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ORIGINAL PAPER

Business Schools and the Development of Responsible Leaders: A Proposition of Edgar Morin's Transdisciplinarity

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Abstract We propose Edgar Morin's notion of transdisciplinarity as a complementary educational perspective for preparing business school students in addressing the complex global socio-economic and environmental challenges that our planet has been facing for some time. Morin's notion of transdisciplinarity spans various disciplines, both within disciplines and beyond individual disciplines. Morin's transdisciplinary approach is inquiry driven and presents a systemic/humanistic vision and form of awareness that challenges habitually dualistic and simplistic thinking. Morin's transdisciplinarity is based on a dialogical and translogical principle that extends classical and rigid logic and that helps students to explore and unify concepts of a simultaneous complementary and contradictory nature. Confronting students with different modes of thinking, imagining and feeling can help them to develop greater self-awareness, critical reflection, and creativity; with various frames of reference; and with an openness toward and confidence in engaging in changes needed to address global challenges in a sustainable and responsible way.

Keywords Business school education · Edgar Morin · Transdisciplinarity · Responsible leadership

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The Need for Responsible Leadership

The world has become increasingly uncertain, ambiguous, and complex (Montuori in Morin 2008a). Socio-economic and environmental challenges, such as those of inequitable wealth distribution, overexploitation, pollution, and environmental degradation, are increasingly becoming polygonal phenomena that are characterized by their multiple interdependencies and interconnectivities at the global scale (United Nations' Millennium Project 2006). The implications of several of these challenges facing mankind and all other living beings have been described as imminent, severe, and far reaching (United Nations Environmental Programme 2011). While scholars from various disciplines have highlighted the responsibilities and moral obligations of companies and their leaders to address such challenges and to spearhead more responsible and sustainable business strategies (see Donaldson 1982; Sison and Fontrodona 2006; Velasquez 1992), company responses and attitudes have remained sporadic, reactive, and focused on compliance (World Economic Forum 2011). Economic pressures and constraints, global competition, short-term business visions, and shareholder expectations continue to override a sense of moral obligation and responsibility amongst business leaders to act collectively in a more responsible and sustainable way (Bettignies 2013; Lacy 2013). The development of organizational changes toward more responsible and sustainable actions that address complex and pressing socio-economic and environmental challenges will depend heavily on current and future graduates of our business schools and on the business education that they receive.

For some time now, however, there has been considerable criticism of business schools and of the relevance of their curricula and teaching methods in preparing business

leaders and decision-makers for the complex challenges that they face (Atwater et al. 2008; Bouchikhi and Kimberly 2015; Ghoshal 2005; Mintzberg and Lampel 2001; Pfeffer and Fong 2002; Starkey and Tempest 2008, 2009). Individual and institutional pressures have driven business school educators toward a 'paradigmatic conformity' (Ghoshal 2005, p. 87), which lets academics viewing themselves as "disinterested students of business, producing knowledge of business rather than for business" (Starkey and Tempest 2008, p. 379). Although attempts have been made by various business schools to change educational models and approaches to better address the concerns of company leaders (see Pfeffer and Fong 2002), Bouchikhi and Kimberly (2015) describe how difficult it is to sustain innovative educational approaches in an "ecosystem that reinforces stability and rewards continuity." Business schools and the business community at large seem to continue to be driven by a *doing business as usual* paradigm that renders them sedentary bystanders of complex global socio-economic and environmental challenges and that prevents decision-makers from leading in a more responsible and sustainable way (Gröschl et al. 2016). Starkey and Tempest (2008, p. 387) have called for the construction of new narratives of business school education that "suggest, define and justify the potential then actual role of management and business in shaping sustaining economic, social, and cultural conditions—to develop knowledge and practices that support the alignment of economic system, social system, and ecosystem." In reference to Delanty (2001), Starkey and Tempest (2008, p. 387) encourage business schools to play "a key role in developing new networks, zones of interconnectivity between the opposing domains of science, business and culture" (p. 387).

