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SOCIAL LCA IN PROGRESS

Ecological modernization, techno-politics and social life cycle assessment: a view from human geography

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Abstract
Purpose Although Social Life Cycle Assessment (SLCA) is a growing field of inquiry and intervention, to date, there has been a dearth of engagement between this field and critical social scientists interested in questions of the societal impacts of goods and services. In response, this paper is written from the perspectives of two human geographers, new to the field of SLCA. Our aim is to offer an 'outsiders' perspective of, and commentary on, the growing field of SLCA, which we frame as a form of political intervention that seeks to have real-world impacts on the lives and futures of diverse peoples and places.
Methods To address these questions, we explore SLCA's underpinning assumptions by critically reviewing the worldviews that inform its methods, including debates in the literature about sustainable development and corporate social responsibility.
Results and discussion SLCA's normative and practical applications resonate strongly with an ecological modernization framework. This framework forwards social change via incremental and institutional interventions that promotes continued development, and privileges objectivity, impartiality and the search for a totalizing knowledge of the impacts of good and services.
Conclusions Exploring SLCA's epistemological foundations illuminates, and in turn, can help to address some of the key challenges SLCA currently faces. Drawing attention to SLCA's inheren *raison d'etre* encourages more debate about the overall intentions and limits of the field, and represents not a weakness but rather its inherent quality of exploring the complex world of social impacts.

Keywords Ecological modernization · Social life cycle assessment · Sustainable development · Techno-politics

1 Introduction

As this special edition highlights, Social Life Cycle Assessment (SLCA) is a growing field of inquiry and research. Papers, reports and conferences over the past decade or so have outlined its progress, shortcomings and challenges, as SLCA develops beyond initial debates and methods. Amidst the progress, one noted shortcoming to date has been an apparent dearth of direct engagement between SLCA researchers and practitioners, and other relevant fields of inquiry and research, such as political science and sociology (Macombe et al. 2013: 28). As Hauschild (in Macombe et al. 2013: 27) plainly put it "to build social LCA, social science researchers are necessary." But 'necessary' to do what, to what ends: using which conceptual frames and methodological tools? Given the different disciplinary lineages of much of the social sciences—and indeed, the social sciences and various forms of SLCA—the roles and contributions that social scientists can make no doubt require further consideration beyond statements of broad intent.

In response, this paper offers commentary and reflection from two social researchers coming afresh to SLCA through the lens of our own disciplinary background, which is predominantly that of human geography. This sub-discipline, along with others (e.g. anthropology, sociology) has only recently begun to engage directly with the field of life cycle assessment from various perspectives (e.g. Freidberg 2013, 2014). In this paper, we aim to outline the ways in which we believe human geography can contribute to these debates, with the strength of this sub-

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discipline being its exploration of phenomena across scales, linking micro-practices to related macro institutions and norms. That is, rather than focusing on, for example, the intricacies of specific databases and metrics—all undoubtedly important issues in their own right—we draw attention to the larger context in which SLCA operates, highlighting some of what we see as its 'epistemological hotspots' and 'blind spots'. Specifically, we examine how SLCA can be argued as a particular manifestation of a broader ethos of ecological modernization (EM). EM is a concept now well-discussed in the social sciences especially in terms of how contemporary approaches to social and environmental governance have been shaped, fostered and evaluated (Spaargaren and Mol 11005; Hajer 1995). From this perspective we ask: how have the aims and imperatives of EM influenced approaches to life cycle thinking? And, what can the weaknesses and critiques of EM suggest and illuminate about SLCA, as a life cycle assessment tool, underwritten by specific normative and technical agendas and expertise?

To be clear, our argument is not to claim a direct lineage between SLCA and EM. That is, while researchers and practitioners of life cycle methods—including those working within SLCA—largely seek technical solutions to understanding and evaluating social and environmental impacts of goods and services, they do not explicitly aim to bring EM to life. Indeed, our own attempts to excavate the epistemological genealogies of the various approaches to SLCA did not allow a clear and unequivocal picture to emerge, which would enable such direct linkages to be claimed. Therefore, in this paper we take a more agnostic stance, arguing that ongoing debates around EM, which includes debates about its intellectual, moral and institutional heritage, resonate with many of those in SLCA. As such, exploring some responses to and critiques of EM by social scientists is claimed here to make a worthwhile contribution to debates about the current state and future direction of SLCA.

