

# Understanding Sustainability Through the Lens of Ecocentric Radical-Reflexivity: Implications for Management Education

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**Abstract** This paper seeks to contribute to the debate around sustainability by proposing the need for an ecocentric stance to sustainability that reflexively embeds humans *in*—rather than *detached from*—nature. We argue that this requires a different way of thinking about our relationship with our world, necessitating a (re)engagement with the sociomaterial world in which we live. We develop the notion of ecocentrism by drawing on insights from sociomateriality studies, and show how radical-reflexivity enables us to appreciate our embeddedness and responsibility for sustainability by bringing attention to the inter-relationship between values, actions and our social and material world. We examine the implications of an ecocentric radically reflexive approach to sustainability for management education.

**Keywords** Ecocentrism · Radical-reflexivity · Reflexivity · Sociomateriality · Sustainability

## Introduction

There is an increasing interest in organization and management journals in addressing the importance of sustainability and sustainability education in contemporary organizations. This is seen in the number of journal special issues and articles exploring related themes, for example, sustainability and management education (Starik et al. 2010); organizational strategies, discourses, identities and practices in relation to climate change (Wittneben et al. 2012); and alternative ways of organizing which respond to climate change (Wright et al. 2013). Reasons given for the impetus behind this growing interest are associated with the responsibilities of organizations and managers for responding to scientific assessments of rapidly degrading ecosystems (Steffen et al. 2015).

Sustainability is not just a question of monitoring and controlling the environmental impact of organizational practices, processes and products through agencies, such as the US Environmental Protection Agency and UK Environment Agency, it is also about “protecting the richness of the world’s resources in such a way that their utilization does not destroy them, but rather leaves equal opportunity to future generations to benefit from them as well” (Docherty et al. 2009, p. 3). Consequently, there is a need to examine the responsibilities of managers and academics for contributing to sustainable development and for finding ways of proactively engaging organizations to take responsibility for promoting ecosystem and community well-being. International initiatives exist in the form of the World Economic Forum and the World Social Forum, which offer opportunities for business, civil society and academia to meet and debate issues around sustainability. At an organization level, the ‘Triple Bottom Line’ of profit, people and planet (Elkington 1997) offers one model for

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connecting performance and sustainability (Glavas and Mish 2015).

But to date, progress in addressing sustainability challenges has been disappointing (Banerjee 2012; Wittneben et al. 2012). Climate change, for example, has the potential to be the most pernicious sustainability challenge for societies and organizations because “the taken-for-granted assumptions of our weather, climate and ecosystem are changing before our very eyes” (Wright et al. 2013, p. 648). Indeed, US National Oceanic and Atmospheric Administration data indicated June 2016 was the fourteenth straight month that global heat records were broken. Yet despite more than fifteen years of annual international United Nations-led negotiations on the issue, it was not until November 2016 that a global agreement for carbon emission reductions finally came into force. The responsibilities of businesses for sustainability are also disputed and often compartmentalized into external legal and ethical issues “separate from economic performance, strategic decisions, or day-to-day business operations, except as annoying cost factors” (Starik et al. 2010, p. 377). Responding to sustainability challenges is often framed as ‘working better’ by maintaining levels of consumption and accelerating innovation in order to reduce the materials and energy inputs employed in designing, making, distributing and selling products and services (Nidumolu et al. 2009; Porter and van der Linde 1995).

Academia is also struggling with how to address sustainability (Jones 2014). It has been suggested that traditional management and organization theories rarely advance our understanding of the issues (Goodall 2008; Starik and Kanashiro 2013), because the focus of work in this area has been mainly conceptual, concerned with developing theory and business models of sustainable development (e.g. Baden-Fuller and Mangematin 2013) that are not necessarily useful to practice. Roome and Louche (2015) go some way towards addressing this issue by arguing that organizational transformation is grounded in “a strong commitment among senior management to participation and communication across networks” (p. 21), which involves: recognizing the need to change (‘identifying’); ‘translating’ or operationalizing new ideas, knowledge and capabilities; adopting or ‘embedding’ new knowledge and relationships in organizational practices and policies; and consolidating and ‘sharing’ new sustainable business models with internal and external actors. In other words, this points to the need for changes in the way organizations address sustainability by embedding the issues in the practices, interactions and attitudes of managers, employees and academics. As Huckle and Stirling (2014, p. 22) note, there is still a “significant gap between the powerful *potential* of education to advance sustainability, and much current educational policy and practice,

which can promote unsustainable rather than sustainable living”.

An emerging strand within Organization Studies addressing the issue of responsibility for sustainability relates to the need to develop educational processes that inform and transform the ways that students and managers live and work. A number of studies on sustainability education address criticisms that traditional forms of management education are often irrelevant and disconnected from managerial practice by focusing on situating learning in practice through processes such as experiential learning (e.g. McPherson et al. 2016), action research (e.g. Woollorton et al. 2015) and critical reflection (Howlett et al. 2016). We suggest that one way of embedding the issues more fully in management education is by encouraging students to challenge assumptions underpinning sustainability and to engage in debate around the ‘sustainability paradox’, in which the “dominant approaches to wealth creation degrade the ecological systems and social relationships upon which their very survival depends” (Kurucz et al. 2014, p. 438). We seek to supplement recent debates by arguing that an ecocentric radically reflexive lens can draw attention to the limitations of current ways of considering sustainability and offer possibilities for reconstructing understanding and practice in new and different ways. The central question we address is: *How can we locate responsibility for sustainability at the level of management thinking and practice by developing an ecocentric radically-reflexive approach in management education?*

Our paper makes three main contributions. First, we argue that we need an ecocentric approach to sustainability that draws on insights from sociomateriality studies to move towards educating students in ways that bring attention to interactions between values, actions and our social and material world. Second, we apply and develop Orlikowski’s (2010) sociomateriality approach by showing how connecting ecocentrism and radical-reflexivity offers a new lens for viewing our embedded relationship with our world and for highlighting our individual and collective responsibility to act. This approach can help both educators and students evaluate their approach to sustainability and rethink their responsibility for acting on the issues. Third, we examine the potential consequences of a radically reflexive ecocentric approach for management education, and in doing so recognize that the implications of this perspective extend to a broad range of stakeholders including academics, managers, consultants and community members.

Based on these arguments, our paper is structured in the following way. We begin by introducing the concept of sustainability, outline how dominant approaches to organizing can be understood as conforming to neoclassic ideas

and discuss how this prompts the need to disrupt conventional ways of thinking about our relationship with the environment. We go on to connect an ecocentric approach (that includes an appreciation for sociomateriality) with radical-reflexivity, arguing that this offers a way of sensitizing students to their embeddedness and to a responsibility to act. We illustrate the practical implications through quotes from a study of senior managers in the energy and power industry (Allen et al. 2015) and offer suggestions for how we might incorporate radically reflexive ecocentrism in management education.

### Background: What is Sustainability?

“The things we want to sustain have only the values we assign to them, which are transient, variable, and mutable. Only when this is recognised can we expect to diminish the political invective that infuses sustainability debates. Deciding what to sustain and how to accomplish it are matters for negotiation and consensus” (Allen et al. 2003, p. 25).

Definitions and strategies of sustainability as a “capacity for continuance into the long-term future” (Porritt 2007, p. 33) are contested and open up an expansive territory for debate, as exemplified in the breadth of academic literature in which the concept is found, including design and engineering, new economics, environmental history and science and technology studies. Recently, studies of sustainability have explored a range of issues around the meanings of corporate sustainability in relation to scientific ideas of planetary limits (Whiteman et al. 2013); the potential intersections between ideas of sustainability and poverty (Khavul and Bruton 2013); and how managers talk about and understand sustainability in relation to themselves and their organizational responsibilities (Cherrier et al. 2012; Wright et al. 2012). This work, as well as suggesting an almost boundaryless conceptualization of sustainability, implies substantial complexities in understanding its meanings for theory and action and reveals that sustainability issues are not just about the physical environment, but also about human values and identity. This connection becomes even more apparent when core questions are posed such as ‘What is being sustained?’, ‘How long is it being sustained?’ and ‘In whose interest is what being sustained?’ (Devall 2001), questions that can provide a basis for classroom discussion.

As Allen et al. (2003, p. 23) point out:

“Ecosystems clearly cannot care whether they lose species, leak nutrients, or have their processes degrade. Such things matter only because people worry about them. [...] Sustainability is a topic of

human values. Once this simple point is understood, dilemmas imposed by simple biological or economic conceptions diminish”.