In this paper, we propose Edgar Morin's notion of transdisciplinarity as a complementary educational perspective contributing to calls for alternative modes and propositions to business school education that help preparing business school students to address in a sustainable and responsible way the complex challenges and threats that our planet has been facing for some time. While Morin's transdisciplinary ideas and propositions have been considered critical in exploring these complex challenges (Montuori 2005; Nicolescu 2006) and essential for the future of education and the education for a sustainable future (see Federico Mayor, Director General of the United Nations Educational, Scientific and Cultural Organization[1]), his concept of transdisciplinarity has yet to be fully applied to the business school context and the development of responsible business leaders and future decision-makers. We begin our paper by discussing competencies and attitudes that are necessary for future decision-makers to have when leading firms in a responsible way through complexities and uncertainties. We then introduce Morin's notion of transdisciplinarity and its key principles and characteristics. We explore how these elements can contribute to the development of responsible decision-makers and how they can be operationalized and applied as an educational proposition complementing current business school curricula. In the concluding part, we discuss some of the contextual and institutional barriers that could hinder the introduction of Morin's transdisciplinary ideas and principles, and we make recommendations how to overcome these obstacles.

Skills and Competencies of Responsible Business Leaders

According to Unilever's CEO Paul Polman (2012), today's complex challenges

> require different types of leaders from what we've had before. Most of the leadership skills we talk about—integrity, humility, intelligence, hard work—will always be there. But some skills are becoming more important, such as the ability to focus on the long term, to be purpose driven, and to think systemically.
> (A 2012 interview with Adrian Wooldridge, Management Editor and 'Schumpeter' columnist for The Economist magazine)

Atwater et al. (2008, p. 10) highlight "that the development of systemic thinking skills is an essential evolution in management education." Based on existing systems theories and frameworks, Atwater and his colleagues present three systemic thinking skill sets including synthetic thinking, dynamic thinking and, closed-loop thinking. Synthetic thinking focuses on studying "the role and purpose of a system and its parts to understand why they behave as they do." Dynamic thinking examines "how the system and its parts behave over time." Closed-loop thinking investigates "how the parts of a system react and interact to each other and external factors" (Atwater et al. 2008, p. 13).

In reference to Ackoff's (2004) holistic/synthetic conceptualization of systemic thinking, Atwater et al. (2008) argue that synthetic thinking represents an important cognitive process that helps decision-makers understand the context in which a system operates, the roles that a system plays within a given context, and the behaviors of a system based on such roles. Atwater et al.'s (2008) two other

[1] In a preface to Edgar Morin's (1999a) *Seven complex lessons in education for the future* published by the United Nations Educational, Scientific and Cultural Organization.

thinking skill sets are derived from Forrester's (1971) characterization of complex systems and Richmond's (2000) framework of system thinking. According to Forrester (1971), within complex systems, causes and effects are often separated in both time and space, solutions often have contradictory effects in the short and long term, and subsystems engage and interrelate through multiple non-linear causal and feedback loops. Decision-makers who do not understand these dynamics and characteristics of complex systems construct views of the world based on a simplified, 'event-oriented' perspective (Atwater et al. 2008, p. 12; Sterman 2000). In using such a perspective, challenges and problems are addressed as isolated events, and interactions and interdependencies between different parts of a system are ignored. Richmond's (2000) notion of dynamic thinking enables decision-makers to "see a phenomenon as the result of behavior over time rather than a reaction to an isolated event" (Atwater et al. 2008, p. 12), motivating leaders to consider the consequences of their actions over time (Richmond 2000). Richmond's concept of closed-loop thinking helps decision-makers explore the structures and internal and external interactions of a system (Atwater et al. 2008; Richmond 2000).

Atwater et al.'s (2008) three thinking modes and their focus on interactions and interdependencies between parts of the system are important when making sense of the complexities and multicausalities of global challenges and of the roles that companies will play in addressing such challenges (Bettignies 2013). Making sense is an essential process that involves challenging the ubiquitous 'business as usual' paradigm in questioning reflexive processes and in interrupting robotic behaviors and routines that avert vital continuous organizational and societal changes that address global, socio-economic, and environmental challenges in a responsible and sustainable way. Creating change by identifying and deleting institutional constraints and norms of normality, thriving for continuous internal renewal and committing to sustainability are essential to moving away from 'archaic' leadership styles that have remained dominant in numerous organizations (Gröschl et al. 2016).

Archaic leadership models are predominantly based on power derived from routines that employees and subordinates return to in times of fear and uncertainty (Nelson and Winter 1982; Weick 1990, 1993). When individuals fear the future, they tend to protect themselves through known and ready-made behaviors, patterns, processes, and practices with limited consideration of and courage to pursue new and different ways of doing things. Disruptive innovation and creativity have no place in this dynamism and commitment to the future (Bibard 2007). Corporate leaders who dare to initiate change are rare, as they are often seen as a threat, challenging current practices and processes and status quo industry standards. Such corporate leaders are also rare, as breaking out of triviality and taking on a maverick or non-conformist role requires great courage (Morin 2008a). According to Mazutis and Zintel (2016), 'courage' has been rated by executives as the most salient leadership virtue needed to lead in a different and more responsible way. Such daring and courageous leaders can be found in visionary companies (Collins and Porras 2004) that fully integrate innovative corporate citizenship and responsibility into the core of their business models and that do not merely use such concepts as a communication tool or for branding purposes (Franklin 2008).

