Theoretical Foundations for Global Education: Selby, Pike, Hicks, and Merryfield

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Abstract

Global education curricular initiatives have been characterized as atheoretical, despite available theories. This monograph showcases four leading-edge global education theoretical initiatives (1988–2001) that remain deeply relevant to the global issues facing humanity. All were predicated on the imperative of replacing the outdated Newtonian world view to accommodate what is needed to address complex global issues. Outside-the-box thinking prevailed in their development with heavy reliance on quantum physics, systems thinking, complexity thinking, and postcolonial constructs. Theoretical contributions from David Selby, Graham Pike, David Hicks, and Merry Merryfield are showcased. Alone or in some combination, their theories remain available for global education curriculum developers to use when planning pedagogical philosophy, content, instructional activities, evaluation and assessment exercises, and learning resources.

Introduction

A theory is system of ideas intended to help people explain, understand, control, or predict something (McGregor, 2018). Examples include economic theory, systems theory, the theory of evolution, and social learning theory. Reimers (2020) provocatively claimed that "the field of global education is missing a good theory" (p. 2). This monograph challenges this assertion by showcasing a collection of powerful, well-established and time-tested global education theories.[1]

As a point of clarification, the literature conflates global education theories with global education frameworks, and guidelines. This monograph concerns global education theories. Theories are grounded in (a) assumptions about reality and comprise (b) concepts and constructs with (c) unique definitions reflecting these assumptions and (d) a network of propositions (statements) explaining how the concepts are related to each other to explain, predict, control, or understand a phenomenon (McGregor, 2018).

Conceptual frameworks are a compilation of constructs that lacks propositions stating how they are related to each other. Instead, "the constructs are defined and logically interconnected ... and are related to the phenomenon" (McGregor, 2018, p. 63). Frameworks can evolve into formal theories if a network of propositions is created that reflects articulated assumptions of reality about the phenomenon. Guidelines translate scientific evidence to practice and offer advice on how to do something. But "guideline developers ... may not be aware of, or be employing the most relevant theories from among the multitude that are available" (Liang et al., 2017, p. 2). Reimers (2020) recognized "the lack of an explicit theoretical foundation undergirding [global education] guides" (p. 2).

Atheoretical Global Education

Global education theories do exist. What is problematic is that many global education teachers and leaders do not to use them thus inadvertently making their efforts atheoretical. This means they are without a theoretical base conceivably because they are unconcerned about, uncomfortable with or unfamiliar with theory in practice (Hean et al., 2015). The lack of theoretical foundation leaves "teachers and education leaders ... with limited conceptual support to make sound professional judgments about how to develop a program of global education" (Reimers, 2020, p. 2).

They are engaging in atheoretical global education practice, which is unfortunate, as drawing on theories lets educators articulate, reflect on, inform, and potentially interpret their work. Theories help them anticipate and rationalize their practice. With theories, educators can "stand outside themselves looking in on [their] practice with a critical eye [and thus] be held accountable for [their] actions" (Hean et al., 2015, p. 143). Atheoretical practice "is at worst, tantamount to malpractice" (Hean et al., 2015, p. 143) thus exposing global educators to accusations of negligent practice (i.e., failing to take proper attention when doing something).

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[1] As a caveat, several global education initiatives were not showcased herein because they were based on theories not specific to global education, or they were conceptual frameworks or guidelines instead of theories. To illustrate, Quittner (2008) said an Australian global education *framework* was based on "synthesised theory and existing practice of global education" (back cover), but specific theories were not identified. Cabezudo et al. (2019) drew on non-global education theories to develop global education *guidelines* for the Council of Europe: change theory, learning style theory, and belief formation theory. Wheeler and Clifford (1979, p. 186) were concerned about having "a theory of global education," but they focused on attribution theory.

If nothing else, failure to draw on available global education theories means students lose valuable learning opportunities, and educators lose powerful teaching opportunities. This possibility flies in the face of the intent of global education, which is to expand students' learning experiences, resultant insights, and attendant civic actions (Hicks, 2007). Students benefit from theoretically rigorous global education curricula. Inspired by this sentiment, this monograph highlights four widely recognized global education theories prefaced with a definition of global education as an educational endeavour.

Global Education Defined

Global education means different things to different people (Ferguson-Patrick et al., 2018). For the purpose of this explication of global education theories, global education is understood to focus on orienting learners to the knowledge, skills, and dispositions (e.g., attitudes, beliefs, values, and principles) about their role as global citizens that lead to civic action. Global education pioneer Hanvey (1976, 1982) called this a *global perspective* with perspective meaning a particular way of regarding something. Global education learners would *regard* everything through a global lens that focuses on the whole world not just their world.