Such values are situated within historical, geographical, political and social contexts, and thus open to different interpretations. We therefore need to find a way of connecting the physical and social worlds, the local and global, and of recognizing the interconnectedness and responsibility of business, communities and individuals for acting with the future in mind, i.e. that human development is connected with sustainable development. There are business initiatives in this area, for example, the World Business Council for Sustainable Development comprised of CEOs of major international companies focusing on how to create a “sustainable future for business, society and the environment” through a vision-to-action plan e.g. (WBCSD 2013). However, this work often does not trickle down to help managers engage with sustainability issues in relation to their values and daily practice. For example, the “skyrocketing incidence of greenwashing” in organizations in the United States (Delmas and Cuere Burbano 2011, p. 64)—the spin that companies put on their supposedly ‘environmentally-friendly’ activities—indicates that sustainability issues are often approached in superficial ways. Consequently, there is a need for new and different ways of understanding and enacting sustainability that locate responsibility at the level of management thinking and practice: management education can play a key role in developing ecocentric and radically reflexive managers.

There is also an increasing appreciation amongst management scholars that much of organization theory divorces organizations and their management from the environment and that this plays through our teaching. Phrases, such as the ‘management of the natural environment’ and ‘the physical environment’, are seen to infer that nature is external to us and manageable in some way. Back in 1995, Gladwin, Kennelly and Krause argued that the technocentric paradigm underpinning much of organization theory is based on the assumptions that the earth is passive, humans are superior and that it is therefore legitimate to exploit the seemingly inexhaustible physical resources. This questionable notion of inexhaustible resources—that natural systems are constant and immutable—is taken up in the debate around biophysical limits, that physical planetary resources are finite (fossil hydrocarbons, mineral ores etc.), and that human activities are destroying the environmental stability and natural change of the last 10,000 years (Rockström et al. 2009). Indeed, Meadows et al. (2005, p. 3) argue that “the ecological footprint of global society has overshoot the earth’s capacity to provide” and that amongst other factors such as population growth,

industrial production has played a large role in this. They observe that we “lack the perspectives, the cultural norms, the habits, and the institutions required to cope” (p. 3). A greater focus on the biophysical foundations of organizations and the complexities of the feedback between businesses and natural systems will require radical changes to current academic and business practices and ways of thinking (Allen and Marshall 2015; Tregidga et al. 2015). A move towards ecocentrism where humans are connected with, rather than predominant over, nature is necessary (Purser et al. 1995; Shrivastava 1995; Stubbs and Cocklin 2008); as is taking what Marcus et al. (2010, p. 405) describe as an embedded view where “business, society, and nature are viewed as nested systems” i.e. business is embedded within society, and society within nature.

### From Neoclassicism ...

In the arena of education, the neoclassical economic underpinning of many business schools is often predicated on the separation of human and environment and a focus on the ‘bottom line’, which potentially leads to ignoring ecological interdependencies and co-evolution (Dyck and Greidanus 2017; Stead and Stead 2010). Indeed, as Sharma and Hart (2014, p. 12) highlight, “virtually all these [sustainability curriculum] initiatives, centres, or institutes continue to merely hang off the side of the existing business school institutional edifice”.

A number of academics who have experimented with teaching practices around sustainability suggest that substantial curriculum change is required because current frames of approaching and knowing about the relationships between business and nature are fundamentally incompatible with pursuing sustainability in practice, and the neoclassical imperative for continual economic growth ignores the idea of ecological limits (Akrivou and Bradbury-Huang 2015; Kurucz et al. 2014; Marshall et al. 2011). Banerjee (2003) notes how prevalent conceptualizations of sustainable development and sustainability are substantially informed by Western ideas of ‘developmentalism’, where the economic discourses which have emerged in the past 70 years have been elevated into unchallengeable and unquestionable parameters to which these concepts must conform. Connectedly, GDP, the principal accounting device for economic growth often used as a proxy for understanding human development, is increasingly being seen as a hindrance for helping guide societies to becoming more sustainable. A recent example relates to how the environmental destruction resulting from the 2010 Deepwater Horizon oil spill and 2012 Hurricane Sandy boosted the US GDP because they stimulated rebuilding (Costanza et al. 2014). Hence, accounting for these events through

GDP appears dichotomous to progressive sustainable development.

Neoclassical views of the role of business in the environment—that sustainability is a cost and can be managed by minimizing environmental impact—are being questioned in favour of ecocentric approaches where business plays a proactive role in enhancing the quality of the environment and life. But if managers are to be committed to sustainable practices, they require a greater appreciation of their ecological embeddedness: a personal identification with the land, which incorporates knowledge and experience of local ecosystems (Whiteman et al. 2013; Whiteman and Cooper 2011). Sustainability requires a critical rethinking around the embedded relationship between our social and physical world and our individual and collective responsibility to act (Shani and Docherty 2009).

So how do we find ways of engaging managers and students in the process of recognizing these issues and acting more critically about environmental issues? A systems theory approach to sustainability and corporate social responsibility has been proposed as one means of identifying the interconnected nature of the human and physical world (e.g. Martin 2005; Porter 2008; Sterling 2004). This can be challenging, as it has been pointed out that systems theory is often associated with a more efficient pursuit of short-term financial profit maximization, which is likely to be counter to long-term sustainability (Porter and Córdoba 2009). Thus, while systems theory involves “attempts to understand the interdependence of phenomena over time” (Bradbury 2003, p. 176) and emphasizes the complex, emergent and interdisciplinary nature of an ecocentric stance (Dale and Newman 2005), it does not necessarily highlight a personal and ethical responsibility for the environment. Alternative approaches to research, education and managing organizations are needed.

### ... To Ecocentrism

Ecocentrism offers an alternative to the technocentric orientation of neoclassicism because it “decentres the privileged position of humans as the sole locus of value, requiring humans to transform their anthropocentric attitude towards ecosystems” (Purser et al. 1995, p. 1073). Ecocentrism is underpinned by a principle of wholeness, which means that humans are seen as one strand of an interlocking web with natural systems (Gladwin et al. 1995; Purser and Montuori 1996). Thus, it becomes important to foster in our students a “deeper appreciation for the intrinsic value of nature, ecocentrists seek to effect change at the levels of human beliefs, values, ethics, attitudes, behaviours, and lifestyles” (Borland and Lindgreen 2013, p. 176).

We suggest that an ecocentric or embedded stance has important antecedents in the earlier work of Gregory Bateson. In his influential book *Steps to an Ecology of Mind* (1972), Bateson argued that environmental crises lie deeply rooted in the separation of the notion of mind from the natural world. He suggested that a unification of ontology and epistemology was necessary to counter human detachment and to re-engage humans with nature because it would help challenge the construction of distinctions between self/other, human/nature and culture/environment. This requires a broadened concept of human mind that reconnects it with society and ecosystems, the structures in which it is 'immanent' or embedded. Bateson's work therefore challenges us to address how we think about the nature and interrelationship of our social and physical world; how we produce knowledge; and how our assumptions influence decision making and acting around sustainability issues in organizations and communities. "An ecological turn based on [these] ecocentric premises represents a radical departure from mainstream organization theory" (Heikkurinen et al., 2016, p. 711) and important considerations for sustainability education and practice.

Ecocentrism is not without criticism; particularly that it projects an idealized view of nature which can: ignore insights from the natural sciences about the flux and instability of ecosystems; imply that there are clear boundaries between humans and nature; and overlook the ways ideas about nature are socially constructed (Newton 2002). Suggestions have been made to integrate ecocentric and neoclassic (technocentric) perspectives (Valente 2012). However, integration may facilitate a transitional compromise that focuses more on "incremental change created by market forces", whereas ecocentrism has the potential to inform transformational strategies that involve "a change in ethos, comprehension, and core values" (Borland et al. 2016, p. 305).

To counter the criticisms and integrate Bateson's insights regarding the need to consider ontological and epistemological aspects of human embeddedness, we draw on recent developments in sociomateriality studies and connect them with reflexivity. Engaging students with ideas around sociomateriality can lead to a deeper understanding of our relationship with the environment. Sociomateriality scholars argue that physical properties, social, economic and political processes are complexly interwoven (Orlikowski and Scott 2008). Reflexivity requires us to question taken-for-granted assumptions and their impact. We now go on to discuss sociomateriality and reflexivity, and their relationship to ecocentrism.

