

Quantum Sustainable Organizing Theory: A Study of Organization Theory as if Matter Mattered

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Abstract

We draw on quantum physics ideas of “entanglement” and “indeterminism” to introduce and develop “Quantum Sustainable Organizing Theory” (QSOT). Quantum entanglement points to the interconnectedness of matter in ways that defy Newtonian physics and commonsense assumptions that underlay conventional organizing theory. Quantum indeterminism suggests that uncertainty is an inherent feature of reality and not simply a lack of information that impedes rational decision making. Taken together, these quantum ideas challenge the assumptions of conventional organizational theorizing about the boundaries between a firm and its natural and social environment, the importance of self-interested individualism and (sociomaterial) financial measures of performance, the emphasis on competitiveness, and the hallmarks of rational theory and practice. We discuss implications for sustainable organizing in particular and for organization theory more generally.

Keywords

sustainability, organization theory, environmental responsibility, entanglement, indeterminism

Many of us have been struggling for years with the problems presented by large-scale organisation, problems which are becoming ever more acute. To struggle more successfully, we need a theory, built up from principles. But from where do the principles come?

—Schumacher (1973, p. 211)

Humankind finds itself at a crossroads of sorts. We are facing serious ecological and social crises. Ecologically, perhaps the most serious crisis is that of climate change, caused in part by the annual US\$1.4 trillion of greenhouse-gas-related externalities associated with the 3,000 largest corporations on the planet (Sukhdev, 2013). Moreover, because of the unprecedented influence humankind has had on the planet's oceans, lands, and atmosphere, scientists are suggesting that we are entering an Anthropocene era with, among other things, the potential for increased threats of species extinction (e.g., Hoffman & Jennings, 2015). Socially, alarm bells are ringing around the world related to the widening gap between rich and poor, where 95% of postfinancial crisis growth since 2009 was captured by the wealthiest 1% in the United States while the lowest 90% became poorer, and where 85 individuals have as much wealth as half the world (Fuentes-Nieva & Galasso, 2014). We should not be surprised that this brings social unrest and revolution.

Business scholars and practitioners want to do their part to address pressing socioecological issues. But progress has been slowed, we believe, because we are caught in a

conventional organizational theory straightjacket, limited by (Newtonian) assumptions, worldviews, and ideas of our own making. This conventional view assumes that the world is made up of discrete units, and that these discrete pieces work together in independent but related systems, and if only we were smart enough we could figure out how the pieces fit together to make these systems work. Moreover, particularly as scholars and practitioners in the business community, we have invented a sociomaterial world that we treat as though it was real and as though it mattered. This constructed reality seeks to maximize profits, competitive advantage, market share, economic growth, and other goals that, physically, simply do not matter.

To unchain organizational scholars from the limitations of conventional theories, we look to quantum theory, a theory focused on the fundamental building blocks of the natural world and a theory that has broken free of the conventional Newtonian paradigm (e.g., Boje, 2012; Fiol & O'Connor, 2004; Lord, Dinh, & Hoffman, 2015; McDaniel & Walls, 1997; Shelton & Darling, 2001). In particular, we argue that quantum entanglement and indeterminism—perhaps the two core ideas that differentiate quantum physics from its

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conventional Newtonian counterpart—may be especially relevant for developing what we call “Quantum Sustainable Organizing Theory” (QSOT). We follow others who use the term “sustainable organizing” to refer to organizational practices that enhance social and ecological well-being (e.g., Sharma & Lee, 2012).

Quantum theory is appropriate for theorizing about sustainable organizing as it recognizes that physical matter matters (i.e., the principles governing the building blocks of the natural world matter). Indeed, it might be said that QSOT is motivated by the question, “What would organization and management theory look like if matter mattered?” (see Carlile, Nicolini, Langley, & Tsoukas, 2013). A “quantum” refers to the smallest possible discrete unit of any physical property, usually at the subatomic level, including electrons, photons, neutrons, and so on. The operation of these fundamental building blocks of all matter, nature, and the cosmos provides a fitting foundation for developing organization theory with a sustainability focus.

Drawing on theories from a seemingly distant discipline like physics puts us in good company, because organizational scholarship has a rich heritage of explicitly and metaphorically drawing on theories from a variety of nonmanagement disciplines, ranging from biology to sociology to engineering to cultural anthropology to mechanics (e.g., Hannan & Freeman, 1977; Morgan, 1988; Oswick & Grant, 2016). The influence of such theories is evident in our use of terms like organic versus mechanistic organizational structures, machine bureaucracies, organizational networks, resource niches, organizational culture and DNA, feedback loops, strategic architecture, and so on.

This article asks, what are the implications for organization theory if what quantum theorists know about the smallest matter, mattered. With this in mind, we chose our paper’s subtitle partly as a play on Schumacher’s (1973) influential book *Small Is Beautiful: A Study of Economics as if People Mattered*, one of the 100 most influential books since the Second World War (“The hundred most influential books since the War,” 1995). We believe that a quantum focus on physical matter—rather than a focus on sociomateriality that characterizes the organization studies literature—provides “the frame-breaking insights needed to reconcile the needs of business with the demands of the natural environment” (Bansal & Knox-Hayes, 2013, p. 62). We will describe how a quantum approach puts into question conventional (Newtonian) assumptions about organizational boundaries, competitiveness, and profit maximization.

The message of this article is timely and almost shockingly bold. We believe and will argue that if businesses are to do their part in addressing the socioecological issues of the day (e.g., climate change, economic inequality, and social unrest), they will need to relax assumptions associated with a conventional (Newtonian) paradigm (e.g., that firms are discrete entities separate from one another, that sociomaterial well-being trumps ecological well-being) and instead

embrace theory and practice built on quantum assumptions (e.g., the ideas of entanglement and indeterminism). More specifically, we will show how both conventional and sustainability-oriented organization theory and practice premised on Newtonian assumptions fall short of addressing the socioecological issues facing the planet, and show how these differ from a quantum theory approach.

This article is divided into three parts. In the first part, we present two hallmarks from quantum theory that lie at the core of QSOT—entanglement and indeterminism—and begin to describe how they are relevant in the study of sustainable organizing. In the second part, we draw out the implications of these principles for developing QSOT, which we contrast and compare with (Newtonian) conventional and sustainability-focused theory. In the third part, we discuss the implications of our bold argument.

