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Footprint technopolitics

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ABSTRACT

Over the past several years, the footprinting of food and other goods has become the basis for both corporate and government initiatives aimed at promoting sustainability. Footprinting refers to the use of methods drawn from life cycle assessment (LCA) to collect, analyze and report information about products' cradle-to-grave (or farm-to-landfill) environmental impacts. Initially focused on products' greenhouse gas emissions, most footprinting initiatives now address multiple environmental concerns. Why is this happening, and with what consequences? This paper takes up these questions. I draw on the notion of technopolitics to show how the footprint serves as a tool for achieving certain political ends, discursive as well as material. More precisely, corporate food retailers and manufacturers look to the footprint both to govern supply chains and to legitimate and realize certain ideas of sustainable food. To illustrate its historical and strategic significance, I compare the footprinting of food to governance by other better-known technologies, namely standards and nutritional labels. I also show why its outcomes, like those of many technopolitical projects, are not predetermined.

Introduction

What counts as sustainable food? In October 2012, this question drew more than 400 people to the Eighth International Conference on Life Cycle Assessment in the Agri-Food Sector, held in the seaside town of Saint Malo, France. In some ways their discussions differed little from what one typically hears and reads in the many forums devoted to sustainable food. Keynote presenters talked about the 10 billion people who would need to be fed—and better fed—by 2050, the rising demand for livestock products and biofuels, and the food system's impacts on global warming, water pollution, land degradation, and biodiversity loss. Attendees spoke of the need to understand "true costs" from a "big picture" perspective.

Yet two aspects of this conference made it distinctive. First, it aimed to determine not just *what* counts as sustainable but also *how* to make this a countable attribute of food. This preoccupation reflects the larger mandate of life cycle assessment (LCA), a modeling technique that quantifies products' multiple impacts on environmental and human wellbeing throughout their material "lives." More colloquially, it generates numbers representing products' cradle-to-grave (or farm-to-landfill) "footprints." LCA is not new, but in recent years both corporate and government interest in the field has skyrocketed (Fava et al., 2009; Freidberg, 2013). And although it originally focused on manufactured goods, today the subfield of agri-food LCA is booming (PRé International, 2014). As the Saint Malo conference organizers boasted, attendance had jumped by more than 60% over two years. While many participants came from academia or consulting, other represented big-name companies such as Unilever, Nestle, Kraft, PepsiCo, and Tesco.

Second, while the conference program sparked plenty of debate, it largely avoided the usual polarizing questions about the sustainability of, say, large versus small-scale food production, high-input farming versus agroecology, or global versus local markets. Instead attendees sparred over methods. In paper sessions and over long French meals, they talked about which life cycle models and data would produce better knowledge about the environmental impacts of different foods, thereby enabling better-informed decisions on the part of companies, policymakers and consumers. Adding urgency to otherwise arcane discussions were the many recent initiatives to quantify these impacts, in both the private and public sector. This article discusses some of them. But its larger purpose is to ask why participating companies and government bodies even want to know about the footprint of different foods, and what they hope to do with this information.

To be clear: I am using "footprint" mostly in a colloquial sense, to describe food's many environmental impacts from production through disposal. Clay's (2011) call to "freeze the footprint of food" captures this sense of the term. I use "footprinting," similarly, to describe assorted practices of quantifying these life cycle impacts, drawing at least loosely on LCA methods. At times I refer to more specific, standardized indicators, such as a product's carbon, water or ecological footprint (Ridoutt and Pfister, 2013).

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LCA practitioners might object to my broad use of a term to which they attach specific meanings and methods. One objective here, however, is to highlight precisely this difference between colloquial references to a product's footprint—implying its total environmental burden—and the type of knowledge LCA can actually generate. Although the technique is defined by its "science-based" assessment of complete product life cycles (ISO, 2006), its models necessarily make assumptions about the many actors, places and relationships involved in any product's life. Its completeness is also confined to the countable. In other words, LCA assesses measurable material and energy flows, not the power relations, policies and commercial imperatives driving those flows. Its models thus implicitly locate responsibility for environmental burden in the life cycle stages that account for the most sustained and intensive biophysical activity—which for food often means on-farm production—and not in, say, supermarkets or the design and marketing departments of branded manufacturers (Mogensen et al., 2011; Weber and Matthews, 2008). While such findings can indeed be useful, they are hardly neutral.

This paper starts from the premise that the footprinting of food in the name of sustainability amounts to a form of *technopolitics*. This term describes the use of technology and technical expertise to pursue political goals, broadly understood. While most scholarship on technopolitics centers on states and their experts, whether in the national or imperial context (Hecht, 2011; Mitchell, 2002), here I examine how corporations, alongside and sometimes in cooperation with states, also engage in technopolitical projects. I focus on the "big brands" in food production and retailing (Dauvergne and Lister, 2012), though their strategies are not entirely unique. I argue that such companies look to life cycle metrics to govern supply chains, to legitimate that governance, and to advance an understanding of "sustainable food" that suits their own bottom-line interests. As this article discusses, LCA is not the only tool put to these purposes. But its quantitative, "science-based" and seemingly comprehensive perspective makes it an especially appealing one.