## Sociomateriality

The recent interest in sociomateriality is a response to mainstream theorizing of organizations as possessing "fixed and inert [material] structure, while leaving the social as active and dynamic" (Dale and Burrell 2008, p. 213). Hence it is argued that "the ways in which organizing is bound up with the material forms and spaces through which humans act and interact" have substantially been overlooked (Orlikowski 2007, p. 1435). Sociomateriality theorists see organizations and objects as simultaneously social *and* material, where each aspect only becomes meaningful through their interrelationship. As Dale and Burrell state "humans are part of the material world, not transcendent gods or magicians able to manipulate the material without being incorporated or changed by it" (2008, p. 210). Connectedly, Cooper (2005) uses the term 'relationality' to question the language categories that help disembed organizations and ecologies, suggesting that humans cannot talk as though they are distinct from the environments that sustain them, instead they are "complexly mixed together as a field of dynamic interchanges in which locatable terms lose themselves in a dense interspace of relations" (p. 1690). The concept of sociomateriality can therefore be connected with an ecocentric perspective because both recognize the 'mutual in acting' of social-material relations: that material objects and the interpretations, values, actions of people are entangled and mutually constituted. This causes us to rethink ontology by questioning the objectivist position of the physical world as a given immutable reality, as well as the strong social constructionist position that only recognizes the social and cultural as meaningful (Dale and Burrell 2008). For example, Hawkins et al. (2016) highlight how learning is situated in the entanglement of social interpretations and material objects through their study of how middle managers develop low-carbon practices in their organizations. They argue that existing understandings can be disrupted around our relationship with material boundary objects (e.g. heating systems, computers, a sustainability checklist), which can lead to more nuanced awareness of sustainability initiatives.

The ecocentric and reflexive perspective we develop here appreciates the interrelationship between material objects and social understandings, the blurred distinctions between evolving societies and dynamic ecosystems and the need to 'disrupt' current ways of thinking and acting. This is key to considering human embeddedness in sustainability so that we can explore possibilities for changes in theory and practice, as well as the potential for a shift in paradigmatic thinking in sustainability education.

## The Contribution of Reflexivity to Ecocentrism

A number of authors have already highlighted a need for reflexivity if we are to transform ‘business as usual’ where economic issues are given priority and move towards changes in our way of thinking about the role of organizations in relation to sustainability (Miller et al. 2011). For example, Kearins and Springett (2003) suggest that reflexivity can highlight the need for radical change because it helps address both personal and social values relating to sustainability. Schneider (2015) notes how reflexive sustainability accounting can bring a greater diversity of stakeholder perspectives and promote organizational logics that can help reconcile economic, ecological and social considerations. And Murillo and Vallentin (2016) argue that reflexivity can be part of helping “business schools to accept their responsibilities as social institutions and to work toward becoming more socially embedded and better attuned to public interests” (p. 743). Yet work in this area is limited.

We argue that reflexivity can enhance an ecocentric view of sustainability as sociomaterial embeddedness by bringing attention to our interconnectedness with, and therefore responsibility for, our physical world. It is also of relevance in addressing one of the main challenges in sustainability—engaging managers and students in recognizing the responsibilities of business, the impact of business practice and their own values and practices on the environment, and connecting this realization with the need for action. Additionally, reflexivity offers the potential for exploring how underlying assumptions and language systems may shape discourse and action on sustainability and climate change (Hall et al. 2010), how neoclassic and technocentric forms of discourse create essentialist distinctions between universal and distinct categories (e.g. human/nature). Finally, reflexivity can also help in developing sustainable communities by bringing forward hidden and marginal voices that can unsettle predominant discourses (Bodorkós and Pataki 2009; Newton et al. 2012). These are all issues that can offer a foundation for debate within a curriculum on sustainability.

In the following section, we will identify the various approaches to reflexivity as a basis for elaborating the radically reflexive perspective which we argue is important to approaching sustainability education from an ecocentric perspective. The need for change and a different way of thinking in management education is not just an issue for educators. A study by Koris et al. (2016) found that international business students “aspire to live up to less instrumental values—they seek to be humane, just, ethical, critical, introspective and intellectually curious” (p. 10) and to serve the public good as well as achieving business

goals. We suggest that critical and reflexive thinking are central to this.

## Embeddedness: Reflection ‘On’ and Reflexivity ‘In’ the World

Reflexivity has only comparatively recently found its way into Organization and Management Studies (Alvesson and Skoldberg 2009; Chia 1996; Johnson and Duberley 2003), having a much longer history in philosophy (Bourdieu 2004; Lawson 1985; Schütz 1967), cultural anthropology and sociology (Clifford and Marcus 1986) and the sociology of knowledge (Ashmore 1989; Woolgar 1988). Numerous definitions and typologies of reflexivity exist (e.g. Alvesson et al. 2008; Holland 1999; Lynch 2000). Many draw on social constructionist assumptions that we continually construct what we assume to be a ‘real’ and independent social world—its meanings, events and institutions—in our everyday activities, interactions and conversations. We therefore need to question, reflexively, our ability to capture fully and accurately an objective social world; *how* we generate and disseminate knowledge; and how we explicitly and implicitly define/capture and privilege particular ways of thinking and acting (Alvesson et al. 2008; Cunliffe 2004). In other words, reflexivity is about questioning what we take for granted and examining the privileging and marginalizing effects of organizational policies, practices and hierarchies. In particular, it emphasizes our responsibility as managers, educators and citizens for shaping social and organizational realities and creating responsive and responsible organizations (Hibbert and Cunliffe 2015; Murillo and Vallentin 2015).

While the terms reflexivity and reflection/reflective practice are often used interchangeably, they are different—and importantly for ecocentrism, the difference is an ontological one. We will highlight this difference by contrasting reflexivity with Schön’s (1983) notion of reflective practice, with which it is often confused. Reflective practice is often seen to be at the heart of management learning. Schön argued that practitioners often ‘think on their feet’, or reflect-in-action (p. 54) in which they rely on a “tacit knowing-in-action” (p. 49), which involves spontaneous actions, decisions and talk in which we somehow construct an understanding of the situation and function within it. Reflecting-in-action involves a manager drawing on cumulative organizational and personal knowledge and practices and using them in “a reflective conversation with the situation” (p. 242): an on-the-spot experimenting and “testing of intuitive understandings of experienced phenomena” (p. 241). This experimentation process is a rigorous one, involving three levels—exploration, move

testing and hypothesis testing—which fulfil the “logics of affirmation” (p. 155) by surfacing, restructuring, testing and affirming the theory underlying action. Schön therefore sees reflective practice as a conscious and deliberate process in which a practitioner/researcher is an ‘agent-experient’—a thinking being who can turn him/herself into an object for reflection (p. 322–323). This draws on an objectivist ontology in which reflective practitioners reflect *on* the situation and themselves, their actions, events and circumstances with the aim of turning that ‘data’ into knowledge to resolve problems. It may also be facilitated by critical event recognition, which may lead to reflection, learning and change (Lindh and Thorgren 2016). Reflection is therefore seen as a cognitive process in which we can step outside ourselves and our circumstances, apply logical thinking and current knowledge to an analysis of a situation, upon which we can act. It rarely involves questioning existing perspectives.

Reflexivity requires a different ontology to reflection, one in which we situate ourselves *in* the world as co-creators of the situations in which we find ourselves, by questioning: our assumptions and our role; what we may be saying and not saying; what we may be privileging and taking for granted. As Marshall et al. (2011) observed in their study of how students took on leadership roles in a Master’s programme about sustainability, reflexivity was about noticing absences and contradictions in their (student’s own) accounts along with “critiquing their [own] position” (p. 20). Reflexivity is concerned with transformative learning and thinking at social, organizational and personal levels, particularly when dealing with ill-defined and contested situations that encompass very different versions of ‘reality’ (Sterling 2011; Wals and Corcoran 2006). It can therefore play a strong role in responding to the criticisms and challenges identified in sustainability studies by focusing attention on the way we see our social–material relations, because it requires us to question “our own constructions of realities, identities, and knowledge” (Cunliffe 2003, p. 989).