In making these arguments, the remainder of the paper is structured as follows: We begin by making the case for considering SLCA as a political practice, which works to (re)distribute societal goods and 'bads'. Acknowledging it as such enables us to enquire as to the form of politics being enacted, which we argue is a techno-political example of EM in practice. We then discuss this argument further, in relation to specific 'schools' of SLCA, drawing attention to particular 'epistemological hotspots' in the different approaches. We end the paper by outlining ways that critical social scientists may contribute to ongoing SLCA debates, in the spirit of opening up dialogue further between SLCA practitioners and researchers and a broader field of social scientists.

2 SLCA as political practice

SLCA is now characterized as a 'method' (Macombe et al. 2011) that aims to "deliver decision support relating to the social impacts of products…either for comparing products or identifying hotspots" (Jørgensen 2013: 296). Arguably, these are modest aims that contain the ambit of SLCA to one of calculating the relative merits of different goods and services and/or the identification of sites and stages of the life cycle that have the most notable social impact. In addition, others have argued that SLCA is able to contribute to larger societal agendas such as having the ability "to measure the changes or evolutions in society (from the perspective of goods and services)" (Benoit and Mazijn 2009: 21), which could potentially include making a significant contribution to the promotion of sustainable production and consumption (Parent et al. 2013).

Such hopes and claims are understandable given the institutional and conceptual origins of SLCA. As others have noted, the aims of SLCA are rooted in the United Nations-led sustainable development and human rights agendas of the 1980s, which together promoted the meeting of universal needs and the protection and promotion of human dignity and well-being (Dreyer et al. 2005). From these shared socio-environmental and normative imperatives, SLCA in practice has evolved into a suite of tools that have arguably diverged into two principle 'schools' of thought and approach. The first has developed from the SETAC 'Guidelines' (Benoit and Mazijn 2009) and is largely concerned with the social performance of a company over the life cycle of specific products: an approach also called life cycle CSR. The second and more recent version of SLCA is more closely related to environmental LCA methodologies, which seek to assess the social impacts associated with all the stages of a product's life from cradle to grave (see Macombe et al. 2011 for a full review). But as already stated, for social researchers new to this field, the extant literature does not as yet specifically outline the different epistemological and methodological origins of these different schools, making their intellectual and institutional histories difficult to scrutinize in detail. Thus, our aim here is to discuss SLCA, broadly understood, through particular social science perspectives.

In response, we take our starting point from Macombe et al.'s (2013: 54) question "What is the social life cycle? It is clearly not a real object…It is an abstract object, deliberately and scientifically constructed with a precise goal in mind." In keeping with the sentiment of this assertion, it can be argued that SLCA—like other life cycle approaches—does more than just 'measure the changes', highlight impact transfers and/or debate the validity of particular metrics and databases (Dreyer et al. 2005; Klöpffer 2008). Rather, a key part of its 'deliberate' construction is the socio-political aims and practices that underpin its construction and execution. By evoking the word 'politics' we do not mean what the political geographer Flint (2003) calls politics with a big 'P': that is, the state, government and foreign relations of 'high politics'. Rather we are referring to politics with a small 'p', which are collective

practices outside of traditional political avenues that nonetheless have impacts on questions of who gets what, how and to what end. As such, the argument that 'politics' concerns the institutions, norms and means by which societal costs and benefits are (re)distributed (Dikeç 2005) suggests that SLCA needs to be framed as more than a 'method'. Rather, it is fundamentally a suite of political–ethical practices that have real-world impacts on those both directly involved in creating a product or service through their labour or consumption, as well as the broader context (families, communities, regions) this labour and consumption takes place within.