Hicks (2013) agreed, adding that global education is the term used internationally to describe a form of education that (a) enables people to understand the links between their own lives and those of people throughout the world; (b) increases understanding of the economic, political, cultural, and environmental influences that shape people's lives; (c) develops the skills, attitudes, and values that enable people to live and work together to bring about change and take control of their lives; and (d) works toward achieving a just and sustainable world in which power and resources are equably shared.

"Global education is a holistic paradigm that encompasses the interconnectedness of communities, lands and peoples and interrelatedness of all social, cultural and natural phenomena" (Pike & Selby, 1988, p. 1). As a caveat, global education is related to but not the same as likeminded areas of education including peace, development, international, human rights, environmental, climate, disaster, citizenship, social justice, gender equity, multicultural, media, and humane education (Hicks & Holden, 2007; Selby, 2000a, 2000b). Global education teaches learners how to weave strands *among* these aligned areas to gain deeper insights into global issues, problems, trends, and developments (Pike, 2000).

Global Education Theories

In 1999, Nordkvelle observed that establishing a core of theoretical beliefs for global education was difficult because of the heterogeneity of the field (i.e., its close links with likeminded areas such as peace, development, and environmental education). He claimed that the theorizing process had hardly begun. I personally beg to differ given my familiarity with a cadre of global education scholars who tendered theoretical orientations between 1988 and 2000. Their contributions have stood the test of time with their still-relevant theoretical insights shared herein. Showcasing these specific global education theories should enable educators so inclined to augment their global education curricula, frameworks, and guides with theoretical underpinnings thus avoiding the label of atheoretical practice.

The discussion begins with two global education scholars, educators, and theorists who have provided seminal contributions, meaning their work strongly influenced later developments: David Selby (England, Canada) and Graham Pike (Canada) both alone and together.

Contributions by David Hicks (England) and Merry Merryfield (United States) are also included. Hicks (2003) described the work of this four-member collective as "a long ... tradition which embodies an enormous amount of theoretical ... expertise" (p. 270) that should "underpin all such endeavours today" (p. 273). This 20-year old testament still holds merit today.

The collection herein comprises major scholars in the global education field (Burnouf, 2004; McGregor, 2013), but there are others including Case (1993), Hanvey (1976, 1982), Kniep (1985, 1989), Lamy (1987, 1990), and Werner (1990). They were not profiled herein because their contributions, while assuredly seminal, are not considered global education *theories* but rather are (a) rosters of global education *principles* that influenced theorists (see Appendix), (b) discussions of how global education should be taught (pedagogy) or (c) both. Werner and Case (1997) and Pike (2000) opined that the collection of principles in the Appendix reflects several broad characterizations of global education: interconnections, interdependence, integration, perspectivity, caring and interlocking welfare, and alternatives.

Pike and Selby's Global Education Theory

Hicks (2007, p. 19), a well-known British global educator, characterized Pike and Selby as "these two venturers [who] developed the conceptual map of the field." Pike and Selby's global education theory was inspired and influenced by Hanvey (1976) and Richardson's (1976) earlier work focused on principles (see Appendix). The key assumption undergirding Pike and Selby's (1988, 1999, 2000) global education theory is the need to counter the powerful influence of ideology (i.e., dominant cultural belief systems) and paradigms (i.e., glasses [lens] used to view life informed by those beliefs) – most especially Newtonian thinking.

Overview of Newtonian Thinking

Isaac Newton was a seventeenth century scientist (1642–1727) who laid the foundations for classical physics. Approaches to life based on his scientific thinking have become known as *Newtonian thinking*. Key theoretical constructs from Newton's work are set out in Table 1. Pike and Selby (1988) argued that addressing global issues using Newtonian thinking is untenable. It cannot accommodate the complexity and interconnectedness of the world and must be augmented with holistic systems thinking. Information in this section was garnered from Bullard (2011) and Heylighen (2006) (see also McGregor, 2011).

Table 1
Key Theoretical Constructs of Newtonian Classical Physics

Linear	straight line – only one dimension meaning no indepth understanding or accounting for complexity
Continuity	must sequentially pass through all stages without skipping steps
Causal	one thing makes (causes) another thing happen – cause and effect
Determinism	what exists now is determined by what came before; while limiting free choice, determinism aids predictability and control
Dualistic	separate and disconnected, meaning problems standalone; enables binary 'and/or' thinking
Matter	materialism (stuff) is distinct from mind and spirit; matter (object) is superior to subject

	(humans)
Measurable	everything is quantifiable; if it cannot be empirically measured, it is of no use nor is it true
Fragmented	concern for the parts; no concern for they relate to each other or to the whole
Reductionism	must take something apart to understand it – however, reducing something to its distinct parts leaves no room for synergy or complex interactions
Relativity	there are no universal truths held by everyone; truth is conditional and changes with the context; each person's truth is based on what is happening in the moment (relativity privileges self-interest and precludes long-term commitment)

First, Newtonian thinking presumes that the building blocks of life already exist and are just waiting to be discovered. "*Do enough scientific experiments and you will find the truth. It is out there, waiting to be found.*" However, discovering new knowledge is not considered a creative process; rather, it involves the scientific process of uncovering distinctions that were waiting to be observed. This assumption shuts down novelty, creativity, and innovation during problem solving and precludes other ways of knowing aside from science. Wisdom, spirituality, awe, intuition, and wonder thus have no place in knowledge discovery or production.