While research on sustainability in management has paid limited attention to reflexivity, there are a number of recent examples in other disciplines that we will discuss briefly as a means of illustrating how reflexivity focuses on embeddedness and therefore its relevance to sustainability studies. A recent strand of work drawing on reflexivity has been from scholars who have been working as action researchers. Bodorkós and Pataki (2009), for example, have used participatory action research to work with socio-economically disadvantaged rural communities in the pursuit of sustainable development. Ideas of reflexivity are expressed in their research approach through the intent of unsettling prevalent discourses, bringing forward hidden voices and challenging structures of power and politics. In

Geography, similar studies have looked at how participatory action research can help explore issues of power and resistance—between the researcher and the researched—in developing understandings about the meanings and practices of a sustainable community (Newton et al. 2012). In this study, being reflexive is about considering how the incentives for researchers around research impact are implicated in how the research is conducted, the subject defined and the ways of researching ‘with’ a community are enacted. Similarly, Hall et al. (2010) employ methods of participatory action research in attempting to promote and enhance the work of social movements to respond to issues of climate change. They use the concept of double loop learning to consider underlying assumptions that may shape discourse and action on climate change.

We wish to supplement this work by introducing the notion of radical-reflexivity, proposing that a radically reflexive approach offers a more powerful way of understanding, studying and acting around issues of sustainability. Radical-reflexivity not only questions sedimented, routine and taken-for-granted assumptions and practices, but it is compatible with ecocentrism by emphasizing that we (as researchers, teachers, managers, people) are embedded in a world in which every seeing, doing and theorizing of that world is a positioned one.

## Radical-Reflexivity and Sustainability

Radical-reflexivity strives “against the inevitable conservatism of settled positions” (Pollner 1991, p. 370).

We argue that within the field of sustainability we need to go one step further and engage with a version of reflexivity—radical-reflexivity—that forms a way of exploring our social–material embeddedness and its concomitant responsibilities. Sociologist Melvin Pollner is attributed as initially drawing our attention to radical-reflexivity and the need to explore the “unremarkable, banal and taken-for-granted practices” (1991, p. 379) that people use to live in the ‘real world’. Radical-reflexivity is not just about “unsettling” (p. 370) ways of thinking about reality, but goes further than other versions of reflexivity by claiming that whoever is doing the “unsettling” is also constrained by a set of presuppositions and assumptions that influence the way s/he views the world. Therefore, the relationship between how a person views the world and the effects or outcomes of that view needs to be considered. This is the antithesis of social science’s and business schools’ preoccupation with objectivity, value neutral positioning, the separation of researcher/researched and abstractions that detach the individual from the context/

environment in which they operate. Radical-reflexivity not only sees the social world as constituted in social activity, but examines multiple positions and truth claims and their consequences. We suggest it also challenges our conceptions of our relationship with our social *and physical* environment by drawing attention to the interrelated nature of individual and collective world views, social and material space and power relations—a stance we argue should be extended to the understanding and enactment of sustainability. Thus, from a radically reflexive perspective, sustainability can be approached as intertwined in a reciprocal relationship between the social and material world, and as such, it is of particular interest to ecocentric sustainability studies because it helps us to explore the embedded nature of our experience.

Understanding sustainability through the lens of radical-reflexivity helps us to consider how business, communities and people exist interdependently through their social-material relations. It also enables ecosystems as well as other aspects, such as technology, to be understood as part of the complexly interwoven material (physical) relations in organizations. For example, Gephart (1996) seeks to develop a management perspective on ecology and nature by employing radical-reflexivity. He suggests that radical-reflexivity helps us move beyond thinking about “a world composed of environments” where nature is constituted as independent of humans, by addressing “the very limits of human knowledge” (p. 220). This point is taken up by Whiteman and Cooper (2011) who argue that ecological materiality (the physical and material elements of the natural environment) is integral to sensemaking—that paying attention to ecological embeddedness can help build resilient and sustainable communities and organizations.

The limitations to our potential to fully understand the world and sustainability are related to how we are inevitably embedded within sociomaterial relationships and cultural practices (including our words and their meanings) at certain locations in time and space. Hence, a radically reflexive lens requires engagement with these limits of understanding to question and deconstruct the ways we conceptualize and categorize issues of sustainability. For example, the idea of there being ‘individuals’ in the world becomes misleading using this lens. Indeed, notions of a world which contains ‘otherness’ independent from a category of human also appears inappropriate.

### Developing an Ecocentric Perspective: Integrating Radical-Reflexivity with Sociomateriality

To illustrate how radical-reflexivity and sociomateriality together can help us to explore managerial and organizational responsibilities in relation to sustainability, we draw

upon Orlikowski’s (2010) framework, which describes four main sociomaterial perspectives. While she refers to technology and organizations, we replace technology with environment because her four perspectives are also informative for viewing the relationship between sustainability and organizations. The framework illustrates how an ecocentric radically reflexive perspective differs from other perspectives and offers a way of helping educators and students evaluate, rethink and transform their approach to sustainability by enabling us to appreciate our social and physical embeddedness Fig. 1.

In the following discussion, we associate reflection and reflexivity with her four perspectives in terms of: ‘absent presence’ as *unreflective*, ‘exogenous force’ as *reflective*, ‘emergent processes’ as *reflexive* and ‘entangled in practice’ as *radically-reflexive*. Our example, which considers sustainability in terms of what it implies for the generation and use of energy, includes some quotations of senior manager’s views about sustainability from a study of the northern European energy and power industry to help exemplify the implications of each perspective (Allen et al. 2015).

1. *Absent presence*—the environment is there but ignored. In this perspective, “ontological priority is given to human actors and social structures”, with the environment as a “background concern” (Orlikowski 2010, p. 128). The environment as an absent presence—as taken-for-granted and immutable (e.g. fossil energy resources appreciated as constant and unlimited)—can be equated with an *unreflective* stance in which even reflecting-in-action does not take place because responsibility for an external ‘given’ is disregarded. This connects with the reported attitude of senior managers, who see sustainability as a problem for others but no concern of theirs, which is often associated with the drive to generate profits or to compete effectively against other global players. For example, in response to the interview question ‘what does operating sustainably mean?’, a Director of Sales at a gas turbine overhaul and maintenance company commented:

“In general I would say the notion of sustainability features in a very very small way, sometimes not at all in any kind of significant discussion. Whether that’s a discussion on ... our business growth, investments, ... product development, sources of competitive advantage and such like. Or, whether it’s a discussion with our customers about the goods and services that they’re looking for”.

By viewing the environment as an absent presence, classroom discussion is likely to focus around sustainability as a business issue to be minimized and organizations



<p style="text-align: center;"><b>The Environment as an Absent Presence</b></p> <p>The environment is present but part of the taken-for-granted background of organizations and communities. It is viewed instrumentally in terms of providing resources to achieve goals, but beyond this is not perceived as having relevance and does not feature in discussion.</p> <p style="text-align: center;"><i>Unreflective</i></p>	<p style="text-align: center;"><b>The Environment as an Exogenous Force</b></p> <p>The environment is external to organizations. It has an impact on, and can determine, structure, design, strategy, etc. The environment is categorized, with generalisable characteristics, and measured. This perspective ignores context, history and human agency. Based on an ontology of separate objects that may be connected through a network.</p> <p style="text-align: center;"><i>Reflective – a logical analysis of external situations and events.</i></p>
<p style="text-align: center;"><b>The Environment as Emergent Human and Material Interaction</b></p> <p>The environment is shaped through the interaction of people, organizational contexts, history, language, culture, etc. Meanings of the environment shift across contexts and time and through multiple and sometimes conflicting interpretations. The environment is enacted into being. Can minimize the materiality of the environment. An ontology of separateness.</p> <p style="text-align: center;"><i>Reflexive</i></p>	<p style="text-align: center;"><b>The Environment and People as Embedded</b></p> <p>The environment, communities and people shape each other in mutually defining ways as they interact in lived experience. A relational ontology in which meanings, actions, events, etc., occur between us and agency is mutual. An ecocentric approach.</p> <p style="text-align: center;"><i>Radical-reflexivity</i></p>

**Fig. 1** Integrating radical-reflexivity with sociomateriality to promote ecocentrism (Based on Orlikowski 2010)

are likely to continue reproducing environmental problems by destroying the potential for ecosystems to regenerate and evolve.