This appeal owes little to LCA's track record. Intended to guide decisions about how goods are designed, produced and consumed, it is notorious for its complexity and inconclusive results. Applied to food, LCA's aspatial models cannot easily capture agriculture's diverse and variable ecologies. Used for marketing, its findings have drawn charges of "greenwash." These shortcomings provide all the more reason to consider the footprinting of food as a form of technopolitics, the history of which is littered with technical failures. Tools, plans and bodies of expertise that do not achieve stated goals can still produce "new forms of power and agency," new subjectivities, and new scales for exercising them (Edwards and Hecht, 2010, p.619; Sneddon and Fox, 2011). They can make old problems newly amenable to technical interventions, though they may also turn those interventions into new sources of political controversy (Vernon, 2005; Barry, 2012). In this paper I consider what the footprinting of food might produce *besides* numbers representing its farm-to-landfill environmental impacts.

My language is necessarily tentative. While much research on technopolitics looks to the past, the footprinting initiatives examined here are current, even preliminary, and in some cases less than transparent. Their implications for the governance of food supply chains hinge partly on the aforementioned debates about method. But equally unresolved are questions about where responsibility for this governance should lie, and what role product disclosures should play. This paper thus draws on ongoing research, which has so far entailed more than 60 in-depth interviews with LCA practitioners, sustainability managers for large corporate food manufacturers and retailers, NGO representatives, and policymakers; attendance at several international conferences devoted to LCA and/or sustainable food, and an ongoing reading of the related journal literature and online forums.

The next section situates the paper's argument in the existing literature on LCA and alternative approaches to corporate supply chain governance, namely standards. I then examine how and why corporate food retailers and manufacturers in particular have taken such an interest in their products' farm-to-landfill lives. After reviewing some of the many recent initiatives to measure and disclose food's footprint, I examine the central differences between governance by quantitative metrics versus standards and certifications. Lastly I draw parallels between the environmental metrics employed in LCA and the more familiar nutritional numbers found on labels. These comparisons advance two linked arguments: first, LCA's power as a technique of governance owes to not just the quantitative, "science-based" nature of the information it generates, but also its discursive claims to comprehensiveness. And second, the exercise and potential material effects of this power must be understood in light of the broader politics of defining what counts as sustainable food.

Environmental governance via the product

Social scientists on life cycle assessment

Geographers and other social scientists have written little about LCA, despite certain parallels between the life cycle perspective and social scientists' conceptions of commodity or value chains (Bair, 2009). This may owe at least partly to LCA's history as a "back room" technique, used by companies that rarely publish the results (Makower, 2009). Corporate interest in LCA has also varied over time and space. Although U.S. companies commissioned some of the earliest life cycle studies in the early 1970s, later the locus of LCA research shifted to northern Europe, where industry-academic collaborations were relatively common, and often government-supported (Hunt and Franklin, 1996; Gabathuler, 1997; Hanssen, 1999).

Heiskanen's late 1990s study of Nordic companies' use of LCA remains the most comprehensive to date. Drawing on actor network theory, she showed how the technique not only created new roles and practices inside corporations, where managers collected information about their products' cradle-to-grave environmental impacts; it also helped frame the product itself "as a generalized and universal object of environmental management efforts" (Heiskanen, 2000). Less clear was exactly how (and whether) this new perspective improved how products' impacts were managed. Collecting product life cycle data, Heiskanen observed, might become a "ritualized practice," serving only to demonstrate concern and protect against liabilities (Heiskanen, 2002, 435). Similarly, Baumann (2000) found that LCA had become a "fashion" among Swedish companies, but not necessarily an important influence on how they operated.

Other early critiques of LCA (some by geographers, see White and Shapiro, 1993; Berkhout, 1996, Duda and Shaw, 1997) pointed out its many technical limitations. The data needed to model a product's complete life cycle was scarce and usually unverifiable; individual studies required months of costly research, and the modeling methods abounded with dubious assumptions (Ehrenfeld, 1997). Of particular concern was LCA's neglect of how the impacts from many material inputs and emissions (i.e., pesticides, wastewater) might vary over time and space. In addition, the sheer scope and ambiguous definition of a product life cycle made for inconsistent and therefore contestable results. One well-publicized example occurred during the 1990 "Diaper War" between disposables manufacturer Proctor & Gamble and the U.S. diaper laundering industry, which both used LCA to claim that their products were environmentally superior (Holusha, 1990).