Second, Newtonian thinking presumes that the only way a problem can be solved is through a process called *reductionism*, which is taking the whole thing apart and dealing with *the part*(s) that is causing the problem. This approach creates a pile of distinct parts that can be left as a pile, put back together, or used to make something similar. They cannot be merged into something new, as is often required when dealing with complex issues, because there is no effort to determine how the parts are related to each other or the whole. Thus, any synergy or synthesis is lost or not considered nor is the role of context or the power of the whole.

Third, the bane of existence arising from Newtonian thinking is dualism – the division of something into two opposed or contrasting parts. People engaged in dualistic thinking assume 'either/or,' 'us/them,' and 'black and white' thinking. There is no color *gray* – no middle ground. Always, the body (object) and the mind and spirit (subject) are independent of each other, and the body (material) is superior (e.g., Western medicine trumps alternative medicine). This assumption leads to the exclusion of many people, ideas, and resources that could be brought together to address complex issues but are not – because they contradict each other.

Fourth, the Newtonian principle of *determinism* gets in the way of seeing a way through and beyond the complex issues harming people and the planet. Determinism holds that any event is completely determined by previous events (i.e., *linear cause and effect*). People thus assume that reality follows a predetermined path that cannot be changed. "*I had no choice.*" "*It was fated.*" "*There was nothing I could do about it.*" In combination with *reductionism* (break down into separate parts), determinism leads people to assume that each issue is a standalone problem with limited avenues for solutions.

Fifth, the Newtonian principles of *continuity* and *causation* let people assume they cannot skip any steps in the linear, problem-solving process when addressing an issue. Instead, following a linear-logic thinking and reasoning process, they assume they can produce new knowledge that can be used to address the issue. When combined with *relativity* (i.e., each person's truth is what matters), there cannot be a meeting of diverse minds and truths, which is

needed to creatively and effectively deal with complex issues. Newtonian thinking stymies efforts to problem pose and problem solve global issues (Pike & Selby, 1988).

Bearing these five points and more in mind, Pike and Selby (1988) created a theory of global education that they subsequently revised in two back-to-back volumes (Pike & Selby, 1999, 2000) (see Table 2, which must be read in its entirety). Their theory comprises four overall theoretical constructs (dimensions) with a multitude of related subconstructs. The four core constructs include (a) *spatial* dimension (space where things happen); (b) *temporal* dimension (time when things happen); (c) *issues* or contemporary phenomena affecting all life and the planet; and (d) human potential, now called the *inner* dimension to reflect people's self-learning as their worldviews are turned on their head.

Table 2
Major and Related Constructs in Pike and Selby's Global Education Theory

Construct		**1988 Version**		**1999/2000 Version**
Spatial	•	Concerns the (a) degree of frequency of events involving global *interdependencies*, (b) number of people affected and (c) range of activities affected by global interactions (i.e., the scope and depth dimension of interdependency).	•	The *interconnectedness* construct was augmented with relational holism and relational thinking. These constructs respect the intensity of the *flow* of ideas, people, and materials in a global economy and society (i.e., global interdependency).
	•	Spatial deals with the space where things are happening. There is a shift from a collection of many separate lands and people to a *system* of *interrelated* and interdependent lands and people. In this *interactive* system, spacial relationships are everything, and nothing can be understood in isolation.	•	*Relational holism*: identities are dependent on the sum of the total exchanges in the relationships in the flow
			•	*Relational thinking* (see patterns, links) – understand systems by exploring the relationships within those systems so people can fully appreciate the consequences of relational activities in the flow
			•	*Sustainability* principle was added along with four *levels of environments*: natural, human built, social, and inner (e.g., an *ecosystem*)
			•	Flagged the importance of the interdependencies of all species: humans and other-than-humans
			•	Introduced the *alternative cultural perspective (harmonious relationships)* to challenge the prevailing western notions of control and ownership
Temporal	•	The time-oriented dimension concerns the pace of change and the need for people to individually and collectively, consciously, strive to	•	Fleshed out the term *alternative futures* for the three-future approach and clarified their assumption that there is a dynamic interplay among them.