The visionary thinking and purpose-driven mindsets of such courageous leaders are influenced by sense-making at individual, organizational, and societal levels (Bettignies 2013). In this transformative process, much depends on enhancing self-awareness and self-knowledge and on reflecting on the role that one and the organization play or should play (Drucker 1999; Starkey and Tempest 2008). Creating ways of doing business in a more responsible and sustainable way means that business leaders should be "morally conscious" (Pless 2007, p. 438) and "give voice to their values […] to develop a corporate culture or a societal environment where no one cops out, passes the buck or dreads the risk of action" (Bettignies 2013, p. 16).

This moral consciousness and critical self-inquiry together with courage and self-confidence, trust building, and synthetic, dynamic, and non-linear thinking form the competencies and attitudes crucial for future decision-makers when leading their firms in a responsible way through complexities and uncertainties. Business leaders will need to make sense of complex challenges in a systemic and integrative way by thinking in synthetic, dynamic, and non-linear ways. Decision-makers will need to have courage that inspires confidence in themselves and trust from others and to adapt their own roles and those of organizations toward responsible and sustained behaviors and actions. All these behaviors and actions are driven by self-reflection and moral reasoning.

Morin's Notion of Transdisciplinarity

Although Edgar Morin cannot be reduced to or categorized as systems theorist or structuralist (Montuori in Morin 2008a), several of the above listed ideas and concepts on systems, sense-making, complexity, and interconnectivity are shared and/or have been developed and explored by Morin and through his notion of transdisciplinarity (Max-Neef 2005).

The term transdisciplinarity was first introduced in 1970 by Jean Piaget, Erich Jantsch, and Andre Lichnerowicz at a conference organized by the Organization for Economic

Co-operation and Development, the French Ministry of National Education and the University of Nice (Cabell and Valsiner 2014; López-Huertas 2013; Nicolescu 2006). Two years later, in his essay on epistemology of interdisciplinary relationships, Piaget (1972) defined transdisciplinarity as a "higher stage succeeding interdisciplinary relationships […] which would not only cover interactions or reciprocities between specialized research projects, but would place these relationships within a total system without any firm boundaries between disciplines" (p. 138). Though many other writers afterwards have also defined and shaped frameworks of transdisciplinarity, most of them have followed Piaget's focus on research contexts (see Nicolescu 1997, 2002, 2008; Stokols 2006; Wickson et al. 2006).

While early on, Jantsch (1972) and Kockelmans (1979) pointed out the relevance of transdisciplinarity to education, and later a number of writers (see Bernstein 2015; Macdonald 2000; O'Dell and Hubert 2011) highlighted the importance of transdisciplinarity and "its role in twenty-first-century education" (Madni 2007, p. 13), it was mainly Edgar Morin who consistently applied aspects of transdisciplinarity to questions regarding education and learning (see Morin 1999b, 2001, 2014) in his "ongoing quest to address the crucial issue of preparing human beings to tackle the challenge of complexity" (Montuori in Morin 2008a, p. xxiv).

While Morin never gave a formal definition of transdisciplinarity (Nicolescu 2006), his understanding and interpretation of transdisciplinarity crystalized through his series of dialogues with primatologists, biologists, neuroscientists, anthropologists, cyberneticists, sociologists, and with numerous other natural and social scientists in the 1970s (see Morin and Palmarini 1978). In those early days, Morin considered transdisciplinarity as "a kind of messenger of the freedom of thinking, a go-between-discipline" (Nicolescu 2006, p. 143). In his later writings, Morin described transdisciplinarity as a concept that extends beyond multidisciplinarity or interdisciplinarity, which are limited in coordination, interaction, and co-operation between disciplines (Max-Neef 2005). Morin has been concerned with the ongoing separation of humanistic and scientific cultures and thoughts, with the fragmentation of their disciplines and with intensifying levels of specialization found in educational institutions and models:

> The former culture [Humanism—the authors], founded on reflection, can no longer nourish itself from sources of objective knowledge. The latter culture [Science—the authors], founded on the specialization of knowledge, can't reflect on itself or think of itself (Morin 2008a, p. 51).