Beyond such broad assertions, if we wish to think more deeply about the politics of SLCA, we must pay attention to how its micro-practices invite further critical scrutiny from interested social researchers. For example, Freidberg's (2014: 178) recent research into LCA footprinting highlights how such methods "serve as a tool for achieving certain political ends." In particular, she argues that the process of quantifying life cycle impacts represents a form of 'technopolitics' wherein technology and technical expertise enable the pursuance of political goals, broadly understood. In other words, while these applications of LCA produce critical data concerning potential environmental impacts, they are also strategies that corporations and the state deploy to govern supply chains, to legitimate that governance and to advance an understanding of sustainability that suits their own bottom line interests.

In a similar vein, it can be argued that SLCA methods and metrics, which receive a great deal of attention within the extant literature, are just one part of a broader array of experts, tools, expertise, established practices and institutional norms that constitute SLCA's emergent 'epistemic community' (Freidberg 2013, 2015). That is, the actual 'doing' of an SLCA requires materials (spreadsheets, databases), competences (experts, SLCA consultants) and meanings (human dignity, welfare and well-being) (see Mylan 2015 for further explanation), which together ultimately impact the redistribution of societal costs and benefits. And it is through these repeated practices that certain forms of politics are made real. The question that remains concerns the particular forms of techno-politics that SLCA is 'actioning' and what social scientists might have to say about its strengths and challenges.

In response, in the next section, we argue that ecological modernization (EM) arguably represents a larger socio-political frame that SLCA is part of, and in turn, helps to recreate and make tangible, albeit on a modest scale. Our central aim is to suggest parallels rather than direct and overt connections, given the tangled intellectual and institutional roots of any field such as SLCA. More to the point, critiques of, and challenges to, the EM framework from across the social sciences markedly echo some of those from within and around SLCA itself. As such, interrogating how social scientists have responded to these critiques we argue can be viewed as contributing to debates about the role of social science in SLCA and the field in general.

3 Ecological modernization: managing change, maintaining the status quo

Environmental social scientists have in recent decades explored the connections between environmental issues and contemporary politics from a variety of conceptual lenses. For example, political ecologists have explored the empirical linkages between changes in socio-environmental systems and 'relations of power' (Robbins 2004: 12), often in Global South contexts. In relation to the institutionalization of pressing environmental issues in the Global North (e.g. resource depletion, climate change), environmental sociologists in particular have developed theories of EM: a macro-level framework that seeks to conceptualize the "new rules of the game for the social organization of production and consumption" (Spaargaren and Van Vliet 2000: 56). In summary, EM is argued to be the prevailing rationale for dealing with socio-environmental challenges, which emphasizes achieving the goals of continued development and environmental improvement through restructuring production and consumption processes. Here, a particular emphasis is placed on technological innovations to improve efficiency and encourage new forms of technological intervention, as well as the role of markets and economic agents "to introduce incentives for environmentally benign outcomes" (Sutton 2007: 159). Although early EM theory was critiqued for paying scant attention to cultural, political and social issues, it has since developed to consider issues of social equality beyond those of income alone (see Mol and Spaargaren 2000), as well as the reconfiguration of political institutions and interventions (Fisher and Freudenburg 2001). Therefore, advocates of EM argue that with some fine-tuning, this modernization project is adaptable and capable of delivering ecological sustainability (York et al. 2010), representing the most pragmatic approach to dealing with twenty-first century socio-environmental challenges (see Ecomodernism.org 2015).

However, Hajer (1995: 34) amongst others questions whether EM is "the first step on a bridge that leads towards a new sort of sustainable modern society" or whether it is a "rhetorical ploy that tries to reconcile the irreconcilable (environment and development) only to take the wind out of the sails of 'real' environmentalists." Some critical social science has leaned heavily toward the latter point, especially in regard to examples of EM in practice at a variety of institutional scales and settings. However, much less research has explored the links between sustainability tools (e.g. ECLA, SLCA) and EM as the guiding discourse and strategy informing environmental politics and policy in the Global North. In response, we argue that the imperatives, goals and means of SLCA as a

form of techno-political practice fit relatively comfortably within an EM framework. Acknowledging this point offers an important opening for critical but constructive engagement between social scientists and those working on and with SLCA.