Two Hallmarks of Quantum Theory

Man, whether civilised or savage, is a child of nature—he is not the master of nature. . . . When he tries to circumvent the laws of nature, he usually destroys the natural environment that sustains him. (Dale & Carter, 1955, cited in Schumacher, 1973, p. 84)

For about a century now, quantum theory has been disrupting foundational assumptions of traditional Newtonian physics, and today it has become a dominant paradigm within physics (Görnitz, 2012). We use “quantum theory” as an umbrella term that refers to fundamental observations and thought experiments about quantum-level phenomena drawing from fields like quantum mechanics and quantum physics (it also encompasses quantum logic and quantum computing). We are fully aware that there are many enigmatic findings and competing interpretations within the quantum literature (e.g., ranging from the Copenhagen consensus, to many-worlds theory, to quantum transactions). However, one thing scientists agree upon is that a focus at the quantum level has led to a much different understanding of reality than is associated with a traditional Newtonian perspective.

The literature in quantum theory is much too complex to attempt to review in such a short space, and among readers not trained in the field. So what we offer here is an admittedly simplified review, highlighting the ideas of entanglement and indeterminism, which are foundational to much of the quantum theory literature where they enjoy strong theoretical and empirical support (e.g., Oppenheim & Wehner, 2010).

Entanglement

All subjects, no matter how specialised, are connected ... (Schumacher, 1973, p. 77)

There is considerable agreement that the idea of entanglement—and the related concept of “nonlocality”—is central

to quantum theory. According to Nobel Prize winning physicist Erwin Schrödinger (1935) who coined the term, entanglement is not “one but rather *the* characteristic trait of quantum mechanics, the one that enforces its entire departure from classical lines of thought” (p. 555, emphasis in original). Entanglement describes a remarkable interconnectedness, across time and space, among two or more quanta (e.g., an entangled pair of photons or an entangled set of electrons). Entanglement also points to the idea of nonlocality, which suggests that two “entangled” electrons influence each other instantaneously (i.e., faster than the speed of light) over large distances (e.g., a million light years apart). Physicists believe that at the time of the Big Bang, virtually all matter was entangled, so we should not be surprised that quanta may be entangled across our universe.

Experiments have demonstrated that changing the “spin” of one quanta will be associated with an immediate complementary change in the spin of its entangled “twin.” This relationship is assumed to be true with quanta that are light years apart and has been observed in experiments currently showing instantaneous changes at distances up to 144 km apart (Ursin et al., 2007). A recent application of nonlocality and entanglement is in the use of paired photons for quantum imaging, whereby knowledge can be extracted about a photon without detecting that photon, but rather by measuring the photon’s entangled twin (Lemos et al., 2014).

Entanglement shifts attention away from *discrete* particles and toward interconnected *relationships* between particles. This demands a different way of looking at the world and, we believe, developing organization theory:

To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, self-contained existence. Existence is not an individual affair. Individuals do not preexist their interactions; rather, individuals emerge through and as part of their entangled intra-relating. (Barad, 2007, p. ix, emphasis added)

This contrasts strongly with traditional Newtonian thinking, where objects in separate locations are assumed to be independent of one another, though they can have an effect on one another. In a sense, entanglement can be seen to erase the (traditional) boundaries that separate objects and thus raises questions “about the existence of clearly distinct levels of analysis in organizations and organizational studies” (Fiol & O’Connor, 2004, p. 350). The suggestion that organizations “lack an independent, self-contained existence” challenges conventional ideas about the “boundaries” that we put around organizations and so-called organizational “externalities.” Such an entanglement-based understanding is precisely the sort of “outside the box” theoretical understanding that is needed to address socioecological issues related to more conventional understandings of boundaries based on efficiency, power, competence, and/or identity (Santos & Eisenhardt, 2005, p. 505). Along similar lines, the idea of

quantum entanglement has also been applied to look at the role of empathy in organizations (e.g., Heaton & Travis, 2014; Pavlovich & Krahnke, 2012, 2014; cf. Oswick & Grant, 2016, on “global brain”).

Indeterminism

In his urgent attempt to obtain reliable knowledge about his essentially indeterminate future, the modern man may surround himself by ever-growing armies of forecasters . . . I fear that the result is little more than a huge game of make-believe . . . (Schumacher, 1973, p. 200)

A second hallmark of quantum theory, and which differentiates it from traditional Newtonian physics, is its emphasis on indeterminism and uncertainty. Dating back to early quantum theorists such as Schrödinger and Heisenberg, the quantum world is often described in terms of murkiness and uncertainty, and not the precision clockwork suggested by classical Newtonian theory. The indeterminate nature of quantum phenomena is often linked back to Heisenberg’s Uncertainty principle, which holds that the more precisely the *position* of quanta is determined, the less precisely the *momentum* is known at that instant, and vice versa (Heisenberg, 1927). Note that “the uncertainty described in Heisenberg’s principle does not reflect science’s ignorance of the laws of nature—[rather,] uncertainty is a law of nature” (Hunt, 2005, p. 130). That said, the Uncertainty principle does not suggest *everything* is uncertain, but rather it sets exactly where the limits of uncertainty lie in making quantum measurements. Quantum uncertainty extends beyond spatial and material phenomena to also include temporal indeterminacy. As already noted, quantum theory challenges conventional thinking about time by noting that two quanta, even if light years apart, can affect each other simultaneously. Moreover, quantum theory also suggests that actions at Time 2 can affect what happens at Time 1. This was famously suggested in an experiment conceived in the 1980s (Scully & Drühl, 1982), which was eventually empirically verified when method caught up with theory in 2000 (Kim, Yu, Kulik, Shih, & Scully, 2000). The term “temporal indeterminism” borrows from Hans Reichenbach (1956, pp. 266, 268), a leading scholar on the philosophical foundations of quantum mechanics, who notes that quantum theory does not “merely signify a reversal of time *direction*; it represents an abandonment of time *order*. . . . This is the most serious blow the concept of time has ever received in physics” (cited in Sánchez-Ron, 2009, p. 11, which includes the emphasis).

Taken together, quantum theory contradicts a Newtonian understanding that reality is governed by known or yet-to-be-discovered cause-and-effect relationships (determinism), and moreover contradicts the commonsensical understanding that the relationships between different objects move (only) forward in time sequentially (linear determinism).