The division between these cultures has created several blind spots in the natural sciences and has "deprived science of any possibility of knowing itself, of self-reflection, and even of conceiving itself scientifically" (Morin 2008a, p. 4). This lack of self-reflection has led to a blind intelligence that "destroys unities and totalities, […] isolates all objects from their environment [and that] cannot conceive of the inseparable link between the observer and the observed" (Morin 2008a, p. 4). "Das lebenswichtige Korn der wissenschaftlichen Erkenntnisse wird nicht mehr in der Mühle der humanistischen Kultur gemahlen" [The vital seed of scientific knowledge is no longer being grinded through the mill of humanism—translated by the authors] (Morin and Hessel 2012, p. 55).

With his transdisciplinary perspective, Morin re-combines, re-engages, and re-connects scientific knowledge with philosophical reflection/reflexive knowledge (Morin 1999b, 2008a). For Morin, the prefix *re*-serves as an important indication of the ongoing processes and changes that take place when studying and addressing complex themes and phenomena that are characterized by their uncertainty and unpredictability—characteristics that hold true for several of the above-mentioned complex global socio-economic and environmental challenges that business leaders and decision-makers are facing.

Morin's transdisciplinarity does not focus on 'either-or' issues, but is rather focused on re-connecting (see Morin 1973). Such a transdisciplinary perspective requires complex thinking based on distinction, conjunction, and implication rather than disjunction and reduction and based on contextualization and connectedness rather than linear causality. According to Morin's transdisciplinarity, linear causality is extended by mutual, interrelational, and circular causality to better understand the uncertainties and complexities of causalities (see Morin 1973, 2008a, b), as Morin illustrates in the following example:

> Society itself, as an organized and organizing whole, feeds back to produce the individuals through education, language, and school. The individuals, in their interactions, produce society, which produces the individuals that produce it (Morin 2008a, p. 61).

Morin's transdisciplinarity is based on a dialogical and translogical principle that extends classical and rigid logic (see Morin 2008b; Morin and Hessel 2012) and that explores concepts of a simultaneous complementary and contradictory nature—"a thinking that is capable of unifying concepts which repel one another and that are otherwise catalogued and isolated in separate compartments" (Morin 2008a, p. 81).

Morin's transdisciplinary perspective challenges the unquestioned and paradigmatic assumptions on which disciplinary knowledge is based. For Morin, we must not

only focus on the creation of knowledge, but also on our understanding of what constitutes knowledge. Too often, knowledge is undermined by dogmatism, fallacy, illusion, ignorance, and reduction (Morin 1973). Morin's transdisciplinarity digs deep to identify underlying assumptions that form the foundations and paradigmatic positions of various disciplines and of disciplinary knowledge that Morin's work addresses (see Morin 1973).

Although much disciplinary knowledge is driven by individual disciplines, Morin's transdisciplinarity promotes an inquiry- or problem-oriented approach. Bernstein's (2015) example of water illustrates the need for studying phenomena in a problem-focused way that extends beyond individual disciplines:

> It has a chemical basis and can be studied from a chemical or physical perspective (hydraulics and hydrology); it is also important in technology, engineering, manufacturing […] It is a component of nutrition, digestion, physiology, and health; there are sanitation and purity considerations in using water and having it in our environment. There are cultural and religious aspects of water […] Water as a resource would be studied by geographers, geologists, economists, and agricultural scientists. Obviously, the sustainability of water as a resource is an issue […] There are even political aspects to an important resource such as water, shortages of which can lead to famine, war, revolution, or other vast sociopolitical changes. […] Questions about water bring together the social sciences, humanities, physical sciences, biological sciences, and practical arts and sciences (Bernstein 2015, p. 11)

According to Morin, "[r]eal understanding and effective action therefore require an approach that is not dictated by disciplinary boundaries but that emerges from the needs of the inquiry" (Montuori in Morin 2008a, p. xxvii). In this way can the uncertainties, contradictions, and interconnectivities of major questions and complex challenges be addressed (Morin 2008a):

> This is central to what makes Morin's vision of transdisciplinarity so important and so timely: it is grounded not in attempts to create abstract theoretical frameworks or to further the agenda of a new discipline, but in the need to find knowledge that is pertinent for the human quest to understand and make sense of lived experience and of the big questions (Montuori in Morin 2008a, p. xii).