	• anticipate and influence a *future* that is not yet determined nor is it predetermined. • The present is bred from past trends and developments. And, there is a wide variety of futures: possible, probable, and preferable with the latter focused on transformation. *Probable* futures are likely to come about given the current trajectory of trends. *Possible* futures just might conceivably come about if certain current conditions were to change. *Preferred* futures are what people would like to see come about given their own values and priorities. • The three phases of time (past, present, and future) are interactive rather than linear.	• Reaffirmed that the major focus of the temporal dimension is learners' actions to affect and effect changes needed for the preferred future they want. • Expanded possible and probable futures with two additional dimensions: (1) *optimistic and pessimistic* and (2) *desirable and plausible* • Augmented reaction with *preaction* (i.e., a previous action that exerted control over the change process)
Issues	• Instead of an issue, it is now "a *global issue*" taken to be a contemporary phenomenon that is affecting all life and the planet in a harmful, or potentially harmful, way. • Issues are no longer conceptualized as separate concerns (cluster of billiard balls – linear cause and effect) but are a *dynamic, interconnected,* and *multilayered web* (interwoven threads connecting the balls). • When issues are conceptualized as an *interactive system*, people have to rethink how they understand solutions, which now become provisional at best (i.e., temporary, interim, conditional, makeshift).	• Expanded the *issue concept* to include the ideas that (a) each issue contains parts of other issues thus must be addressed locally and globally simultaneously; and (b) many people must draw on many *perspectives* (e.g., cultural, social, economic, ideological, ecological) to understand these *connections*. • Added a four-dimension framework to understand global issues while assuming that issues are positioned within an interlocking space and time: (a) *spatial*: engage in continuous dialectic among close, intermediate, and distant realities; (b) *temporal*: continuous dialectic among past, present, and future; (c) *issues*: we live in an era of Mega-crises (multitude of concurrent crises); and (d) inner *ecology*: respect the person and planet relationship.
Inner (initially human potential)	• Focuses on the personal inward journey people make when their perspectives, values, beliefs, and worldviews are exposed and challenged. • Also, for people to reach their *potential* as humans, they must gain an appreciation of the inner learning that occurs when they engage in	• Expanded the learning journey construct to include both the (a) inward *emotive journey* (sensitivity, poignancy, and emotions); and the (b) outward *controversial journey* when dealing with controversy, contention, divisiveness, disagreement, and arguments. • Added the *worldmindedness* construct

• interactive learning *with others*. Individual potential is inherently tied to societal and planetary potential. These three elements are interdependent leading to the *whole person*.	to reflect learners' need to commit to the principle of *the one world* and be *mindful* of the world (watchful, wary, heedful, alert, and attentive). • Theory now assumes that, through the inner dimension, learners find and explore their *global self* to unleash their potential to deal with global issues that play out over space and time.

They framed these constructs as "the four interlocking dimensions of globality" (Pike & Selby, 1988, p. 34). Globality refers both to the whole world and the idea of embracing the whole of something (Anderson, 2014). By choosing this word, Pike and Selby conveyed the intent of their theory: to help people appreciate that the whole world is something that can be embraced – going far beyond one's solitary world. Educators using Pike and Selby's (1988, 1999, 2000) global education theory can better help students gain (a) systems consciousness, (b) perspective consciousness, (c) health of planet awareness, (d) involvement consciousness and preparedness and (e) process mindedness (a lifelong learning journey).

Another assumption of their theory is evident in their choice of the verb *gain* – gaining consciousness, awareness, and mindedness suggests that students lack these mental strengths before educators teach curricula and pedagogy designed and informed by global education theory. Indeed, Pike and Selby (1988), heavily inspired by Hanvey's (1976) principles (see Appendix), firmly argued that students wearing Newtonian and associated ideological blinders (see Table 1) are precluded from being conscious, aware, and mindful of systems, perspectives, participatory involvement, and complex processes. Their learning is stymied.

Pike and Selby's global education theory was further predicated on the assumption that, to recognize and then challenge Newtonian principles (see Table 1), students must be able to (a) think in systems mode; (b) recognize that their view of the world is not universally shared, and that they must become receptive to others' perspectives; (c) become aware of and understand the global condition (e.g., justice, rights, equality, freedom) and associated global issues, trends, and developments; (d) accept that their choices have repercussions (global present and global future), and that they can take responsible civic action; and (e) recognize that self-learning and gaining new ways of seeing the world and their place in it is a lifelong journey – a process (journey) not a destination (Pike & Selby, 1988).

To sum up, their explicit intent was to "weave the multifaceted and interlocking threads of global education theory ... into a rich and seamless tapestry" (Pike & Selby, 1999, p. 12). Pike (2000) continued with this metaphor calling "the strands of global education a tapestry in the making" (p. 218). A tapestry is a thick textile fabric with designs or pictures formed by weaving (interlacing) different threads on a canvas (Anderson, 2014). Framing global education theory as a tapestry is an inspiring theoretical innovation, because people can picture the finished product hanging on a wall. They can mentally *see* global education *theory* as a finished product ready to be used when designing global education curricula, frameworks, and guidelines.