Implications and evidence of indeterminism at the organizational and interpersonal levels of analysis are numerous. For example, there is a surprising amount of empirical research that supports the idea that humans can sense the future (Fiol & O'Connor, 2004; Bem, 2011, provides a particularly striking example testing the idea of precognition; also see Mossbridge, Tressoldi, & Utts, 2012, for a meta-analysis). Within the larger organization theory literature, Lord et al. (2015) describe some implications for organizational change with regard to what quantum theory says about time:

We maintain that by integrating quantum theory with a view of the future as flowing into the present, we can revolutionize our conception of the processes linking time to the development of events . . . as well as an enhanced understanding of change processes. (p. 265)

More generally, embracing indeterminism aligns with studies that point to nonlinear organizational change processes and the unintended consequences of change efforts (e.g., Plowman et al., 2007; Richkus, 2013; Tsoukas & Chia, 2002).

Perhaps the most important thing we are learning today about organizations is that if they are going to succeed, they [managers] must give up their obsessions with control, knowing what is going on, and seeking stability. . . . The scientific basis for new ways of looking at organizations is not Newtonian physics but quantum theory. (McDaniel & Walls, 1997, p. 366)

Conventional (Newtonian) Versus QSOT

Modern man does not experience himself as a part of nature but as an outside force destined to dominate and conquer it. He even talks of a battle with nature, forgetting that, if he won the battle, he would find himself on the losing side. (Schumacher, 1973, pp. 10-11)

Admittedly, it is a considerable jump to go from cutting-edge physics research performed at the level of quanta and apply its principles—even metaphorically—to organizational phenomena (e.g., Lindebaum & Jordan, 2014). Even so, as summarized in Table 1, we believe the concepts of entanglement and indeterminism have particular relevance for developing QSOT (fourth column). This becomes especially evident when we draw out its implications in contrast to the assumptions of traditional Newtonian physics that underpin conventional organization theory (second column) and to theory about sustainable organizing based on Newtonian assumptions (third column; we adopt the term Newtonian Sustainable Organizing Theory (NSOT) to refer to the conventional, or Newtonian, approach to sustainable organization theory). Using this sort of parallelism to develop QSOT has been

promoted as a desirable way to develop new theory (e.g., Elsbach, Sutton, & Whetten, 1999; Lewis & Grimes, 1999; Poole & van de Ven, 1989).

As indicated by the rows in Table 1, we develop and differentiate QSOT by focusing on four key categories or themes. The first two categories are particularly relevant to sustainability theorizing (the view of the natural environment and the view of the socioeconomic world), and the second two categories are generally important across all organizational theories (behavioral assumptions and the hallmarks of organization theory).

View of Natural Environment

. . . it is still the dominant belief today that, whatever may have happened with earlier civilisations, our own modern, western civilisation has emancipated itself from dependence upon nature. (Schumacher, 1973, p. 85)

Conventional (Newtonian) organization theory views the natural environment as a bundle of resources for humankind to manage and exploit toward maximizing a firm's competitive advantage, typically with little regard for negative socio-ecological externalities. In other words, the natural world is seen as controllable and available for humankind to manage (e.g., Kurucz, Colbert, & Marcus, 2014). For example, in the Resource Based View (RBV) of the firm (Barney, 1991), organizations achieve competitive advantage if they control bundles of resources that the marketplace deems valuable, that are rare, inimitable, and nonsubstitutable.

This *mechanistic* view of the world was expounded upon by Descartes, Newton, Weber and later Frederick Taylor in the management arena with influence lasting well into the 20th century. Since the end of the European renaissance the metaphor of science has been that of the machine with the universe being described as “grand clockwork” where the planets spin around the sun in a predictable fashion, described by the precision of mathematics. (Hunter, 2013, p. 61)

This machine metaphor has been tweaked within the NSOT perspective, which argues that natural resources should be managed in a way that both improves competitive advantage and promotes sustainable development. NSOT has a fairly traditional view of sustainable development, consistent with Brundtland's (World Commission on Environment and Development, 1987, p. 8, emphasis added) understanding of “meeting the needs of the present generation *without compromising* the ability of future generations to meet their needs.” NSOT's emphasis on preserving the environment, in particular by profitably reducing negative ecological externalities, is exemplified in theory like the Natural-Resource-Based View (Hart, 1995). This perspective suggests that ecological problems can be solved by determining the laws of nature, and then adjusting accordingly specific pieces of the clockwork

Table 1. Implications of Newtonian Versus Quantum Assumptions on Organization Theory.

Category	Conventional organization theory (based on Newtonian assumptions)	Newtonian sustainable organizing theory	Quantum sustainable organizing theory (based on entanglement and indeterminism)
View of natural world	Machine metaphor: Natural resources are managed and exploited to maximize competitive advantage, with low regard for addressing ecological externalities. Example: Resource Based View (RBV)	“Tweaked” machine metaphor: Natural resources should be managed in a way that both (a) improves a firm’s competitive advantage and (b) enhances sustainable development. Example: Natural RBV	Mother Earth metaphor: Firms place primary emphasis on cooperatively nurturing the well-being of the natural world with which they are indeterminably entangled. Example: Radical RBV; indigenous peoples
View of socioeconomic environment	Sociomaterialism: Economic measures of firm well-being (profits, market share) coincide with measures of societal well-being (GDP, economic growth), with low regard for negative social externalities. Example: Milton Friedman	Enlightened sociomaterialism: Socioeconomic resources should be managed in a way that both (a) improves a firm’s competitive advantage and (b) reduces negative social externalities. Example: Corporate Social Responsibility; stakeholder theory	Physical constructionism: Firms operate according to the understanding that the socioeconomic well-being of humankind is intrinsically linked to the well-being of the physical world. Example: Social movement theory; slow fashion
Behavioral assumptions	Self-interestedness/individualism: People are naturally self-interested (with guile). Example: Agency theory; transaction cost	Enlightened self-interestedness/individualism: Do good for others when it is good for you. Example: Enlightened self-interests	Self-interestedness is <i>unnatural</i> ; Emphasis on humility/entangled socioecological interests. Example: Relationality; Economy of Communion
Hallmarks of organization theory	Assumptions: (a) Boundaries between a firm and its external environments are real and create opportunity to benefit from externalities; (b) self-interestedness and individualism are natural, and firms are motivated to maximize economic (sociomaterial) measures of performance. Firms compete with one another and seek to gain power over their buyers and suppliers (which may create negative externalities); (c) the goal of organization theory is to understand the factors that determine competitive advantage and thereby empower managers to exploit opportunities to improve firm profits, especially in the short term. Example: Michael Porter on competitive advantage	Assumptions: (a) Boundaries are real, and we need to find profit-enhancing ways to reduce resulting socioecological negative externalities; (b) self-interestedness and individualism are natural, and should be “enlightened” to find ways of helping oneself while helping others. Firms compete with one another, seek to gain power over their buyers and suppliers, and strive to reduce negative externalities; (c) the goal of organization theory is to understand the factors that determine competitive advantage, and also reduce socioecological negative externalities, and thereby empower managers to exploit opportunities to improve firm profits and socioecological well-being, especially in the medium term. Example: Triple bottom line; Michael Porter on creating shared value	Assumptions: (a) Boundaries between a firm and its external environments are symbolic/porous; entanglement theory implodes externalities; (b) self-interestedness and individualism are unnatural, and firms are motivated to cooperate with others to enhance physical well-being. Firms collaborate with others in ways that enhance and nurture socioecological well-being, and competitiveness is subservient to this larger mutual goal; (c) the goal of organization theory is to enhance socioecological well-being while ensuring financial viability, recognizing the importance of managers to act with humility and precaution, mindful of the long term. Example: Community Supported Agriculture