Whether an inquiry concerns generating knowledge or defining and understanding the roots of knowledge, according to Morin's transdisciplinarity, the inquirer is part of an inquiry or observation (see Morin 1973, 2008a). Morin's works and his notion of transdisciplinarity reflect the embodiedness and personal reflections of the inquirer in the inquiry (Montuori 2005). He highlights the importance of 'autocritique' and self-reflection for this process:

> on étudierait notamment comment les erreurs ou déformations peuvent survenir dans les témoignages les plus sincères ou convaincus; la façon dont l'esprit occulte les faits qui gênent sa vision du monde, comment la vision des choses dépend moins des informations reçues que de la façon dont est structuré le mode de penser [One would study how errors or misinterpretations can be present in the most honest and convinced testimonies, how the mind overshadows facts that hinder his/her vision of the world, and how visions of things are less dependent on information received than on how ways of thinking are structured—translated by the authors] (Morin 2014, p. 89).

Giving the inquirer center stage and rendering him/her a subject of self-inquiry and self-awareness incites an "éthique de la comprehension" (Morin 2014, p. 91)—*an "intersubjective understanding" (Morin 1999a, p. 50) of not only of the multifaceted and complex world around the inquirer, but an awareness of the inquirer's own multidimensionality (Morin 2014). This awareness "that a human being is at one and the same time an individual, a member of a society, a member of a species" constitutes Morin's "anthropo-ethics" and shapes his educational philosophy (see Morin 1999a, p. 3, 2004). Based on his ethics for the human genre, Morin considers truly human development to be directed toward "earth citizenship" and to be built on the "joint development of individual autonomy, community participation, and awareness of belonging to the human species" (Morin 1999a, 2004, 2014).

This joint development requires a sense of responsibility and solidarity by each individual. Developing these two characteristics is therefore critical in Morin's ethical thinking and they form the foundation of his understanding of ethics (see Morin 2004, 2014). Morin encourages the inquirer through self-reflection and awareness to take responsibility for his/her actions and decisions (Montuori in Morin 2008a). Morin's call for self-inquiry and intersubjective understanding re-introduces moral and ethical reflections by the inquirer that have been excluded and denied by reductive scientific approaches and the fragmentation of knowledge (see Morin 1999b; Ghoshal 2005). The moral development shapes the inquirer's notion of solidarity with the community and the means by which the inquirer makes decisions. For Morin, the moral considerations for these means are critical in his ethical understanding, as they are more important than the results when considering that the inquirer cannot know in advance the

consequences of his/her actions when making decisions (Morin 2004).

In the following table, we propose how Morin's ethics for the human genre and his transdisciplinary ideas and propositions could address the competencies and attitudes future decision-makers need to lead in a responsible way through complexities and uncertainties (Table 1).

Central to most of these competencies and attitudes is the ability for self-awareness and Morin's proposition of autocritique and self-inquiry. Morin's call for personal reflection facilitates an intersubjective understanding and multidimensional self-awareness and encourages a sense of responsibility and moral consciousness. From greater self-awareness and moral consciousness emerge courage and self-confidence. Taking responsibility for one's actions and decisions reflects courage and self-confidence to others and inspires or strengthens their trust in themselves and each other. Systemic sense-making through synthetic, dynamic, and non-linear thinking modes is encouraged by Morin's principles of distinction, conjunction, and implication. Morin's focus on contextualization and connectedness provides the basis for studying the role and purpose of a system and its parts. Morin's dialogical/translogical proposition to explore concepts of a simultaneous complementary and contradictory nature and his notion of mutual, interrelational, and circular causality to better understand the uncertainties and complexities of causalities support closed-loop thinking and how systems and parts of a system react and interact to each other and external factors and assist dynamic thinking and how the system and its parts behave over time.

In the following section, we explore how Morin's transdisciplinary theoretical ideas and propositions can be operationalized and applied as a complementary educational approach to current business school curricula. The section includes aspects of current business school education and curricula to better contextualize our discussion.

Morin's Transdisciplinarity Applied to Business School Education

Business school curricula continue to be largely characterized by their separation of disciplines, by their focus on isolated disciplinary knowledge delivery and disciplinary problem orientation in the classroom, and by their strong scientific approaches in the context of business school teaching and research (Ghoshal 2005; Khurana and Spender 2012; Max-Neef 2005; Pfeffer and Fong 2002):

> The analytical perspective still applied since it was believed that a business would perform optimally if each function tried to optimize its performance in isolation from the other functions. This hierarchical arrangement and divisional structure became widely used and remains the dominant approach employed to organize businesses, business schools, and business school curricula (Atwater et al. 2008, p. 11).