3.1 Sustainable development and EM: shared goals, different discourses

A useful starting point to explore the above points is a discussion of the politics of sustainable development (SD): arguably the most fundamental guiding principal for contemporary life cycle initiatives like SLCA. As is well documented, SD emerged in the 1980s as an attempt to explore and harmonize the seemingly contradictory imperatives of global development and environmental degradation. In the last two decades, numerous definitions of SD have been put forward, with the most commonly cited one being found in 'Our Common Future' (otherwise known as the Brundtland Commission Report) (WCED 1987: 9) that is, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Since then, SD has come to be considered a "visionary development paradigm" with governments, businesses and civil society around the world acknowledging it as the guiding principle and normative goal (Drexhage and Murphy 2010: 2) of a 'three pillar' approach to collective global futures i.e. economic development undergirded by greater social equity and environmental protection.

Yet, while this definition has been significant in promoting forms of multi-scale sustainability, it has also proven problematic. For one, scholars and policy makers consistently disagree about how the definition should be implemented or how sustainability should be measured. For example, who defines what constitutes 'human needs and wants', and how does one operationalize the expressed concern for future generations (Redclift 1987; Escobar 11005; Sneddon et al. 2006)? Social scientists also point out that definitional slippage between the concepts of sustainability, sustainable development and the 'social', amongst others, can lead to some rather veiled outcomes (e.g. Redclift 1987; Harvey 1996). That is, sustainability is often promoted by "situating it against the background of sustaining a particular set of social relations by way of a particular set of ecological projects" (Harvey 1996:148). Thus, the debate about resource resilience and ecological limits, for example, has been argued by some to be about the "preservation of a particular social order rather than a debate about the preservation of nature per se" (Harvey 1996: 148; Banerjee 2003, 2008). And the 'social order' being preserved is argued to be that of the neo-liberal market-driven global economy, which enshrines a 'right to develop' (Hajer 1995) through particular framings of global progress (e.g. market penetration and GDP growth). Thus, rather than re-imagining markets and production processes to "fit the logic of nature, sustainable development uses the logic of markets and capitalist accumulation to determine the future of nature" (Sneddon et al. 2006; Banerjee 2008: 65). As such, SD has been argued to be inherently linked to a wider project of sustaining an established socio-economic order and worldview, rather than fundamentally questioning the systemic inequalities and environmental challenges that arise out of the established order.

Linking SD to EM, Spaargaren and Mol (11005: 334) state that "like the concept of sustainable development, ecological modernization indicates the possibility of overcoming the environmental crisis without leaving the path of modernization." Here, modernization equates to a form of 'sustainable capitalism' (see Fisher and Freudenburg 2001; Hamilton et al. 2015) which re-enshrines the existing neo-liberal order: an order that prioritizes economic growth and reductions in state activity, including the systematic dismantling of programs related to environmental, ecological and indeed social sustainability (Parr 2014). In such a case, the prevailing spirit of EM, often deployed through SD rhetoric, seeks the continued accumulation of benefits (i.e. capital) to certain sectors of society via specific means, with its 'trickle down' discourse of redistribution being roundly evidenced as false through the global financial crisis and rising global inequality (see Wilkinson and Pickett 2011; Foster 2012). Along these lines, Jackson (2009) has famously called the holy grail of EM—the decoupling of environmental degradation from economic growth—a 'myth', unattainable unless absolute (not relative) levels of resource consumption drop dramatically. Jackson's intervention has since lead to calls for an emphasis on 'degrowth' or forms of production and consumption that emphasize less material consumption, such as the 'sharing economy' (Hobson 2013).