2. *Exogenous force*—the environment informs and may also determine organizational processes. Here the environment is no longer absent, but becomes a factor relevant to organizations that can be *reflected* upon as an entity separate from the organization: environmental ‘data’ can be accumulated, studied and utilized to resolve organizational problems. However, the environment and its materiality are kept at a distance with clear boundaries between it and humans. The environment is understood as a storehouse of resources which are to be managed in order to fulfil economic objectives. Business is seen to operate autonomously from an environment which is substantially defined by financial metrics and understood via value-neutral generalizable laws with “tendencies and effects that extend broadly and hold generally across [environments] and contexts” (Orlikowski 2010, p. 137). In general, there is a lack of attention to the role of human agency in shaping and construing the environment. In respect of organizational action this perspective is similar to the first, but involves recognizing a cause and effect relationship and responding to external environmental pressures and expectations from shareholders, the media, politicians and consumers/customers. Essentially, this involves some financial commitment since the situation may require the appointment of both internal champions/spokes-people, and/or external PR agencies that specialize in helping companies to look ‘environmentally friendly’. As a Director of Technology in a major oil company commented:

“I think the corporations are all switched on to it, companies like us understand corporate social responsibility [and] have some sort of sustainability agenda etc. so I don’t think there’s an issue at the corporate level; but corporations have to have a viable offer, they [have to] make money ... for their business models so ultimately the consumer has to be able to discriminate and pay the extra”.

As such, education may focus on how to create competitive advantage by utilizing and managing environmental resources and present a business case for considering corporate social responsibility.

3. *Emergent processes*—the environment is *reflexively* understood as contingent on the emergent processes of human and material interaction. No longer taken-for-granted, it is interdependent with organizations and mediates processes of organizing. There is an appreciation for how the environment is shaped by “competing [human] interests, interpretations and identities” (Orlikowski 2010, p. 131). From this perspective, we can envisage that people in business seriously debate the sustainability agenda along with the conflicting meanings of nature–society–business relationships with protagonists. This debate is not just because there are external pressures, or the necessity for long-term company survival, but because managers recognize their responsibility for the world in which they exist. Humans and (a relatively stable) environment are still considered “essentially [and materially] different and separate realities” (p. 134), problems are able to be resolved through reflexive inquiry into issues of reducing organizational impact (e.g. how much fossil energy is combusted) and lessening unsustainable

decisions and actions, rather than actually promoting sustainability and seeking alternative purposes as well as ways of doing and being. As the Group Managing Director of a cogeneration and renewable energy company described:

“We looked at [sustainability] from different angles ... we needed to walk the talk. ... [But when we looked at] what do we do as an organization we were flying everywhere and we weren't recycling things properly. ... There are a lot of people in the business, generally younger people, who are asking [about] what we are doing as an organization to be sustainable and reduce our carbon footprint so there is pressure from the people that work for us. Policies around procurement is what some of it is about...”

Thus, managers recognize they have a responsibility for the environment because their decisions and actions have an impact. Within the classroom, we can engage students in reflexive debate around: how humans and materials interact; the different perspectives relating to human responsibilities for the environment; issues of power, politics and resistance around sustainability issues within organizations and the business community; and what should be done to change practices.

4 *Embedded ecocentrism (entangled in practice)*—While Orlikowski (2010) denotes the fourth perspective as ‘entangled in practice’, we have modified this to ‘embeddedness’ in order to reflect more directly the ecocentric view of the environment and human experience as reciprocally, ongoingly and multiply constructed as they come together in lived experience. Orlikowski’s definition of entanglement renounces the “presumption of separateness” of cause–effect relationships between separate atomistic entities by suggesting that humans and technology are intertwined in practice (2010, p. 137), rather entanglement is how the dynamic relations between humans and technology become configured and constitute agency, or the capacity to act. Her approach therefore connects with ecocentric principles of wholeness and embeddedness by drawing on a relational ontology in which our focus lies on how meanings, order, identities, organizing and actions occur in the relationships *between* us and our world. However, while entanglement brings to our attention the limitation of understanding about being in a sociomaterial world, care is needed not to marginalize human intentionality and with it the possibilities for humans to act responsibly within that entanglement (Heikkurinen et al. 2016). Hence, we use the term ‘embeddedness’, which blends the ‘out there’ and ‘in here’ while recognizing the need and potential for human reflexivity.

Within embeddedness, the idea of an environment becomes unstable, multiple and emergent. Consequently, this perspective is not only about the relative politics and powers of different organizations and people, but also the ‘matter’ of the environment is given an active role in shaping realities. For example, promoting inquiry into how fossil energy resources can be seen as actively involved in shaping processes of globalization, enabling and cajoling it to become a governing principle for economic activity. We argue that *radical-reflexivity* connects with embeddedness because it requires us to disrupt atomistic and normative ways of thinking and promotes the view that we are *in* the world and both shape/are shaped by it. This brings an ongoing responsibility for sustainability as our values, actions and the materiality of the world mutually construct issues around sustainable and unsustainable societies and environments. In this perspective, employees and managers in an organization understand and support the idea of sustainability as core to the identity and practices of the organization, whether they are involved in the functions of design, finance, manufacturing, marketing, etc. Such an embedded perspective involves taking, as the Group Managing Director of a power protection company explained, a broader view of the how sustainability can be related to being and managing:

“It’s a complex issue which, putting the energy market to one side, sustainability is related to every facet of life it even relates, in my mind, to politics and to religion although it tends to be largely focused on ecology and economy and I think that’s a bit narrow minded. It seems to me that you can’t separate these other issues because by its very nature the whole sort of the idea of sustainability is to keep everything going in the long term”

In this example, organizations and organizing are not seen as separate from the environment (as in the other perspectives *something* to be managed) rather they are embedded, and therefore managers are responsible for recognizing the complex and entangled nature of developing, generating and using, sustainable sources of energy. More broadly, this means being committed to the purpose of the company operations as promoting ways to organize for sustainability in their context—not doing so could materially be considered as a process of self-harming. This perspective therefore differs ontologically and practically from the other three.

These four perspectives offer a way of helping our students understand various relationships with our environment and evaluating their impact on decisions and actions. As such, they provide an impetus for reflexivity—for questioning what we take for granted and for exploring new possibilities. In the following section, we argue that

education can play an important role in changing management thinking and practice around sustainability, but that it will require a reflexive questioning of current assumptions and values underpinning business education around issues of sustainability and a movement towards a more ecocentric worldview. Sterling (2009) suggests that to do so, we need to pay attention to the paradigm, purpose, policy and practice of sustainability education.

### Implications of Radically Reflexive Ecocentrism for Management Education

“Sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly of ethos” (Sterling 2004, p. 50).

Sterling, along with a number of other authors (e.g. Coleman 2013; Kurucz et al. 2014; Setó-Pamies and Papaoikonomou 2016; Sherman and Hansen 2009), argue that we need to rethink our approach to sustainability in management and business education, in particular to find ways of capturing the complex relationships between ourselves, the communities and organizations in which we live and work and the physical environment. When undergraduate and graduate business students are, or become, interested in attempting to address sustainability challenges, education can play a major role in influencing their attitudes, decision making and behaviours. If we accept that the *purpose* of business and management education is about creating an ecological (not just economic) worldview, then we can begin to address the sustainability paradox (Kurucz et al. 2014) at the *paradigm* level. Engaging our students in radical-reflexivity can provoke this process by disrupting normative and technological ways of thinking and acting around sustainability to work towards a more ecocentric and relational approach.

We suggest a starting point for understanding our relationship with our world in different ways, and moving towards an ecocentric worldview lies in grappling with the impact of taken-for-granted ontological and epistemological issues in our thinking and practice. Consequently, alternative approaches to sustainability need to be supported or informed by education which engages with ‘epistemological pluralism’ and ‘multiple ways of knowing’ (Miller et al. 2011): ways of knowing predicated upon understanding how assumptions, values, emotions and identities are implicated in sense making and action around sustainability (Shrivastava 2010). Reading work that connects these philosophical issues with the environment can help students be reflexive and critically engage with the

issues. Exemplars may include books such as Bateson’s (1972) *Steps to an Ecology of Mind*, Carson’s (1962) *Silent Spring*, Goldsmith’s (1992) *The Way: An Ecological World View*, Zweer’s (2000) *Participation with Nature*, films such as Nora Bateson’s *An Ecology of Mind*, Vaughan-Lee’s *Elemental*, and journal articles such as Painter-Morland and ten Bos’s (2016) exposition of the relationship between Heidegger’s notion of being-in-the-world and organizational environmentalism.