This separation of disciplines and focus on analytical thinking has created a reductionist approach to problem solving that promotes dualistic thinking amongst students. Reductionism coupled with dualism reinforces simplistic thinking, and this prevents students from being able to address complex phenomena by making sense of their connection to the whole and vice versa: "The simple fact of analyzing an organism according to its constituent elements entails a loss of information about that organism" (Atlan 1972, p. 262).

Despite this criticism, and in line with Morin and his colleagues Basarab Nicolescu and Lima de Freitas (Morin et al. 1994), we would like to highlight that we consider transdisciplinarity to complement and not dominate or substitute business school education and its disciplinary approach: "Transdisciplinarity does not strive for mastery of several disciplines but aims to open all disciplines to that which they share and to that which lies beyond them" (Morin et al. 1994, Article 3).

Table 1 Edgar Morin's transdisciplinary propositions and the competencies of responsible leaders

Responsible leadership competencies	Edgar Morin's transdisciplinary propositions
Self-awareness and reflection	An embodiedness and personal reflection of the inquirer in inquiry
Moral consciousness	The inquirer taking responsibility for his/her actions and decisions
	An embodiedness and personal reflection of the inquirer in inquiry
Courage and self-confidence	An embodiedness and personal reflection of the inquirer in inquiry
Trust building	The inquirer taking responsibility for his/her actions and decisions
Synthetic, dynamic, and non-linear thinking	Complex thinking based on principles of distinction, conjunction, and implication
	Mutual, interrelational, and circular causality
	A dialogical/translogical principle that extends classical and rigid logic

Applying Morin's notion of transdisciplinarity means encouraging professors from different disciplines to collaboratively teach courses and programs that are inquiry driven rather than discipline driven and that focus on broader questions, fundamental questions, and complex challenges that business leaders currently face. In such transdisciplinary courses, disciplinary boundaries do not exist. Professors foster systemic perspectives on a subject of inquiry that help students learn to connect seemingly contradictory and opposing concepts and ideas and that challenge students in their sense-making of parts and the whole that define complexities that they will face as future business leaders. It is through Morinian sense-making that the description and explanation of parts and the whole are recursive and constituted in a relational circuit. "[N]either one of the two terms is reducible to the other" (Morin 2008a, p. 101). Transdisciplinary-oriented courses are characterized by such cyclic thinking modes—particularly in regards to exploring and evaluating cause and effect relationships through which students' actions and decisions are governed. Various perspectives and types of knowledge presented through these courses can help students examine their actions from within and across systems and to better understand and consider effects of their decisions and actions on different parts of a system and on systems as a whole.

A concrete example of teaching beyond disciplines is a leading French Business School and its *imagination week* seminar series. In those imagination weeks, students are confronted with abstract themes such as transformation or broad topics such as work and life. In plenary sessions, the students meet experts with very diverse backgrounds and experiences ranging from life sciences, future studies, technology, arts, music, cybernetics, math, meditation, gastronomy, philosophy, astrophysics, ecology, biochemistry, foresight, mobility, and cryptography. Between plenary sessions, students work in groups on imagining and envisioning what their seminar themes and topics would look like in the future. Rendering their visions takes place through a unique medium such as literature, art, multimedia, or through performance. The purpose of these imagination weeks is to help students understand the complex issues of the world they are building, to assist them in developing their creative minds in overcoming these issues, to raise concerns for the consequences of their decisions as well as to assume a certain moral consciousness and reasoning amongst students.

Other concrete teaching examples and methods that can take students beyond disciplinary boundaries are case studies, business games, and simulations such as *The Lake Simulation* by the Instituto de Empresa Business School in Spain. The latter is based on Hardin's *Tragedy of the Commons* and addresses many of today's complex challenges including the overuse of common pool resources, pollution, collective actions, profit maximization, corruption, and bribery, and other (non) ethics-related aspects, and encourages discussions that can go beyond single disciplines and perspectives. By making students decide on whether or not to pollute the water of a lake, and confronting them with their decisions' financial and environmental impact, introduces students to aspects of systemic thinking, helps them to realize the interdependency of their actions and decisions, and challenges their moral consciousness.

Students' moral consciousness is often denied or diminished by scientific approaches that business schools follow in their educational models today. According to Ghoshal (2005, p. 77):

> [B]usiness schools have increasingly adopted a scientific approach to business education. This approach and the claim for knowledge and 'theorizing based on particularization of analysis' excludes 'any role for human intentionality or choice.' Considering that morality and ethics are inseparable from human intentionality means that by applying a scientific approach business schools deny 'any moral or ethical considerations in our prescriptions for management practice.'