How then does all of the above link to, and have bearing on, the techno-politics and micro practices of SLCA? Recent research in the social sciences helps explore this question, examining how particular ways of thinking, counting and measuring change and impact are instrumental to an EM agenda, broadly conceived. For example, economic geographers have undertaken research into the complex networks and multi-spatial politics of local and global production chains (Bair 2008; Bumpus and Liverman 2008; Ormond 2015), including the role played by life cycle tools in fostering forms of 'sustainable capitalism'. Ormond's (2015) recent research, for instance, shows how product carbon footprinting—made possible through the application of life cycle assessments—enables global retailers to retain control of their interests within complex production chains, as the demands of the 'new carbon economy' begin to assert themselves on businesses core values and economic bottom line. Far from a simple re-tooling of the supply chain, the requirements that producers contribute to calculations of, and savings in, carbon enables retailers and consultants to control how carbon is measured, with carbon reduction standards passed down-the-line. Overall, this is argued to represent an opportunity for "global retailers to

consolidate their socioeconomic powers as sustainability leaders that fundamentally direct society's response to, and mitigation of, climate change" (Ormond 2015: 1).

In terms of what these literatures can contribute to further engagement between SLCA researchers and practitioners and the social sciences, in the next section we explore the two principal forms of SLCA as mentioned briefly above, to discuss further how some of the critiques from social scientists speak to the ongoing debates and concerns within SLCA. How, for instance, might the challenges and critiques of EM resonate with SLCA in general? And, what can debates about EM tells us about the specific epistemological challenges and 'hotspots' that currently exist within SLCA?

4 SLCA as life cycle CSR or decision support: social washing, physics envy and the god trick

As mentioned above, two principal 'schools' of SLCA have emerged in recent years. The first developed from the SETAC Guidelines, which have a close alignment with a long-standing corporate social responsibility (CSR) agenda. Specifically, CSR methodologies that highlight social parameters "[put] businesses end-to-end in an attempt to understand an entire 'life cycle'" (Macombe et al. 2013: 28), thus estimating their social performance. As Macombe et al. (2013) argue, this version of SLCA—or what they call 'life cycle CSR'—is based on aggregated social performance criteria that do not distinguish the social effects or impacts attributable to the context from those attributable to the product. As such, life cycle CSR does not estimate the total 'social consequences of a choice' but instead gives companies a way of 'standing out' by describing parts of the value chain deemed worthwhile of positive attention or that have become problematic hotspots demanding further transparency and possible action.

Critiques of CSR however argue that this field is ill-equipped to provide a comprehensive methodology for exposing social issues within current consumption and production processes and patterns (for a full explanation see for instance: McWilliams et al. 2006; Orlitzky et al. 2011). For example, CSR life cycle tools limit their evaluative scope to 'quantifiable' impacts, mostly focusing on end-producers or brands. Thus, companies inevitably focus their sustainability policies at the operational scale and thus lack a broader "vision of sustainability" (Hart in Banerjee 2008: 66) that includes equal weight to the three pillars of SD as outlined above. Such limitations discourage an "assessment of the consequences of a choice and [do] not highlight possible impact transfers"—points considered crucial in the further development and legitimacy of SLCA methods (Macombe et al. 2013: 33).

As such, arguably a form of piecemeal 'social washing' (Carbo et al. 2014) can result. That is, it is feasible that CSR life cycle initiatives "risk being little more than drops in the ocean when compared with the scale of the challenges…they may even undermine long-term solutions by deflecting attention from the root problems" (Beloe et al. 2004: 6; see also Harvey 2014). Thus, as an acknowledgement that some SLCA approaches may unintentionally reinforce rather than fundamentally ameliorate such 'root problems' arguably needs to be made, returning again to the points above about SLCA being fundamentally a techno-political practice. Another example of such thinking can be found in a paper on the role of life cycle thinking (including SLCA) in promoting sustainable production and consumption (SPC). In this paper, Parent et al. (2013: 1642) claim the goals of SPC are to 'green' the economy through greater efficiency, with the social goals of the SPC agenda being 'poorly discussed'. On the contrary, the social goals of SPC have been subject to considerable debate, with many scholars and activists critiquing the idea that SPC = the greening of the economy via greater efficiency, arguing instead for a focus on quality of life, sufficiency and a move away from excessive and conspicuous consumption and towards forms of 'degrowth' (e.g. Schor 2010; Barry 2012). If life cycle thinking is charged only with helping the incremental 'improvement of enterprises' behaviours' (Parent et al. 2013: 1642), it is highly unlikely that SLCA can, at the moment, contribute to SPC social agendas that challenge the status quo at its roots i.e. sufficiency and 'degrowth' (Hobson 2013).