**Hicks' Augmentation of Pike and Selby's Global Education Theory**

Hicks (2003, 2007) affirmed Pike and Selby's (1988, 1999, 2000) global education theory

with theoretical augmentations. While respecting their assumptions and retaining the spatial, temporal, and issues dimensions of their theory, Hicks replaced the inner dimension with a *process* dimension. A process is a series of steps followed or actions taken to achieve a particular end (Anderson, 2014). For Hicks, the process construct concerned the personal and social skills that people must acquire and then use to cooperatively address global issues, events, trends, and developments – that is, take civic action. Hicks (2003, 2007) envisioned this educational learning *process* as (a) holistic (not linear or focused only on the parts); (b) participatory (not solitary, fragmented, or disconnected); and (c) values oriented (not ignoring values) leading to politically astute and civically active citizens.

Hicks (2003) maintained that all four theoretical dimensions (space, time, issues, and process) must be in play if educators want to claim they are teaching global education. "Anything less than this fails to address adequately the global condition" (p. 270). Pike and Selby's (1999, p. 12) triangular representation of their theory had double-arrowed lines linking the spatial, temporal, and issues dimensions to each other with the inner dimension core similarly linked to the other three dimensions. Hick's (2007) model is the same (see Figure 1), but he replaced the inner dimension with the process dimension at the core. This theoretical innovation represented his conviction that socializing learners to the imperative of taking *action* to ensure the future is paramount in global education, more so than focusing on the inner journey people experience when their worldviews are flipped and exposed.

Figure 1
Representation of Hicks' (2007) Global Education Theory
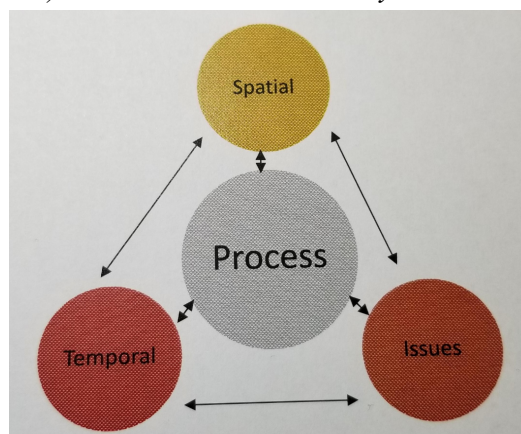
Similar to Pike and Selby (1988), Hicks (2007) also theoretically assumed that global issues are spatially interrelated *and* connected over time. More specifically, Hicks explained that the *spatial dimension* of global education theory concerns space – where things are happening. Using this aspect of global education theory, teachers can help students appreciate that anything happening locally (e.g., buying coffee) affects people globally (e.g., people growing and harvesting the coffee at a great distance, geographically and mentally). Hicks (2012) also asserted that people must confront and challenge prevailing Newtonian ideologies (see Table 1) as well as the materialistic, consumer culture that informs their less-than-mindful spatial practices.

Everything has consequences. Thus, the *temporal* (time) dimension of Hick's (2002, 2007) global education theory deals with the future impact of both past and present-day decisions and (in)actions.

To continue, Hicks (2002) strongly advocated for a futures' dimension in global education as did Pike and Selby (1988, 1999). Hicks claimed that the changing spatial and temporal dimensions within globalizing societies make a futures' dimension in global education theory imperative. Although in agreement with Pike and Selby's (1999) three-futures approach (see Table 2), Hicks (2002) took a different theoretical direction.

He felt that the form of action taken to address global issues, indeed taking any action *at all*, depends on a person's image of the future. He thus added the notions of *hope* (i.e., a connection to the future) and *existentialism* (i.e., a free and responsible agent) to global education theory (Hicks, 2002). To grasp the essence of the human condition and human existence (i.e., the meaning of life), global education learners must meld (a) existential thinking (being yourself – authentic) with both (b) scientific thinking (being knowledgeable – truth) and (c) moral thinking (being good – doing right) (Crowell, 2010; McGregor, 2015).

Informed by these theoretical augmentations, global educators can thus give students "a positive sense of direction" (Hicks, 2002, p. 67). Hope is, after all, a feeling of expectation and a desire for something to happen (or not) in the future. Hopelessness is a feeling of existential angst (generalized dread). When dealing with angst, people "try to *come to terms* with their existence as a human being, meaning they are trying to understand, accept, and deal with difficult life situations" (McGregor, 2015, p. 3). Hicks (2007) further believed that the metanarrative of modernity (i.e., progress, growth, economic development, wealth, materialism, patriarchy, and technology) has lost its validity and is causing undue existential angst. Adding a futures dimension that is informed by civic action grounded in hope and existentialism advances global education theory, so that students can deal with paradigm loss and experience an emergent shift to a more global, humanistic perspective of the world. Their life takes on new meaning.