More specifically, Ghoshal (2005, p. 76) argues that business schools have freed their students from any sense of moral responsibility by promoting "ideologically inspired amoral theories." This taken-for-granted amorality can be traced back to the birth of modern sciences, which German sociologist Max Weber radically made clear when writing on the differences between science and politics (Weber 2004). Sciences and technologies are everything but neutral: they are not only grounded in paradigms that influence human understanding of the whole, but they also cause individuals to behave in ways that depend on this understanding and on integrated prescriptions in technologies (Latour 1988, 2004). The taken-for-granted difference between facts and values must be questioned to make room for a genuine rebirth of epistemological revisions and of ethics.

Ethics and developing students' moral consciousness are central elements in Morin's educational philosophy and transdisciplinary perspective. Within a business school context, Morin calls for business ethics to cultivate a stronger transdisciplinary focus that explores "beyond the confines of our limited contexts" (Woermann 2013, p. 166). According to Morin (1999a), this requires business ethics to foster an intersubjective understanding through critical self-reflection. Without such self-inquiry, students will "consider everything that is distant or foreign as secondary, insignificant or hostile" (Morin 1999a, p. 50).

Critical self-reflection can start by encouraging students to (re) learning to ask questions, by engaging students in debates, dialogues, and other exchanges that foster curiosity, reflection, understanding, openness, and tolerating (Morin 1999a, 2014). Students' self-reflections can be small parts or side effects of classroom exercises as much as they can be the key focus of mentoring programs and courses/seminars on leadership and management. Recently introduced *Build your own course* initiatives (BYOC) in business schools put students' critical self-reflections at the core of their objectives. BYOCs give students the opportunity to imagine new courses, the way they would like them to be taught, by co-creating the course content and format together with different professors. Students are encouraged to explore what they want from their business educations and what to them are important issues and challenges in the world that need addressing through business school education.

Engaging students with humanistic perspectives and philosophical ideas can help guide students in their pursuit of answers to some of these core questions on which their lives, decisions, and actions are based (see Morin 1999a)—as Nussbaum (1997) explains:

> Humanities are essential to good citizenship in business […] It would be catastrophic to become a nation of technically competent people who have lost their ability to think critically, to examine themselves, and to respect the humanity and diversity of others (Nussbaum 1997, p. 300).

In practical terms this could mean the introduction of courses on philosophy, (liberal) arts, music, and literature. In many of his writings, Morin refers to these domains as very useful when reflecting on and exploring complex phenomena—as his discourse about the awareness of human complexity illustrates:

> We can learn from the literature and cinema that a human being should not be reduced to the least part of himself or the worst part of his past. In real life someone who has committed a crime is quickly confined in the notion of a criminal, reducing all other aspects of his life and person to this single feature, but we discover the gangster kings of Shakespeare and the royal gangsters of *films noirs* in all their fullness. We can see how literary criminals like Jean Valjean and Raskolnikov transform and redeem themselves. (Morin 1999a, p. 53)

While some of these ideas of Morin's transdisciplinarity are already applied in current business school curricula, there are contextual and institutional barriers that could hinder or limit a more formal and recognized introduction and operationalization of Morin's transdisciplinary ideas and principles. In the following section, we outline some of these key challenges and make recommendations how to overcome these obstacles.

Contextual and Institutional Barriers of Operationalizing Morin's Transdisciplinarity in a Business School Context

While many of the above principles and features characterizing Morin's transdisciplinarity have "gained recognition as a mode of research" (Bernstein 2015, p. 13) and have been considered essential for education, there are no studies which have operationalized Morin's transdisciplinary ideas and/or discussed them within the context of business school education. One of the key barriers could be the lack of a formal explanation by Morin as to how he defines transdisciplinarity. Many of his arguments and ideas have been fragmented and scattered throughout his many works.

Yet, even with a clear understanding of Morin's transdisciplinary propositions and their relevance to the education for a sustainable future, in an educational "ecosystem that reinforces stability and rewards continuity" (Bouchikhi and Kimberly 2015), complementing his ideas and thoughts to current business school education is only possible if faculty members are themselves convinced that changes must occur in business schools in order to tackle the complex global economic, social, and environmental problems. In his commentary on Ghoshal, Pfeffer (2005, p. 99) concludes that

> [w]e ought to be both more explicit and more thoughtful about the values we are imparting by what we teach and how we teach it. With more engagement in issues of policy, and with more reflection on the implications of our ideas and our pedagogy for the values and behavior they produce, we might just be able to create social conditions and organizations and management practices more consistent with what Ghoshal believes is both possible and desirable. And that would be a wonderful legacy, indeed.