that represent our interface with the natural environment. While this may create fixes that improve things at least temporarily, it still sees the environment as something outside of us that can be controlled.

A QSOT view abandons the machine metaphor and the idea that, with enough knowledge, humankind can manage the natural world to serve our purposes. Instead, the QSOT view underscores that humankind is entangled with the

natural world, and that the way the world works is inherently uncertain. QSOT’s primary emphasis for firms is to respect and nurture the well-being of the natural environment with which they are entangled. This view has served humankind well for many millennia, but anthropologists note that humankind today has lost its sense of connectedness to an ecological and living place, and with this it has lost “the awareness of ‘being-a-place’” (Livingston, 1994, p. 99; cited

in Whiteman & Cooper, 2000, p. 1267). QSOT responds to the “call for organizational theories that more fully account for physical materiality” (Bansal & Knox-Hayes, 2013, p. 61). QSOT’s focus on entanglement is echoed in place-based-organizing (e.g., Shrivastava & Kennelley, 2013) and in Radical RBV theory where cooperation among firms to live in harmony with nature trumps competitiveness (Bell & Dyck, 2012). QSOT promotes a holistic view where there are no “externalities” and aligns with the following characteristics of ecocentrism (though QSOT also differs from ecocentrist sustainability):

The earth is the nurturing mother of life, a great interlocking order, and a web of life in which humans are but one strand. The earth is alive, active, sensitive to human action, and sacred. The governing metaphor is organic, with wholeness representing the basic principle of ecocentrism. Everything is connected to everything else, and internal relations and process take primacy over parts. System structure is extremely heterarchical, established by an egalitarian interplay of interconnected parts. (Gladwin, Kennelley, & Krause, 1995, p. 886)

An example of the QSOT view of the natural environment is evident among indigenous peoples who have strong emotional and spiritual connection to the land and to place (Bansal & Knox-Hayes, 2013; cf. Liu & Robertson, 2011). For example, Whiteman and Cooper (2000) examine the management practices of Cree peoples in James Bay, Canada, and in particular their ability to observe, bracket, select, and respond to vital information from the physical environment, thanks to their deep sense of embeddedness within it: “Our research suggests that it is time for management studies to take the reality of native approaches more seriously” (Whiteman & Cooper, 2000, p. 1280). Indigenous peoples are also at the forefront of modeling the precautionary principle (consistent with the notion of indeterminism), as illustrated by the Iroquois Nation famously known for “the seven generations rule” that calls on decision makers to consider the long-term, multigenerational, implications of their decisions. This mentality is exemplified today in decisions American indigenous peoples are making about sustainable energy (Brookshire & Kaza, 2013). Indeed, such a deep respect for and being attuned to nature has been integral to humanity for tens of thousands of years, when humankind was very dependent on and sensitive to the rhythms of nature, knowing when and where to hunt for animals and to find plants and water, and knowing not to take more from nature than needed.

View of Socioeconomic Environment

If we could return to a generous recognition of meta-economic values, our landscapes would become healthy and beautiful again and our people would regain the dignity of man, who knows himself as higher than the animal but never forgets that *noblesse oblige*. (Schumacher, 1973, p. 96, emphasis in original)

Conventional organization and management theory is noted for its econocentric materialistic focus that has been socially constructed rather than being grounded in physical matter. The mainstream literature is fixated on what Bansal and Knox-Hayes (2013) have called sociomaterialism, talking about the economy, profits, market share, and money as though they are “real.” We forget that money and profits are merely socially constructed symbols, associated with firms that were able to capture financial value from the economic marketplace. These sociomaterial measures have become the dependent variables in our theory and research. Indeed, Nobel Prize winning economist Milton Friedman (1970) argues that the social obligation of firms is to enhance profits (without regard for externalities) within the bounds of the law. Moreover, these sociomaterial measures and goals of a firm’s well-being have also informed measures of overall societal well-being, such as GDP and economic growth, which are for the most part also an abstraction of physical reality. We continue to do so, despite the fact that GDP was never intended to be a, nor does it adequately, measure of societal well-being (Munda, 2015).

NSOT draws attention to the negative social externalities created by business and notes that reducing these externalities represents an untapped potential source of competitive advantage and economic well-being. NSOT has what we might call “enlightened socio-materialism,” which focuses on those situations where reducing negative social externalities can serve to enhance a firm’s financial well-being (e.g., Queen, 2015). This may be most evident in NSOT research on Corporate Social Responsibility (e.g., Clarkson, 1995) and stakeholder theory (e.g., Donaldson & Preston, 1995) that focuses on the subset of social well-being that enhances firms’ financial interests (e.g., Margolis & Walsh, 2003).

For its part, QSOT downplays sociomaterialism and instead calls scholars and practitioners to be mindful of the larger physical world wherein we are entangled, and to participate in what we might call physical constructionism. Physical constructionism involves socially (re)constructing a reality that is grounded in physical matter, understanding that the well-being of humankind is a holistic subset of ecological well-being (Marcus, Kurucz, & Colbert, 2010). Humans suffer when oceans are acidified and plankton is no longer able to keep turning carbon into oxygen, when the toxins of industrial activity emitted into the atmosphere sicken life on the planet, and when intensive agricultural practices deteriorate the planets’ soils.