Applying Hicks' global education theory when teaching global education helps students "understand the complex web of local-national-global [spatial] interrelationships that govern life [and] expose webs of interconnection ... that exist over time [temporal]" (Hicks, 2007, pp. 26–27). Similar to Pike and Selby's (1988) approach, spatial relationships and temporal connections are a key aspect of Hicks' (2007) global education theory, which places civic action around global issues to ensure the future at the core – taught through the process dimension.

Selby's Quantum Physics-Informed Global Education Theory

Although Pike and Selby (1988) jointly challenged global educators to engage with the fallout of Newtonian thinking by turning to holistic systems thinking, Selby (1999, 2000b) augmented this idea in a solo effort by delving into the realm of quantum physics and complexity thinking. This new science came into play in the early 1920s and challenged the 200-year domination of Newtonian thinking. While classical physics deals with physical matter and the mechanical laws that affect it at the macrolevel, quantum physics is "a theory of the small components that comprise familiar matter" (Norton, 2020, para. 3). Quantum deals with discrete, invisible energy units called quanta (bundles of energy) at the microscopic level (especially subatomic particles and waves) (Oracle Thinkquest Education Foundation, 1996; University of Sãn Paulo, n.d.).

Newtonian science is about *being* (matter), and quantum science is about *movement* (Selby, 1999). A discussion of Selby's (1999, 2000b) revised global education theory is prefaced with an overview of quantum thinking, which is informed by McGregor's (2011) detailed chart summary of the fundamental differences between classical and quantum physics

Overview of Quantum Thinking

Quantum is Latin *quantus*, 'how great' (Harper, 2023). Fittingly, the evolution of quantum thinking is considered "one of the most stunning [and greatest] intellectual developments of the 20th century [whose many effects] have yet to be fully felt" (University of Sãn Paulo, n.d., p. 4). Selby (1999, 2000b) was so convinced that insights gained from quantum theory could radically advance global education theory that he used its precepts to reformulate the theory designed to help educators enhance humans' consciousness of their place in the world. Zohar affirmed the "striking similarities between the way quantum systems behave and the way that human consciousness behaves" (interview with Volckmann, 2013, p. 3).

To begin, the quantum world is radically interconnected and in perpetual movement. There are no parts — merely patterns in an inseparable web of relationships (i.e., quantum particles and waves) (see Figure 2, Microsoft clipart used with permission). Selby (1999, 2000b) suggested that when problem solving, people would analyze each part as it is connected to the whole, which is feasible because each part contains the code of the whole. In turn, the *global self* emerges out of the sum of these ongoing dynamic relationships (person in center of Figure 2), and this new self will have moved beyond awareness to gain a sense of empowerment to change the world.

Figure 2

*Representation of Interconnected Quantum World in Perpetual Motion*

Also, unlike classical reality, which is fixed, quantum reality is a sea of movement and potential (i.e., it has the capacity to develop into something in the future). Rather than classical determinism, predictability, and certainty (see Table 1), quantum physics applies the *indeterminacy* construct (i.e., the necessary incompleteness of a system). The world manifests in particles and waves, but people cannot see both at the same time – the *uncertainty principle*. People do not know what exists until they look at it, and the *looking changes everything* (Selby, 1999, 2000b). A common example to illustrate this principle is Schrödinger's (1935) cat-thought experiment (see Figure 3, Microsoft clipart used with permission). For clarification, a thought

experiment is a hypothetical situation in which people use their imagination to conduct an experiment in order to think through its consequences before doing the real thing, if ever (Mach, 1926/1976).

Figure 3
Schrödinger's Cat-Thought Experiment
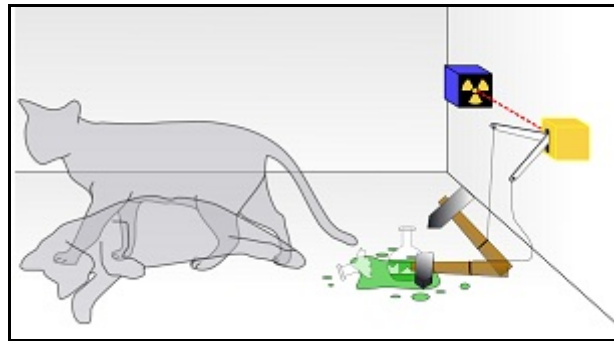
A cat is placed within box that is then sealed. If a poison is released, the cat will die. Without knowing what has happened (without looking yet), there are simultaneously two *quantum systems* in the box – a dead cat and an alive cat (the uncertainty principle). The *uncertain* state of the two systems collapses into a *definitive* state only *when* one of the systems is observed (measured). Until then, both can exist. The *looking* changes everything – the cat remains both dead and alive *until* someone opens the box and looks inside (Schrödinger, 1935) (see Figure 3). This thought process opens the quantum sea of potential and possibilities when addressing global issues (Selby, 2000b).