Pfeffer's (2005) call for greater self-reflection on the part of faculty members may be merely one response to Marx's famous thesis on Feuerbach and to questions regarding who educates the educator (Marx 2002). We propose that professors' efforts to transform and constantly educate themselves by taking into account real socio-economic and environmental problems should be an integrated objective of business schools. While numerous businesses promote cross-functional learning and development on the part of their managers, business schools may wish to follow suit with cross-disciplinary learning and development on the part of their faculty members.

We wish to challenge some past and current recruitment and selection profiles of business school professors. Accepting non-traditional business school academic profiles, professors with liberal arts degrees and with backgrounds in philosophy, literature, and history could help bridge cultures of science and humanism—as Morin has called for in several of his works (Morin 2008a, 2012, 2014)—while helping students identify new ways of defining their own roles, purposes, and missions and those of organizations that they may lead in the future.

Aside from rather homogeneous selection profiles, other factors such as professor tenure privileges and research agendas have also had implications on the static nature of business school education. Any move toward more transdisciplinary-oriented thinking amongst business school educators will depend on changing the structures and contexts in which business school educators work. According to Ghoshal (2005), deans and business school leaders play a critical role in such processes of change:

> If deans really intend to infuse a concern for ethics and for responsible management in the research and teaching that are carried out in their institutions, they have to acknowledge that the tokenism of adding a course on ethics will not achieve their goals. As long as all the other courses continue as they are, a single, stand-alone course on corporate social responsibility will not change the situation in any way. Deans have to take leadership—perhaps even at the cost of some displeasure of some of the senior faculty who are most embedded in the currently dominant perspective—in adapting the recruitment and promotion processes in their schools (Ghoshal 2005, p. 88)

Other stakeholders that play a role in this process of change include accrediting bodies and disciplinary professional associations, which have been described by Pfeffer and Fong (2002, p. 91) as acting "in a mutually reinforcing way, to maintain the status quo." Their roles and responsibilities may be a topic for future research, as an in-depth discussion of such factors would extend beyond the scope of this paper.

Conclusions

The development of organizational changes toward more responsible and sustainable actions that address complex and pressing global socio-economic and environmental challenges will depend heavily on current and future graduates of our business schools and on the business education that they receive. A number of guidelines that business schools can refer to already exist. In 2007, the UN Global Compact Developments and an international task force of sixty deans and university presidents of leading business schools introduced six principles on responsible management education (PRMEs). Epstein (2008) proposed a model for the development of corporate sustainability whereby leaders could have a significant impact via leadership and sustainability practices. Moreover, several schools in Europe and in the Anglo-Saxon world have been promoting courses on business ethics, responsible leadership, corporate social responsibility, and social entrepreneurship.

In all these programs and initiatives, traditional business models and manager roles are starting to be questioned; alternative models and manager roles are being identified, developed, and accepted; and having different priorities and values—in other words, being different—is no longer only seen as a threat to a perceived status quo but as an opportunity to better meet the multiple challenges that we face. However, these courses are often taught in isolation from other courses and disciplines. The complex challenges and major questions we face cannot be sufficiently addressed in this way, and thus it is not only new programs or courses that must be developed.

We have suggested Edgar Morin's notion of transdisciplinarity as a complementary educational proposition, as his transdisciplinary ideas have been considered critical in exploring complex phenomena and challenges and essential for the education for a sustainable future. We have outlined how Morin's transdisciplinary propositions address the competencies and attitudes that are necessary for future decision-makers to have when leading firms in a responsible way through complexities and uncertainties. We have provided propositions and concrete examples related to the operationalization of Morin's transdisciplinarity and to complementing business school curricula and teaching methods. Morin's transdisciplinary ideas and perspectives presented in this paper can be revised and tailored to each business school's particular needs—from a complementary teaching framework to an integral part of curricula and teaching methods. As for Morin, "[t]ransdisciplinarity does not strive for mastery of several disciplines but aims to open all disciplines to that which they share and to that which lies beyond them" (Morin et al. 1994, Article 3).

Morin's propositions are neither exclusive nor do they require radical changes. Some of Morin's ideas already exist in one form or another in many teaching approaches and business school curricula, and only small adjustments or changes are needed to start creating a transdisciplinary perspective. Developing such a perspective does not necessarily imply to attract more students, but to assist them in becoming responsible business leaders and future decision-makers. In this sense, we do agree with Federico Mayor that Morin's approach can contribute to business schools in a quest for an education for a sustainable future.

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