QSOT accepts that humankind is deeply connected to the living organism we call Earth. For example, the life-giving oxygen pulsing through your veins, which is an integral part of you, will in a breath or two be exhaled and become inhaled as part of the person beside you, after which it will become part of plants and the process of photosynthesis. The quanta that make up our bodies today were parts of the bodies of

trees and oceans yesterday, and will be part of the same tomorrow. As David Suzuki (2014) observes,

every breath we take contains argon atoms that were once in the bodies of Joan of Arc and Jesus Christ; every breath contains argon atoms that were once in dinosaurs 65 million years ago; and every breath will suffuse all life far into the future. (p. 284)

Given this deep interconnectedness with one another and with nature, from a QSOT perspective it behooves us to design our businesses and socioeconomic systems in ways that treat the Earth with dignity. Becoming more connected with nature will increase overall social well-being (Francis, 2015). For example, a study of 145 executives found a positive relationship between a variety of environmentalism scales and positive interpersonal relations, life satisfaction, positive affect, autonomy, personal growth, purpose in life, environmental mastery and self-acceptance (Nisbet, Zelenski, & Murphy, 2011). Cloutier and Pfeiffer (2015) review the literature that shows that happiness is related to closeness to the natural environment and to social relationships. They go on to argue that our well-being is greatly influenced by how we design our communities, and point to a provocative definition of “profits” as those characteristics of a community or organization that contribute to its members’ well-being (happiness) while also promoting a sustainable future.

A QSOT view of the socioeconomic environment is illustrated in the “slow fashion” movement, which seeks to create clothing that recognizes entanglements within the physical and social worlds we inhabit (e.g., Ertekin & Atik, 2015; Fletcher, 2013; Jung & Jin, 2014; cf. Clarke & Holt, 2016). Slow fashion represents a deliberately countercultural alternative to mainstream “fast fashion,” which is known for creating negative social and ecological externalities, including (a) environmentally unfriendly sourcing and preparing of raw materials (e.g., non-organically grown cotton, toxic emissions from the dyeing of cloth) and wasteful product disposal (e.g., garments are disposed after only several uses due to a combination of designed obsolescence/poor manufacture); and (b) exploitive practices toward factory workers (e.g., sweatshops, underpaid/overworked employees in substandard working conditions) and consumers (e.g., messages about fashion lead to social problems like reduced self-esteem, distorted body images, and eating disorders). The “slow fashion” movement addresses these issues by (a) using environmentally friendly inputs (e.g., organic cotton, used clothing) and designing longer lasting “timeless” clothing (reduces waste and number of garments, garments may be designed to be shared among different people with different body sizes), and (b) using practices that enhance societal well-being (e.g., local producers who are more closely connected to consumers, small-scale less-rushed/exploitive labor practices, more time/opportunity to build mutually beneficial relationships among suppliers, producers, retailers, and

consumers). In sum, consistent with QSOT, the slow fashion movement values and nurtures entanglements with the physical and social aspects of our clothing.

Behavioral Assumptions

In a sense, the market is the institutionalisation of individualism and non-responsibility. Neither buyer nor seller is responsible for anything but himself. (Schumacher, 1973, p. 36)

Conventional organization theory typically accepts the mainstream economic assumptions that people are self-interested, individualistic, motivated to get ahead, seek to achieve competitive advantage, and so on (e.g., agency theory, Jensen & Meckling, 1976; transaction costs theory assumes people are self-interested “with guile,” Williamson, 1981). These assumptions about self-interested individualism are so embedded in our theorizing that they become self-fulfilling prophecies (e.g., Ferraro, Pfeffer, & Sutton, 2005), where students and scholars in the field become more materialistic and individualistic over time (Dyck, Walker, Starke, & Uggerslev, 2011). And although there is recognition that the *capacity* for individuals to act on their self-interests is boundedly rational (e.g., Simon, 1982), conventional economic theory does not question the self-interested motivations of economic actors *per se*.

An NSOT perspective is based on an enlightened understanding of self-interestedness and individualism, which accepts that people are motivated to achieve their self-interests and to get ahead and out-compete others, but at the same time recognizes that achieving these goals is often best accomplished via enhancing the well-being of others (Queen, 2015). This is evident, for example, in NSOT approaches to Corporate Social Responsibility (CSR) and Natural RBV, which theorize about how to address social responsibilities and enhance the natural environment in ways that enhance profits and competitive advantage (e.g., Garriga & Melé, 2004). It is also evident in the literature that presents the “business case” for corporate social and environmental responsibility (e.g., Carroll & Shabana, 2010). In short, from an NSOT perspective, practitioners are motivated to seek business opportunities that permit them to meet their self-interests while reducing negative socioecological externalities.

In contrast, from a QSOT perspective, the idea of individualistic self-interests is logically inconceivable. QSOT holds that everything is entangled and everyone is interconnected; thus, it makes no sense to think an individual’s self-interests differ substantially from those of their neighbors or the natural environment. This QSOT view does not “fit” with the contemporary business narrative and its socioeconomic structures; for example, Grant (2013) describes how business students tend to rate “compassion” highly as a personal value, but very low as a value taught in business school. However, QSOT’s emphasis on the importance of

sharing and cooperation is consistent with research examining ancient economies and contemporary hunting-gathering societies (e.g., Sahlins, 1972), and is aligned with the literature in relationality (e.g., O'Hara, 1998), virtue ethics, *Ubuntu*, and other perspectives that tend to start from the community as the primary unit of analysis, and secondarily seek to understand what it means to be a "person" within that larger community. For example, virtue ethics suggest that happiness (*eudaemonia*) is found in community (Aristotle, 1999). Ubuntu ethics, which is an African communitarian ethic that has roots back to the ancient Egypt idea of *Maat* (West, 2014; akin to Hebrew *shalom*), suggests that, as Bishop Desmond Tutu puts it, "We are because we belong."