In part, as a response to some of the challenges and seeming flaws of the life cycle CSR approach, other SLCA methodologies directly link to established practices such as ELCA in which actual (social) effects and the consequences of choices are key outputs. Described as a turn toward the 'spirit' of life cycle methods, this form of SLCA seeks 'impartiality' by examining "all of the effects caused by all stages in the life cycle" (Macombe et al. 2013). This requires an "omniscient point of view" (Macombe et al. 2013), in that an SLCA analyst is not biased and is discouraged from 'cherry-picking' aspects of the value chain in the way that CSR methods might. As Curran (2014: 190) argues, "without [comprehensive] life cycle thinking, we risk focusing on the…issues that demand our immediate attention, and ignoring or devaluing issues that may occur either in another place or in another form (impacts)."

Thus, such an approach aims to take 'impact transfers' into account and departs from previous life cycle CSR approaches through acting as a decision support tool. That is, as a method that aims to estimate by "anticipation the potential impact transfers between life cycle stages, between the nature of impacts and between actors affected" (Macombe et al. 2013: 38). While we acknowledge the relative infancy of this version of SLCA, the persistent challenges in, and indeed calls for, harmonization in-line with 'scientific methods' like ELCA also point to an important aspect of the techno-politics of SLCA. Specifically, the challenges of quantifying impacts are presented as one of technological precision, which assumes that

"all kinds of impacts should be squeezed, with high ingenuity, into environmental LCA" (Klöpffer 2008: 95). And in doing so, the supposedly detached SLCA practitioner is able to adopt an "omniscient point of view" and "put him/herself in the shoes of others (natural environments, other humans, etc.) to view the entire society nature included!" (Macombe et al. 2013: 38).

Although admirable in spirit and understandable given the epistemological and professional lineage of ELCA, philosophers and sociologists have long critiqued this notion of the 'god trick' (Haraway 1988). That is, of "claiming to see the whole world while remaining distanced from it" (Rose 1997: 308). As a counter argument, social scientists have asserted that all forms of knowledge is and can only ever be a 'view from somewhere' (Haraway 1988; Rose 1997), with many fields suffering from what has been called 'physics envy' (Cooper 2013). In short, this is a desire to create calculable models of change and impact that can claim to be objective and thus free from value judgements and 'human error' (Shanteau and Weiss 2013). To extend this point further, Freidberg (2015), writing in this journal, recently challenged the role of 'values' and the partiality of knowledge generated in and through ELCA. She argues that social and cultural values "shape the framing (and funding) of research questions, choice of data, and the communication of results" (Freidberg 2015: 2). Such assertions are nothing new in the social sciences, which have drawn attention over several decades to the contextual choices and contingencies of how 'science' comes about and presents knowledge (e.g. Latour 1987). In line with this thinking, Freidberg (2015: 2) argues that ELCA (falsely) presents itself as a field based on objective processes and data, and 'natural science', able to capture the complete life cycle of a product including "all attributes of natural environment, human health and resources".

Along similar lines, how SLCA has evolved and has been developed—in terms of prevailing methodologies and the skills of those involved—means that ELCA methodologies and tools have helped shape expectations and applications of its data. Indeed, early calls for more comprehensive approaches to social impacts (Fava et al. 1993) came from within the field of ELCA and have remained central to its aims and ambit since (e.g. Benoit and Mazijn 2009; UNEP 2013), as both fields broadly aim for similar goals i.e. to provide tools to compare and assess the impacts of goods and services (Klöpffer 2014). Thus, the apparent ambition is for SLCA to mirror the 'objectivity' and quantified nature of ELCAs. Whilst Macombe et al. (2013: 44) suggests that "There is no ambiguity of in the field of environmental LCA", the very essence of the field of social impacts is rife with ambiguity, due to the complex, interwoven and time/space dependent nature of impacts. Clearly, one way around this is to focus on short-term, easily measurable and calculable indicators, rather than longer-term and more diffuse processes of social and political change, an issue well-noted in the field of Global South development (e.g. Ebrahim 2003). But this too has its limits, as it presents an arguably narrow view of what constitutes social impacts, providing a limited 'decision support' picture on which companies have to make real-world decisions.