There are also arguments that we (managers, students, academics) can learn from indigenous or traditional forms of knowledge, which embed sustainability as a community responsibility that focuses on sustainable development over the long term (Jolly et al. 2011; Stewart and Pepper 2011). These approaches advocate the need to appreciate being in the land—an ecocentric understanding fundamental to fostering attachment, meaning and a more holistic knowledge of places and their ecologies. An ecocentric curriculum could be designed such as that at Schumacher College (UK) which runs postgraduate and short courses based on an ecological worldview: a holistic understanding of people as co-inhabitants of the world and responsible for addressing social and ecological problems. A key aspect of the approaches at Schumacher College is that students are much less able to “go through a transformative experience as a whole group unless the whole organization is in a transformative learning experience itself” (Blake et al. 2013, p. 5367). Hence, there is a need to connect curriculum and pedagogy with the operations of educational institutions to help open up the space for students to test new perspectives and practices.

An ecocentric understanding can be achieved by engaging students from different disciplines in collaborative tasks to design sustainable products (Welsh and Murray 2003). Working from an open systems perspective, Gearty et al. (2015) propose a form of collaborative social learning in which learning histories from a number of organizations are written around sustainability initiatives and used in group discussion (students and managers) as a means of generating change. Ways of achieving this include exploring how the consequences of managerial decisions ‘cascade down to ground level’ (Walck 2003, p. 210), and engaging students in reflection on their differing value orientations towards the environment (e.g. Jolly et al. 2011).

Finally, at an individual level, how can we encourage students to think differently about their relationship with the world? Radical-reflexivity is associated with questioning our assumptions, values, decisions, actions, etc. in context, and is based on a degree of suspicion and/or doubt about our self and organizational practices. Doubt can lead to generative learning (Hawkins and Edwards 2015) and may be carefully facilitated in the classroom in various

ways: arts-based methods such as visual inquiry and poetic writing (Gaya and Phillips 2016; Page et al. 2014); reflexive writing (Bissett and Saunders 2015) including how sociomateriality can be understood as involved and represented in their writing (e.g. Muhr and Rehn 2015); and by engaging in dialogue around threshold concepts that encourage reflexivity and can lead to acting in more moral and responsible ways (Hibbert and Cunliffe 2015). Each of these resources can help students confront previously unknown, unfamiliar, uncomfortable and sometimes troublesome knowledge; explore multiple perspectives; and take a broader view about the ways of knowing which can be drawn upon in making sense of their entanglement in sustainability and responsibility for action.

A relatively small number of studies exist assessing the impact of sustainability education on practice (see Barlett and Chase 2013; Koehn and Uitto 2014). One such study is that by Hesselbarth and Schaltegger (2014), who surveyed 85 alumni of an MBA in Sustainability Management in Germany. They discovered that many alumni either changed their job, developed their current position or created their own new position or new company to include sustainability management—indeed 56% of respondents held a position where sustainability was a main focus. While this study suggests—and we argue—that education can have a significant role in promoting sustainability, we agree that it “cannot be seen as a panacea... but it could become a place for exposure, interaction and experiences to produce a cognitive and affective change in students” (Setó-Pamies and Papaioikonomou 2016, p. 534).

## Conclusion

The potential significance of developing radically reflexive ecocentrism can be appreciated by considering the United Nation’s Principles for Responsible Management Education (PRME), an initiative launched in 2007 to heighten the prominence of sustainability issues in management education. A substantial strand within PRME is to develop education processes that help students notice their value orientations and consider how these do or do not translate into personal and organizational actions. Hence, PRME advocates reflective practice as a key element of education for sustainability. However, a recent evaluation of the PRME initiative found that while opening up issues for discussion, PRME has not become a key driver of curriculum change in business schools (Burchell et al. 2015). We argue the need for a more fundamental change, one which requires educators to consider how incorporating a radically reflexive ecocentric approach to sustainability in the heart of a management curriculum might offer a way of rethinking our responsibility to act on these issues.

*Reflection on the world* does not foreground our *embeddedness in the world*: it is only by combining *radically-reflexive practice* (placing ourselves as participants in and active constructors of our world) with an understanding of ecocentrism and sociomateriality (that humans and materials interact and constitute each other) that we begin to highlight irresponsible actions and assumptions and therefore the need for responsible management.

In summary, radical-reflexivity “turns the reflexive act upon ourselves to deconstruct our own constructions of realities, identities, and knowledge, and highlight the intersubjective and indexical nature of meaning” (Cunliffe 2003, p. 989). When integrated with sociomateriality, a number of issues emerge relating to the way we conceptualize and educate for sustainability. First, as a socio-ontological resource, radical-reflexivity promotes an ecocentric approach to sustainability that requires us to pay attention to the interrelated nature of values, actions and our social and material world. It does so by engaging students in questioning assumptions about our place in the world, the multiple and competing interests we may encounter and how we can act in responsible and ethical ways. Second, radically reflexive ecocentrism challenges educators and students to examine how the discourses and practices of businesses, communities and researchers contribute to the conceptualization, definition and the enactment of sustainability. For example, the discourse of the environment as an *absent presence* or an *exogenous force* separates the organization from the environment, which becomes something to be ignored or managed based on a justification of the ‘bottom line’. The result is often a disconnect of managerial action from consequences, as indicated by the recent Fundão dam collapse in Brazil that buried a town, contaminated the water supply and impacted biodiversity. The assets of the mining companies in the joint venture were frozen after the United Nations criticized their insufficient response. Examples such as this provide case study material for discussion. Third, it highlights the need for academics, students and managers to think more critically and reflexively about their individual and collective responsibility to act on issues of sustainability. Radical-reflexivity embeds us in the world by offering a link between “major ‘macro’ sociohistorical configurations on the one hand and a vast array of embodied and discursive situated practices on the other” (Pollner 1991, p. 378).