At the same time as being rooted in current community (entanglement), QSOT has a cross-temporal perspective that respects indeterminism characterized by responsibility and humility:

people may not think about their predecessors' legacies. Do we owe anything to those who came before us? We say "yes." The humility that comes from an understanding of history does us good. Fundamentally, we need to appreciate that we inherit the world when we are born. We also would do well to appreciate that in time, our lives will be history too. Our legacy should be to leave the world better than we found it. In short, we should work to make our ancestors proud. (Donaldson & Walsh, 2015, p. 196)

An intriguing example of adopting the behavioral assumption of entangled motivations is evident in the Economy of Communion (EOC), a group of more than 800 businesses from 50 countries. Chiara Lubich, who founded the EOC movement, wanted to create a way of doing business that addressed the "heart of the problem" associated with a mainstream status quo that is characterized by "the desire to claim possessions for one's self as opposed to feeling connected to others as a family" (Gold, 2010, pp. 69-70). Commitment to this sense of connectedness was transformative for EOC business managers: "Realizing that all those connected with the business were part of one human family and not simply 'factors of production' or 'human resources' led to a series of changes in management" which showed that sociomaterial economic factors were secondary to community building and which lead to the "humanizing" of economic structures (Gold, 2010, p. 129). The profits of EOC firms are divided into three, with one third invested back into the firm, one third invested in educational efforts to promote a culture of giving, and one third sent to a central location to be distributed to needy people throughout the world. Researchers have found that EOC firms proactively minimize their negative externalities (e.g., they proactively incur extra expenses to purchase environmentally friendly inputs) and enhance positive externalities (e.g., they draw employees from the margins of society), promote participative decision making, decrease wage gaps

within the firm, and treat suppliers and even competitors as "family" rather than as enemies (Gold, 2010).

Hallmarks of Organization Theory

[In conventional business theory and practice] everything becomes crystal clear after you have reduced reality to one— one only—of its thousand aspects. You know what to do— whatever produces profit; you know what to avoid—whatever reduces them or makes a loss . . . Let no one be fogged by asking whether a particular action is conducive to the wealth and well-being of society, whether it leads to moral, aesthetic, or cultural enrichment. (Schumacher, 1973, p. 213)

The following three assumptions are hallmarks of conventional organization theory. First, it assumes that there are boundaries between a firm and its external (natural and social) environments, which gives rise to the possibility of externalities. Second, it assumes that self-interestedness and individualism are natural, and that firms are motivated to maximize economic (sociomaterial) measures of performance (e.g., profits, market share, and share price). Moreover, it assumes that firms within an industry compete against one another and that they seek to gain power over their buyers and suppliers (which may create negative externalities). Finally, the goal of the theory is to understand the factors that determine competitive advantages, thereby empowering managers to exploit opportunities to improve firm profits. These hallmarks are especially evident in much of the research on competitive advantage and maximizing organizational profits, and is perhaps best illustrated by Michael Porter's (1980) work strategy and the five competitive forces.

The hallmarks of NSOT are very similar, but they have been tweaked with "enlightened" ideas that focus on being attuned to finding "win-win-win" opportunities that simultaneously enhance "financial-social-ecological" well-being (sustainable development). First, NSOT continues to assume that there are boundaries between a firm and its external (natural and social) environments, but has an emphasis on reducing negative socioecological externalities in ways that enhance a firm's financial performance. Second, NSOT holds a benevolent self-interestedness that suggests firms are motivated to maximize economic (sociomaterial) measures of performance, but it emphasizes the merit in finding and seizing more opportunities that simultaneously create value for others as well as for self. NSOT agrees that firms compete with one another and that they seek to gain power over their buyers and suppliers, but NSOT is particularly attuned to opportunities where they can concurrently reduce negative externalities. Finally, the goal of NSOT is to identify and understand the overlap between economic systems, social systems, and ecological systems, and helps firms to improve their own profits while also improving ecological and social well-being, especially in the medium term (e.g., Marcus et al., 2010). These hallmarks of NSOT are especially evident in research

building on frameworks akin to the Triple Bottom Line (Elkington, 1997) that combine theory from ecological sustainability (e.g., Natural RBV), social sustainability (e.g., CSR), traditional management (e.g., Porter's five forces), and the idea of benevolent self-interest. It is also evident in Michael Porter's more recent work on creating shared value, which draws on his original work with a nod toward sustainable development ideas (Porter & Kramer, 2011).

The hallmarks of QSOT are very different. QSOT recognizes that NSOT's win-win-win thinking has built-in socio-material (financial) constraints that limit the socioecological well-being a firm can create and may even foster unsustainability (Milne & Gray, 2013). In contrast, QSOT promotes long-term socioecological value creation that is financially *viable* for a firm, even if it costs the firm financial resources and thus does not maximize the firm's profits or competitive advantage. One might say that QSOT has a nested double-bottom-line approach—it has a primary emphasis on ecological and then sociological well-being, where financial viability is subservient to those two “bottom lines”—which is distinct from NSOT's triple-bottom-line and from the conventional single-(financial)-bottom-line approach.

In terms of the first of our hallmarks of organizing, QSOT recognizes the porousness of boundaries between a firm and its external natural and social environments; such demarcations are more socially created than they are real. Within a QSOT “matter matters” perspective, there is little support for the idea that sociomaterial economic systems (e.g., markets, share values, profit margins) somehow “exist” as independent realities (Bansal & Knox-Hayes, 2013). This is not to suggest that QSOT does not have room for organizational boundaries *per se*. Rather, it means that these boundaries are recognized as symbolic rather than material. In other words, QSOT suggests that economic, organizational, and social activities are embedded in a larger, more holistic, entangled world (cf. Gladwin et al., 1995, p. 886, on ecocentrism; Whiteman, Walker, & Perego, 2013). In this way, QSOT contrasts with the vast majority of management theorizing, which rarely examines integral connections to the natural ecosystems wherein human existence is nested (e.g., Etzion, 2007; Kurucz et al., 2014; this is true even for organization theory grounded in population ecology, which one might think would lend itself to connecting organizations to the natural resources they depend upon; Hannan & Freeman, 1977).

Second, QSOT's assumption of entanglement suggests self-interestedness and individualism are nonsensical, and that firms are motivated to enhance physical well-being rather than sociomaterial well-being. In this light, QSOT replaces the conventional definition of financial profit—that is, how much financial value can a firm capture within its boundaries—with a much broader idea of holistic “pro-fit,” where the purpose of business is to sustainably “fit” into the larger reality, that is, to produce goods and services in a way

that enhances socioecological well-being (cf. Cloutier & Pfeiffer, 2015). “Pro-fit-able” organizing takes into account the physical, biological, and relational aspects of life. In turn, pro-fit-maximizing organization theory focuses on creating net holistic value that encompasses (and implodes) conventional understandings of positive and negative “externalities.” QSOT also responds to the growing call to develop management theory and practice where holistic “value creation” (i.e., providing goods and services in ways that focus on creating positive socioecological externalities) out-trumps maximizing financial “value capture” (e.g., Santos, 2012), which thereby opens the door to a whole host of opportunities which enhance the nested double bottom line, but not necessarily the triple bottom line. For example, Bill Gates (2007) suggests that millions of children are dying (even though the medicine they require to stay alive would cost less than US\$1 per child) because the marketplace values financial well-being at a higher or equal level to social well-being.