How then might we think differently about the role of data and knowledge generated in and by and for an SLCA, a key issue in the field as highlighted by leading commentators (Jørgensen 2013)? For some social scientists, this issue is navigated through the assertion that evidence in a "countable or a measurable sense is not something that all qualitative researchers attend to" (Denzin 2009: 142). For example, critical human geographers use rich, qualitative data to examine experiences, events, processes, and narratives as a way to develop an understanding of context and meaning. Beyond the scope of quantitative methods, qualitative data can explore clearly defined issues in greater depth, offering analyses of the settings in which behaviour takes place and/or creating a detailed picture of the issue being studied. A 'case study' approach, in particular, represents a key method that can incorporate qualitative data. Deployed largely in an 'interpretivist' frame, case study approaches offer in-depth exploration from multiple perspectives that potentially illuminate, as in the case of SLCA, the complexities of the social effects of production activities in 'real life' contexts (Simons 2009: 21). Invariably, this raises the issue of generalizability and comparability: a concern within the social sciences, where some have debated the role that case studies approach can play in furthering social science knowledge (e.g. Castree 2005). That said, broad lessons and themes are pulled out from qualitative data undertaken through a case study approach, building up rich but not always congruent pictures of similar phenomenon in varied contexts over time.

Our general point here is not to argue for the merits of qualitative data over and above those of quantitative data per se, as both play a role in SLCA and in the social sciences more broadly. Rather, the aim is to draw attention to the limits and partialities of both, given the nature of social impacts and their variations across places and peoples. That is, as no doubt there is disquiet and concern about the narrow scope and 'un-objective' nature of qualitative data, there are uncertainties and discomforts noted about the breadth, form and accuracy that the quantitative data used in SLCA currently takes, or as Ekener-Petersen and Finnveden (2013: 139) put it when discussing their SLCA of laptop computers, "there is no absolutely true answer available with which to compare."

5 Concluding comments

As stated from the outset, our aim in this paper is to offer some thoughts, reflections and commentaries on SLCA as an evolving field of practice from the perspective of human geography

in particular, as well as some areas of the social sciences and philosophy more broadly. As geographers interested in the field of SLCA, we have tried to excavate, understand and evaluate its epistemological foundations and hotspots, in terms of where the debates have come from and where they are going. In terms of the former, tracing the epistemological roots of SLCA has proven particularly challenging, not least of all since the knowledge and experience that makes up the complex method is part of a techno-political constellation of practices, relationships and institutions that variously translate and disseminate (or not) this knowledge in expert circles, not immediately open to the outsiders such as ourselves.

As such, our intention has not been to critique the field wholesale but rather to offer one 'view from the outside' that responds to calls for greater involvement of the social sciences in SLCA. In doing so, we do not present clear and unambiguous remedies to some of the challenges that persist in SLCA as outlined by those much more well-versed in its methods and practices than ourselves. Instead, we have drawn on bodies of social science research and debate to outline how SLCA's underlying socio-politics echoes the intentions, rationales and means of an EM frame. Here, the imperatives of ecological limits and global (economic and human) development are rendered compatible through the lenses of SD and CSR, made less malignant through life cycle methodologies that privilege objectivity, impartiality and the search for a totalizing knowledge of the impacts of good and services.

Taken together, such debates have led some SLCA practitioners to argue that the social impacts of current goods and services can be rendered fully knowable through the honing of indices and methods, along with continued data collection, similar to the ethos that underpins LCA. While no doubt the 'decision support' that particular SLCA tools lend to corporations can improve the conditions of workers and citizens in particular sites and along particular value chains, we aim to draw attention to SLCA's inherent raison d'etre, to encourage more debate about the overall intentions and limits of the field, not as a weakness but as an inherent quality of exploring the complex world of social impacts. And in doing so, we fully accept the modest, partial and initial nature of our foray into the field of SLCA and welcome further engagement with researchers, practitioners and other interested parties as SLCA develops further as a field of knowledge, practice and intervention.

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