, 201–210.
- Werkheiser, I., Tyler, S., & Thompson, P. (2015). Food sovereignty: Two conceptions of food justice. In J. Dieterle (Ed.), *Just food: Philosophy, justice and food*. Lanham, MD: Rowman & Littlefield International.
- Whyte, K. (2015). Indigenous food systems, environmental justice, and settler-industrial states. In M. Rawlinson & C. Ward (Eds.), *Global food, global justice: Essays on eating under globalization*. Newcastle upon Tyne: Cambridge Scholars Press.
- Whyte, K. (forthcoming). Renewing relatives: Indigenous food sovereignty and settler colonialism. In M. Rawlinson & C. Ward (Eds.), *The Routledge Handbook of Food Ethics* (pp. 354–365). New York: Routledge.