Finally, QSOT takes a decidedly humble approach to the task of accumulating the information that assists understanding and managing the ways in which all this happens. A QSOT perspective has a built-in bias to humility and the precautionary principle:

if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking the action. (Richkus, 2013, p. 1258)

QSOT's mindfulness of the relative timelessness of the universe compared with humankind's timescale (Zalasiewicz, Williams, Steffen, & Crutzen, 2010) facilitates sustainable organizing (Slawinski & Bansal, 2015). We are holistically interconnected with nature (and with each other) in ways that defy explanation, and prediction. Even when we deliberately try to “restore balance” to an ecosystem (or a social system), our actions may have more negative than positive repercussions.

Wiens Family Farm

It is moreover obvious that men organized in small units will take better care of *their* bit of land or other natural resources than anonymous companies or megalomaniac governments which pretend to themselves that the whole universe is their legitimate quarry. (Schumacher, 1973, p. 29, emphasis in original)

We offer the following as an example of an organization that fits well with the hallmarks of QSOT. The Wien's Family Farm, part of the Community Supported Agriculture movement, is a firm that enhances both ecological and social well-being, has porous boundaries, and challenges norms of instrumental self-interests while embodying humility (Bell & Dyck, 2012; Dyck, 1994a, 1994b). First, in terms of

ecological well-being, farmers Dan and Wilma Wiens use organic practices to grow vegetables on their small farm (less than 5 acres). This has ecological benefits because it enhances the quality of the soil, and removes the need to add fertilizers and pesticides from outside the farm, thus reducing their financial costs and reducing negative ecological externalities (external inputs like fertilizers and pesticides are very energy inefficient, contributing to the fact that it can take 5 kcal of energy to grow 1 kcal of food energy). By using organic practices like Conservation Agriculture, the Wiens farm both (a) reduces the release of CO₂ into the atmosphere (about 60% of the Earth's original carbon stock has been lost from the planet's cultivated soils, but even so the Earth's soils still store about 2 times the amount of carbon than its plant and atmosphere combined; Schwartz, 2014); and (b) actually takes carbon from the atmosphere and puts it back into the soil (it has been estimated that no-till agriculture sequesters about 0.80 ton of carbon per acre per year; Franzluebbers, 2004, cited in Kremen & Miles, 2012).

Second, Community Supported Agriculture also enhances social well-being. The Wiens Family Farm has had up to 200 "sharers" (customers) who, in spring, purchase a "share" of the farm's produce. This is designed to provide money up front to purchase seeds and other supplies, and to assure the farmers earn a living wage. Every week for 12 weeks, the farmers provide each sharer with a "blue box" filled with the harvest of that week. Some years the Wiens Family Farm has hosted an on-farm barbeque for sharers to exchange recipes and build community. The sharers also share some of the risk of farming. For example, in years that were the wettest or driest on record, sharers on Wiens Farm received fewer vegetables. However, rather than complain, this prompted some sharers to (anonymously) send money to the farmers, knowing that it had been a difficult year for the farm. This emphasis on building community between and among farmers and sharers is captured by the Community Supported Agriculture slogan: "It's not just about vegetables." Enhanced social well-being is also evident in how Dan Wiens has helped facilitate the start-up of other Community Shared Farms in his region, included one led by El Salvadorian refugees growing vegetables familiar for that community and another where people from the inner city come to the farm to do fieldwork (weeding, harvesting, etc).

Third, the boundaries are porous. This is evident when sharers volunteer on the farm and when Wiens helps sharers who are inspired to start their own backyard gardens. It is also evident in the governance and strategic decisions of the farm. For example, after the first year of the operation, Dan Wiens called together a group of sharers, showed them the farm's financial statement for the past year, and (humbly) asked the sharers to decide on the share price for the coming year. The sharers, who would be paying this price, voluntarily raised it by over 25%! They wanted the farm to be financially viable, and for the farmers to earn a living wage.

Humility is also evident, for example, in the recognition of the uncertainty related to the weather and other factors related to growing vegetables. Indeterminism influences how decisions are made regarding what to plant and how to irrigate and even in how much sharers pay (e.g., during years of flooding, some sharers voluntarily and anonymously make donations to farm). Nothing is guaranteed, and even the plans made on the best information available must be made in humility (this is a common lesson of all farming and may be something society has lost through urbanization).

Readers may wonder about the relevance of a (seemingly inconsequential) small farm. However, consider the fact that there are more than 500 million small-scale farms on the planet, involving about 3 billion people (Meyer, 2010). And consider the fact that organic practices like Conservation Agriculture have been shown, on average, to double the productivity of such farms (Pretty, Toulmin, & William, 2011). And consider the fact that up to two thirds of the approximately 1 billion chronically malnourished people on the planet are small-scale farmers (Braul et al., 2011). If you multiply by 500 million times the enhanced ecological and social well-being of what is happening on the Wiens Family Farm, the result is a lot of well-being! In other words, QSOT may be particularly relevant to the vast majority of people on the planet.

Discussion

Let me therefore, in conclusion, add a few words about future scientific research. . . . What matters, as I said, is the *direction* of research, that the direction should be towards non-violence rather than violence; towards an harmonious cooperation with nature rather than a warfare against nature; towards the noiseless, low-energy, elegant, and economical solutions normally applied in nature rather than the noisy, high-energy, brutal, wasteful, and clumsy solutions of our present-day sciences. (Schumacher, 1973, p. 118, emphasis in original)

The time is ripe for a paradigm change within the organizational sciences. We fully recognize that such change is difficult. It was difficult for humankind to let go of the idea that the earth was the center of the universe (Kuhn, 1970). It was difficult for even brilliant minds like Albert Einstein to accept the idea of entanglement, and that we are not separate from everything else. But today most of us agree that our planet and our galaxy are not at the center of the universe, and most physicists have accepted a new quantum paradigm characterized by entanglement and indeterminism (and perhaps we will learn about other paradigms in the future).