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## References

- Akrivou, K., & Bradbury-Huang, H. (2015). Educating integrated catalysts: Transforming business schools toward ethics and sustainability. *Academy of Management Learning & Education*, 14(2), 222–240.
- Allen, S., & Marshall, J. (2015). Metalogue: Trying to talk about sustainability—A reflection on experience. *Tamara Journal for Critical Organization Inquiry*, 13(1–2), 1.
- Allen, S., Marshall, J., & Easterby-Smith, M. (2015). Living with contradictions: The dynamics of senior managers' identity tensions in relation to sustainability. *Organization and Environment*, 28(3), 328–348.
- Allen, T., Tainter, J., & Hoekstra, T. (2003). *Supply-side sustainability*. New York: Columbia University Press.
- Alvesson, M., Hardy, C., & Harley, B. (2008). Reflecting on reflexivity: Reflexive textual practices in organization and management theory. *Journal of Management Studies*, 45(3), 480–501.
- Alvesson, M., & Skoldberg, K. (2009). *Reflexive methodology: New vistas for qualitative research*. London: Sage.
- Ashmore, M. (1989). *The reflexive thesis*. London: University of Chicago Press.
- Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. *Strategic Organization*, 11(4), 418–427.
- Banerjee, S. B. (2003). Who sustains whose development? Sustainable development and the reinvention of nature. *Organization Studies*, 24(1), 143–180.
- Banerjee, S. B. (2012). A climate for change? Critical reflections on the Durban United Nations Climate Change Conference. *Organization Studies*, 33(12), 1761–1786.
- Barlett, P. F., & Chase, G. W. (Eds.). (2013). *Sustainability in higher education: Stories and strategies for transformation*. Cambridge, MA: MIT Press.
- Bateson, G. (1972). *Steps to an ecology of mind*. Aylesbury: Intertext.
- Bissett, N., & Saunders, S. (2015). Criticality and collegiality: A method for humanizing everyday practice? *Journal of Management Education*, 39(5), 597–625.
- Blake, J., Sterling, S., & Goodson, I. (2013). Transformative learning for a sustainable future: An exploration of pedagogies for change at an alternative college. *Sustainability*, 5(12), 5347–5372.
- Bodorkós, B., & Pataki, G. (2009). Local communities empowered to plan? Applying PAR to establish democratic communicative spaces for sustainable rural development. *Action Research*, 7(3), 313–334.
- Borland, H., Ambrosini, V., Lindgreen, A., & Vanhamme, J. (2016). Building theory at the intersection of ecological sustainability and strategic management. *Journal of Business Ethics*, 135(2), 293–307.
- Borland, H., & Lindgreen, A. (2013). Sustainability, epistemology, ecocentric business, and marketing strategy: Ideology, reality, and vision. *Journal of Business Ethics*. doi:10.1007/s10551-012-1519-8.
- Bourdieu, P. (2004). *Science of science and reflexivity*. Cambridge: Polity.
- Bradbury, H. (2003). Sustaining inner and outer worlds: A whole-systems approach to developing sustainable business practices in management. *Journal of Management Education*, 27(2), 172–187.
- Burchell, J., Kennedy, S., & Murray, A. (2015). Responsible management education in UK business schools: Critically examining the role of the United Nations Principles for Responsible Management Education as a driver for change. *Management Learning*, 46(4), 479–497.
- Carson, R. (1962). *Silent Spring*. London: H. Hamilton.
- Cherrier, H., Russell, S. V., & Fielding, K. (2012). Corporate environmentalism and top management identity negotiation. *Journal of Organizational Change Management*, 25(4), 518–534.
- Chia, R. (1996). The problem of reflexivity in organizational research: Towards a postmodern science of organization. *Organization*, 3(1), 31–59.
- Clifford, J., & Marcus, G. (1986). *Writing culture: The poetics and politics of ethnography*. London: University of California Press.
- Coleman, G. (2013). Sustainability as a learning challenge. *The Journal of Management Development*, 32(3), 258–267.
- Cooper, R. (2005). Peripheral vision relationality. *Organization Studies*, 26(11), 1689–1710.
- Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K. E., et al. (2014). Development: Time to leave GDP behind. *Nature*, 505(7483), 283–285.
- Cunliffe, A. L. (2003). Reflexive inquiry in organizational research: Questions and possibilities. *Human Relations*, 56(8), 983–1003.
- Cunliffe, A. L. (2004). On becoming a critically reflexive practitioner. *Journal of Management Education*, 28(4), 407–426.
- Dale, K., & Burrell, G. (2008). *The spaces of organisation and the organisation of space: Power, identity and materiality at work*. Basingstoke: Palgrave Macmillan.
- Dale, A., & Newman, L. (2005). Sustainable development, education and literacy. *International Journal of Sustainability in Higher Education*, 6(4), 351–362.
- Delmas, M. A., & Cuerel Burbano, V. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64.
- Devall, B. (2001). The unsustainability of sustainability. *Culture Change Magazine*, (19). Retrieved January 8, 2013 from <http://www.culturechange.org/issue19/unsustainability.htm>.
- Docherty, P., Kira, M., & Shani, A. B. (2009). What the world needs now is sustainable work systems. In P. Docherty, M. Kira, & A. B. Shani (Eds.), *Creating sustainable work systems. Developing social sustainability* (pp. 1–21). Abingdon: Routledge.
- Dyck, B., & Greidanus, N. S. (2017). Quantum sustainable organizing theory: A study of organization theory as if matter mattered. *Journal of Management Inquiry*, 26(1), 32–46.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Oxford: Capstone Publishing.
- Gaya, P., & Phillips, M. (2016). Imagining a sustainable future: Eschatology, Bateson's ecology of mind and arts-based practice. *Organization*, 23(6), 803–824.
- Gearty, M. R., Bradbury-Huang, H., & Reason, P. (2015). Learning history in an open system: Creating histories for sustainable futures. *Management Learning*, 46(1), 44–66.
- Gephart, R. (1996). Simulacral environments: Reflexivity and the natural ecology of organizations. In D. M. Boje, R. P. Gephart, & T. J. Thatchenkery (Eds.), *Postmodern management and organization theory*. Thousand Oaks, CA: Sage.
- Gladwin, T. N., Kennelly, J. J., & Krause, T. S. (1995). Shifting paradigms for sustainable development—Implications for management theory and research. *Academy of Management Review*, 20(4), 874–907.
- Glavas, A., & Mish, J. (2015). Resources and capabilities of triple bottom line firms: Going over old or breaking new ground? *Journal of Business Ethics*, 127(3), 623–642.
- Goldsmith, E. (1992). *The way: An ecological world view*. London: Random Century.
- Goodall, A. H. (2008). Why have the leading journals in management (and other social sciences) failed to respond to climate change? *Journal of Management Inquiry*, 17(4), 408–420.
- Hall, N. L., Taplin, R., & Goldstein, W. (2010). Empowerment of individuals and realization of community agency Applying action research to climate change responses in Australia. *Action Research*, 8(1), 71–91.

- Hawkins, B., & Edwards, G. (2015). Managing the monsters of doubt: Liminality, threshold concepts and leadership learning. *Management Learning*, 46(1), 24–43.
- Hawkins, B., Pye, A., & Correia, F. (2016). Boundary objects, power and learning: The matter of developing sustainable practice in organizations. *Management Learning*. doi:10.1177/1350507616677199.
- Heikkurinen, P., Rinkinen, J., Järvensivu, T., Wilén, K., & Ruuska, T. (2016). Organising in the Anthropocene: An ontological outline for ecocentric theorising. *Journal of Cleaner Production*, 113, 705–714.
- Hesselbarth, C., & Schaltegger, S. (2014). Educating change agents for sustainability—Learnings from the first sustainability management master of business administration. *Journal of Cleaner Production*, 62, 24–36.
- Hibbert, P., & Cunliffe, A. L. (2015). Responsible management: Engaging moral reflexive practice through threshold concepts. *Journal of Business Ethics*, 127(1), 177–188.
- Holland, R. (1999). Reflexivity. *Human Relations*, 52(4), 463–484.
- Howlett, C., Ferreira, J.-A., & Blomfield, J. (2016). Teaching sustainable development in higher education: Building critical, reflective thinkers through an interdisciplinary approach. *International Journal of Sustainability in Higher Education*, 17(3), 305–321.
- Huckle, J., & Sterling, S. (2014). Introduction. In J. Huckle & S. Sterling (Eds.), *Education for sustainability* (pp. 20–24). London: Routledge (first published 1996).
- Johnson, P., & Duberley, J. (2003). Reflexivity in management research. *Journal of Management Studies*, 40(5), 1279–1303.
- Jolly, F., Whiteman, G., Atkinson, M., & Radu, I. (2011). Managing and educating outside: A Cree Hunter's perspective on management education. *Journal of Management Education*, 35(1), 27–50.
- Jones, D. R. (2014). Restorative counter-spacing for academic sustainability. *Organization & Environment*, 27(3), 297–314.
- Kearins, K., & Springett, D. (2003). Educating for sustainability: Developing critical skills. *Journal of Management Education*, 27(2), 188–204.
- Khavul, S., & Bruton, G. D. (2013). Harnessing innovation for change: Sustainability and poverty in developing countries. *Journal of Management Studies*, 50(2), 285–306.
- Koehn, P. H., & Uitto, J. I. (2014). Evaluating sustainability education: Lessons from international development experience. *Higher Education*, 67(5), 621–635.
- Koris, R., Ortenblad, A., & Ojala, T. (2016). From maintaining the status quo to promoting free thinking and inquiry: Business students' perspective on the purpose of business school teaching. *Management Learning*. doi:10.1177/1350507616668480.
- Kurucz, E. C., Colbert, B. A., & Marcus, J. (2014). Sustainability as a provocation to rethink management education: Building a progressive educative practice. *Management Learning*, 45(4), 437–457.
- Lawson, H. (1985). *Reflexivity: The post-modern predicament*. La Salle: Open Court.
- Lindh, I., & Thorgren, S. (2016). Critical event recognition: An extended view of reflective learning. *Management Learning*, 47(5), 525–542.
- Lynch, M. (2000). Against reflexivity as an academic virtue and source of privileged knowledge. *Theory, Culture & Society*, 17(3), 26–54.
- Marcus, J., Kurucz, E. C., & Colbert, B. A. (2010). Conceptions of the business-society-nature interface: Implications for management scholarship. *Business and Society*, 49(3), 402–438.
- Marshall, J., Coleman, G., & Reason, P. (2011). *Leadership for sustainability: An action research approach*. Sheffield: Greenleaf.
- Martin, S. (2005). Sustainability, systems thinking and professional practice. *Systemic Practice and Action Research*, 18(2), 163–171.
- McPherson, S., Anid, N. M., Ashton, W. S., Hurtado-Martín, M., Khalili, N., & Panero, M. (2016). Pathways to Cleaner Production in the Americas II: Application of a competency model to experiential learning for sustainability education. *Journal of Cleaner Production*, 135, 907–918.
- Meadows, D., Randers, J., & Meadows, D. (2005). *Limits to growth: The 30-year update*. London: Earthscan.
- Miller, T. R., Munoz-Erickson, T., & Redman, C. L. (2011). Transforming knowledge for sustainability: Towards adaptive academic institutions. *International Journal of Sustainability in Higher Education*, 12(2), 177–192.
- Muhr, S. L., & Rehn, A. (2015). On gendered technologies and cyborg writing. *Gender, Work & Organization*, 22(2), 129–138.
- Murillo, D., & Vallentin, S. (2016). The Business School's right to operate: Responsibilization and resistance. *Journal of Business Ethics*, 136(4), 743–757.
- Newton, T. (2002). Creating the new ecological order? Elias and actor-network theory. *Academy of Management Review*, 27(4), 523–540.
- Newton, J., Franklin, A., Middleton, J., & Marsden, T. (2012). (Re-)negotiating access: The politics of researching skills and knowledge for 'sustainable communities'. *Geoforum*, 43(3), 585–594.
- Nidumolu, R., Prahalad, C. K., & Rangaswami, M. R. (2009). Why sustainability is now the key driver of innovation. *Harvard Business Review*, 87(9), 56–64.
- NOAA. (2016). State of the climate: Global analysis for June 2016. Retrieved July 21, 2016 from <http://www.ncdc.noaa.gov/sotc/global/201606>.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435–1448.
- Orlikowski, W. J. (2010). The sociomateriality of organisational life: Considering technology in management research. *Cambridge Journal of Economics*, 34(1), 125–141.
- Orlikowski, W. J., & Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals*, 2(1), 433–474.
- Page, M., Grisoni, L., & Turner, A. (2014). Dreaming fairness and reimagining equality and diversity through participative aesthetic inquiry. *Management Learning*, 45(5), 577–592.
- Painter-Morland, M., & ten Bos, R. (2016). Should environmental concern pay off? A Heideggerian perspective. *Organization Studies*, 37(4), 547–564.
- Pollner, M. (1991). Left of ethnomethodology: The rise and decline of radical-reflexivity. *American Sociological Review*, 56(3), 370–380.
- Porritt, J. (2007). *Capitalism: As if the world matters*. London: Earthscan.
- Porter, T. (2008). Managerial applications of corporate social responsibility and systems thinking for achieving sustainability outcomes. *Systems Research and Behavioral Science*, 25(3), 397–411.
- Porter, M. E., & van der Linde, C. (1995). Green and competitive: Ending the stalemate. *Harvard Business Review*, 73(5), 120–134.
- Porter, T., & Córdoba, J. (2009). Three views of systems theories and their implications for sustainability education. *Journal of Management Education*, 33(3), 323–347.
- Purser, R. E., & Montuori, A. (1996). Ecocentrism is in the eye of the beholder. *The Academy of Management Review*, 21(3), 611–613.
- Purser, R. E., Park, C., & Montuori, A. (1995). Limits to anthropocentrism: Toward an ecocentric organization. *Academy of Management Review*, 20(4), 1053–1089.

- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, S., Lambin, E. F., et al. (2009). A safe operating space for humanity. *Nature*, 461(7263), 472–475.
- Roome, N., & Louche, C. (2015). Journeying toward business models for sustainability: A conceptual model found inside the black box of organisational transformation. *Organization & Environment*, 29(1), 11–35.
- Schneider, A. (2015). Reflexivity in sustainability accounting and management: Transcending the economic focus of corporate sustainability. *Journal of Business Ethics*, 127(3), 525–536.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schütz, A. (1967). *The phenomenology of the social world*. Evanston, IL: Northwestern University Press.
- Setó-Pamies, D., & Papaioikonomou, E. (2016). A multi-level perspective for the integration of ethics, corporate social responsibility and sustainability (ECSRS) in management education. *Journal of Business Ethics*, 136(3), 523–538.
- Shani, A. R., & Docherty, P. (2009). *Learning by design: Building sustainable organizations*. Oxford: Wiley.
- Sharma, S., & Hart, S. L. (2014). Beyond 'saddle bag' sustainability for business education. *Organization & Environment*, 27(1), 10–15.
- Sherman, P., & Hansen, J. (2009). The new corporate social responsibility: A call for sustainability in business education. *International Journal of Environment and Sustainable Development*, 9(1–3), 241–254.
- Shrivastava, P. (1995). Ecocentric management for a risk society. *Academy of Management Review*, 20(1), 118–137.
- Shrivastava, P. (2010). Pedagogy of passion for sustainability. *Academy of Management Learning & Education*, 9(3), 443–455.
- Starik, M., & Kanashiro, P. (2013). Toward a theory of sustainability management uncovering and integrating the nearly obvious. *Organization & Environment*, 26(1), 7–30.
- Starik, M., Rands, G., Marcus, A. A., & Clark, T. S. (2010). From the guest editors: In search of sustainability in management education. *Academy of Management Learning & Education*, 9(3), 377–383.
- Stead, J. G., & Stead, W. E. (2010). Sustainability comes to management education and research: A story of coevolution. *Academy of Management Learning & Education*, 9(3), 488–498.
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., et al. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855.
- Sterling, S. (2004). Higher education, sustainability, and the role of systemic learning. In P. B. Corcoran & A. E. J. Wals (Eds.), *Higher education and the challenge of sustainability: Problematics, promise, and practice* (pp. 49–70). Dordrecht: Springer.
- Sterling, S. (2009). Sustainable education. In D. Gray & L. Colluci-Gray (Eds.), *Science, society and sustainability: Education and empowerment for an uncertain world* (pp. 108–111). New York: Routledge.
- Sterling, S. (2011). Transformative learning and sustainability: Sketching the conceptual ground. *Learning and Teaching in Higher Education*, 5(11), 17–33.
- Stewart, D., & Pepper, M. B. (2011). Close encounters: Lessons from an indigenous MBA program. *Journal of Management Education*, 35(1), 66–83.
- Stubbs, W., & Cocklin, C. (2008). Teaching sustainability to business students: Shifting mindsets. *International Journal of Sustainability in Higher Education*, 9(3), 206–221.
- Tregidga, H., Milne, M. J., & Kearins, K. (2015). Ramping up resistance: Corporate sustainable development and academic research. *Business and Society*. doi:10.1177/0007650315611459.
- Valente, M. (2012). Theorizing firm adoption of sustaincentrism. *Organization Studies*, 33(4), 563–591.
- Walck, C. (2003). Using the concept of land to ground the teaching of management and the natural environment. *Journal of Management Education*, 27(2), 205–219.
- Wals, A. E., & Corcoran, P. B. (2006). Sustainability as an outcome of transformative learning. *Drivers and barriers for implementing sustainable development in higher education*, 103. <http://hdl.handle.net/11295/60357>.
- WBCSD. (2013). Beyond business as usual-Action2020 and climate change. Retrieved February 17, 2014, from <http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=15980&NoSearchContextKey=true>.
- Welsh, M. A., & Murray, D. L. (2003). The ecollaborative: Teaching sustainability through critical pedagogy. *Journal of Management Education*, 27(2), 220–235.
- Whiteman, G., & Cooper, W. H. (2011). Ecological sensemaking. *Academy of Management Journal*, 54(5), 889–911.
- Whiteman, G., Walker, B., & Perego, P. (2013). Planetary boundaries: Ecological foundations for corporate sustainability. *Journal of Management Studies*, 50(2), 307–336.
- Wittneben, B. B. F., Okereke, C., Banerjee, S. B., & Levy, D. L. (2012). Climate change and the emergence of new organizational landscapes. *Organization Studies*, 33(11), 1431–1450.
- Woolgar, S. (1988). *Knowledge and reflexivity: New frontiers in the sociology of knowledge*. London: Sage.
- Wooltorton, S., Wilkinson, A., Horwitz, P., Bahn, S., Redmond, J., & Dooley, J. (2015). Sustainability and action research in universities: Towards knowledge for organisational transformation. *International Journal of Sustainability in Higher Education*, 16(4), 424–439.
- Wright, C., Nyberg, D., De Cock, C., & Whiteman, G. (2013). Future imaginings: Organizing in response to climate change. *Organization*, 20(5), 647–658.
- Wright, C., Nyberg, D., & Grant, D. (2012). 'Hippies on the third floor': Climate change, narrative identity and the micro-politics of corporate environmentalism. *Organization Studies*, 33(11), 1451–1475.
- Zweers, W. (2000). *Participation with nature: Outline for an ecologisation of our worldview*. Utrecht: International Books.