Adherence to these quantum theory tenets enabled Selby (1999) to further assume that *particles* give humans both form and permeable boundaries. *Waves*, on the other hand, give humans unstructured potential, because waves spread out across boundaries of space, time, choice, and identity. Electrons smear themselves everywhere simultaneously, so they can explore potentialities (e.g., all directions and all journeys). People are thus 'one with the whole' (*unbroken wholeness*). They are intimately embedded in a reality that is so much greater than they are; they are nonlocalized (interconnected) rather than localized (separate and fragmented) (Bohm, 1983). People gain self-energy through their interconnections with others, energy that is lost when acting in isolation instead of spreading themselves around. The seemingly paradoxical sustainable consumption slogan now makes sense, "*Think globally, act locally*."

Quantum theory also assumes there is no distance between things, which are not separate and disconnected but in an interconnected web. An interesting quantum paradox thus arises: with deeper integration comes deeper individuality. Because people are 'one with the whole' web, they are better able to discern their own identity, to appreciate that they are connected to everything else while they have a unique quality and character informed by the whole. With these and other profound quantum theoretical insights (to be introduced), Selby (1999, 2000b) augmented the 1999/2000 version of Pike and Selby's theory (see Table 2) from a quantum science perspective while retaining the four main theoretical constructs: spatial, temporal, issues,

and inner.

Quantum Spacial Dimension

Space is where things happen, but quantum space is profoundly different from Newtonian space. "Newtonian physics assumes that the space between entities is dead, empty, void, stagnant and static, like the spaces between the balls on a billiard table" (McGregor, 2011, p. 6). Quantum physics assumes instead that this space (i.e., the quantum vacuum) is not empty at all but at its lowest possible energy level – it is ripe with possibilities and potential because of the concurrent presence of particles and waves.

Selby (1999) used the billiard ball metaphor to explain this aspect of global education theory. Classical physicists theorize that matter comprises particles, a minute portion of solid material that is smaller than an atom. Particles thus have mass (weight). When bounced off each other, they experience force, resistance, position, momentum, and so on. On a billiard table, the balls (particles) *are* in relationship with each other, but it is a linear, cause and effect, and deterministic relationship. The balls cannot occupy the same space at the same time. Despite being in relation to each other, their true essence does not change when they interact. Each ball (particle) retains its own properties (see also Norton, 2020).

To the idea of quantum particles, quantum physicists added the notion of quantum waves. "In some ways, the particles of quantum theory are like little points of matter, as the name 'particle' suggests. In other ways, they are like little bundles of waves [with] fundamental particles having both properties at the same time" (Norton, 2020, para. 4). Particles collide and bounce off each other, but waves can superpose, meaning they can roll over the top of each other, pass through each other, or they can go around obstacles (Zohar, 1980) (picture yourself standing on a beach with surf rolling in). Said another way, "if you are taking cover behind a wall form [sic] a person shooting peas at you, you will not be hit; yet when she screams that you are a chicken, you hear her perfectly well" (Wudka, 2006, p. 10). The sound waves can go around, under, or through the wall, but the peas (solid particles) cannot.

Now to combine bundles of particles and waves with Schrödinger's cat. Each wave is full of potentialities. It suddenly becomes one thing, a particle, when someone observes it. The looking changes things. "Everything is both wave-like and particle-like [until it isn't]" (Volckmann, 2013, p. 7). Electrons thus have a wave-particle duality. While the particle parts of an electron remain separate, the wave parts interfere with each other. As the wave aspect of the electron overlaps and merges into itself, it draws other electrons into an existential relationship where the inner qualities of the particles change becoming indistinguishable from the relationships among them. Electrons affected by this relationship cease to be separate and become parts of the whole (Zohar, 1980).

Selby (1999, 2000b) maintained that the wave-particle duality concept allows global educators to teach students that everyone is affected by global relationships. People cease to be separate entities and become part of the global whole. Bohn (1980) called this idea *unbroken wholeness*. People can better appreciate that whatever they do will eventually come back to impact *them* as well – because everything is connected. Perhaps people will start to think twice before acting, so they can selfishly avoid self-harm, and then realize that this reflective action is best for everyone.

Selby (1999, 2000b) extrapolated from the unbroken wholeness construct that people are mutually embedded in dynamic relationships. Each person is manifest in the other and flows into

the undivided whole that is in perpetual dynamic flux. The whole thing is moving as one toward complexity and connectedness. A water metaphor is useful here. Imagine people as eddies (spinning whirlpools in a stream). At first, these eddies (people) appear to be separate. But soon, it becomes hard to tell where the whirlpools end and the stream begins. People are one with the whole.