We believe that the assumptions of entanglement and indeterminism, which lie at the heart of QSOT, may be precisely what is needed to escape the Newtonian straightjacket that limits thinking about sustainable organizing. We have been imprisoned within Weber's (1958) sociomaterialistic/individualistic "iron cage," the social construction of which

coincided with the development of Newtonian physics. Organizational scholars and practitioners who refuse to recognize that entanglement and indeterminism matter will be tempted to see firms as local and separate units that compete with one another for sociomaterial goods. This temptation is “real” even if the basis for it denies the material reality of the quantum physical world.

In this article, we offer an argument regarding the merits of QSOT and begin to develop the theory. Our discussion provides fertile ground for subsequent development within this new theoretical paradigm. For example, future research can look into what, if any, other principles from the quantum world might have implications at the sustainability and organizational level. One such principle we feel holds particular promise is idea of collapsed superpositionality, which relates to both entanglement and indeterminism. Quantum theory and experimentation suggest that a single quantum material (e.g., a photon) takes the form of a probabilistic wave of potentiality, holding multiple positions at one time. This wave “collapses” when observed or measured, at which time it behaves in a manner similar to particles (interested readers may wish to refer to a Physics textbook or website to explore further this quantum-level phenomena and the classic two-slit experiments that provide empirical support). We encourage future research to explore how ideas related to collapsed superpositionality may help to understand organizational-level phenomena, for example, by building on existing theory in areas like the social construction of reality (Berger & Luckmann, 1967) and the idea of physical constructionism.

Beyond theoretical extensions of QSOT, we also see a number of areas for its empirical testing. For example, we provided a number of illustrations of QSOT organizations, but the identification and study of firms operating consistently with QSOT principles would provide further fodder for theory development and testing. Of course, it is possible that QSOT firms are extremely rare, which raises further research questions surrounding the transition from NSOT organizations to QSOT organizations. Can this transition occur with existing NSOT firms, or is QSOT’s paradigm shift so disruptive that only new firms are likely to fit its criteria? A follow-up line of inquiry could also focus on what types of industries, communities, and social movements lend themselves to QSOT (e.g., we see many QSOT principles in Daskalaki, Hjorth, & Mair’s, 2015, discussion of community action and entrepreneurship).

We speculate that QSOT may be particularly well suited to develop a theoretical understanding of core concepts in the so-called sharing economy, which ranges from popular companies such as UBER and airbnb to companies such as Relayride (car sharing), Taskrabbit (task sharing), and Liquid (bike sharing). For example, the sharing economy breaks the conventional notion of ownership and also includes such ideas as collaborative consumption. Companies, or in some cases informal networks, in this movement empower individuals to

form their own business (eroding traditional organizational boundaries) while also better utilizing resources by shifting the concept of ownership. Thus, the sharing economy highlights the entanglement we share with each other and the resources from the natural environment. The results of this new organizing model are somewhat indeterminate, as there are positives in terms of reducing use of the natural environment’s resources, creating community, and taking down employment barriers for some, while critiques include businesses using contract workers to increase profits, the demise of existing organizations, and lack of regulatory control. This may prove to be a promising area for further QSOT research.

Developing QSOT is certainly not without its challenges. We see the biggest threats to QSOT in terms of it being either (a) rejected or (b) co-opted by the dominant paradigm. With regard to the possibility of rejection, because QSOT places only secondary emphasis on abstract sociomaterial notions such as maximizing profits and share prices (these literally do not “matter”), it is in danger of being perceived to have little relevance within the conventional organizational and management theory literature. Can we imagine management research articles that have an “emphasis on entanglement” as the dependent variable? Similarly QSOT research would draw more attention toward humility, precautionary principles, and toward strategies that value socioecological well-being more highly than maximizing financial profits. Thereby QSOT would reduce research on decisive leadership, on bold attempts to capture value, and on maximizing profits via using Porter’s (1980) five competitive forces to manage externalities.

With regard to its second threat, we believe that QSOT could be co-opted into the mainstream paradigm, much like stakeholder theory and Corporate Social Responsibility before it (e.g., Margolis & Walsh, 2003). In fact, evidence of such co-optation is already at hand, as ideas around temporal indeterminism are being applied toward gaining a competitive advantage in predicting the stock market (e.g., Smith, Laham, & Moddel, 2014). Similarly, perhaps a focus on entanglement could be used in the service of financial “value capture” maximization rather than to serve a more holistic “value creation” mandate (Santos, 2012).

Another challenge comes from the paradox embedded in quantum theorizing. Despite becoming a dominant paradigm within physics, its intrinsic indeterminism may be off-putting for scholars who are not comfortable with the idea of a world that cannot be fully known through science, who disdain uncertainty. Even Nobel laureates in physics recognize the challenges in developing theory that seems to defy commonsense: “If quantum mechanics hasn’t profoundly shocked you, you haven’t understood it yet” (Niels Bohr); “I think I can safely say that no one understands quantum mechanics” (Richard Feynman) (taken from Piccioni, 2013).

In the end, it may not be a question of *whether*, but a question of *when* theories like QSOT will become the new

mainstream in organization studies and practice. If the Newtonian straightjacket prevents us from adequately addressing the socioecological issues facing humankind, and if those issues worsen despite the best efforts of scholars and practitioners steeped in the NSOT paradigm, then we must seek and develop theories that are grounded in alternative fundamental assumptions about “reality.” Quantum physics may be the best option science currently has to offer. While the risks of rejection and co-optation may be high, they may be offset by the potential rewards and insights a new paradigm like QSOT has to offer.

We conclude by referring again to Schumacher (1973) and his epilogue in *Small Is Beautiful*. In the final analysis, when deciding whether to embrace a Newtonian versus a quantum worldview, management scholars and practitioners need to look at how they themselves perceive “reality.” Certainly (Newtonian) theory and practice, with its emphasis on sociomaterial measures of well-being, fits better with the status quo. But this emphasis on ever-increasing insatiable sociomaterial well-being has contributed to dire socioecological issues. The quantum view, which suggests that matter matters, seems to represent a more challenging but possibly more rewarding path.

In the excitement over the unfolding of his scientific and technical powers, modern man has built a system of production that ravishes nature and a type of society that mutilates man. If only there were more and more wealth, everything else, it is thought, would fall into place. . . . [However] the chance of mitigating the rate of resource depletion or of bringing harmony into the relationships between those in possession of wealth and power and those without is non-existent as long as there is no idea anywhere of enough being good and more-than-enough being evil. . . . Everywhere people ask: “What can I actually do?” The answer is as simple as it is disconcerting: we can, each of us, work to put our own inner house in order. (Schumacher, 1973, pp. 246, 247-248, 249-250, emphasis in original)

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