Bohm (1983) further explained that within this unbroken wholeness there are two types of order: explicate (Latin *explicare*,' to unfold') and implicate (Latin *implicare*, 'to fold inward') (Harper, 2023). *Explicate order* is "the material world, particles as it were. *Implicate order* is essentially the level of reality in Schrodinger's wave function" (Zohar as interviewed in Volckmann, 2013, p. 5). Implicate order is invisible, underlying the whole yet fundamental for everything. When parts of the whole make themselves visible, explicate order emerges. A *resting* Slinky (compressed helical spring toy) represents implicate order. A slinky in *motion* represents explicate order. Certain parts become temporarily visible but still remain part of the whole. This mental image also reflects the quantum construct of *enfolded*, which means bending over itself. In Figure 4 (Microsoft clipart used with permission), the blue/green area is implicate order (resting and invisible), and the red/orange/yellow is explicate order (visible or becoming visible).

Figure 4
*Slinky Illustrating Explicate and Implicate Order*

To further develop the spatial dimension of global education theory, Selby (1999, 2000b) drew on two additional quantum science constructs: embedded and emergence. To *embed* means to incorporate or contain as an essential part or characteristic of something; to surround tightly or firmly (Anderson, 2014). Photographers are often embedded into military units to record unfolding war and conflict events – they move with the unit. Likewise, embedded global issues are in perpetual movement with every portion of their flow containing the entire flow (imagine a lava lamp where everything is moving and interconnected).

Emergence means to come up, to arise, or to come forth from a place that is shut off from view. It also means to come into existence (Anderson, 2014). Selby (2000b) conceived the spatial dimension of global education theory as dynamically in perpetual motion – things are emerging all the time; new issues are always coming into view, disappearing, merging with others, and so on. He used the kaleidoscope metaphor (see Figure 5, Microsoft clipart used with permission) to represent the continually changing and shifting *quantum space* where things are happening on the

global stage. New forms, patterns, and situations are always coming into existence and do so repeatedly over time.

Figure 5
Kaleidoscope Metaphor for Emergence and Shifting Quantum Space
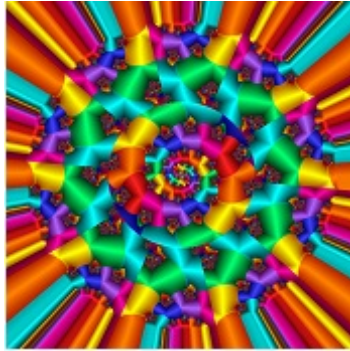
Quantum Temporal Dimension

Space is *where* things happen. Time is *when* things happen. The Oxford English dictionary aptly defined time as "an indefinite continued process of existence and events in the past, present, and future regarded as a whole" ("Time," 2021). Quantum notions of time allowed Selby (1999) to propose that time is embedded within itself, which means that the three phases of time (past, present, and future) interpenetrate each other (see Figure 6, Microsoft clipart used with permission); they are *not* distinct time frames unfolding in a linear fashion. A frame is a rigid structure holding something within it (Anderson, 2014). Because quantum time is moving (fluid and nonlinear), it cannot be construed as a fixed time frame.

Figure 6
Dimensions of Time Interpenetrate Each Other

Likeminded educator Liza Ireland (2007) further proposed that the future is carried as yet unfolded within the implicate order (the green/blue area in Figure 4). This means the future is *ever present* although invisible and not yet manifested, so people can see it. It is not off in the far linear distance because it is ever present (indeed co-present with the present – the yellow area of Figure 4). For this reason, it is imperative that people view themselves as guardians of the future as it makes itself known and visible. The future emerges from its embeddedness in the present.

van der Leeuw et al. (2011) theoretically played with this idea as well suggesting that viewing time as nonlinear leads to a different understanding of our relationship with the future. Instead of perceiving it as far off and distant, the future can now be viewed as different time projections from the present. This premise aligns with Pike and Selby's (1988) three alternate futures: possible, probable, and preferred (see Table 2). The past provides a more-or-less coherent narrative of causalities and certainties of the state of the present. The state of the present lets people outline a number of possible trajectories for the future (quantum is all about inherent potentialities) that are compatible with their understanding of the *time dynamics* that brought them to the present. Instead of analyzing the past to gain feedback, people would use knowledge of emergent, embedded time dynamics to *anticipate* the future – they would "feed-forward" (van der Leeuw et al., 2011, p. 4).

Selby (2000b) built on these theoretical ideas by using the *zone of potentiality* construct – what is possible instead of what is certain and predictable. While people are reflecting on alternative futures (probable, possible, and preferred), they must understand the merits and demerits of a full range of options. The resultant understanding leads to informed choices about the future arising from critical self-reflection, values clarification, and issue reflection.

Selby (2000b) subsequently added the *catholically conceived* construct to the temporal dimension of global education theory. The adjective catholic means 'a wide variety of things' (Anderson, 2014). Dealing with global issues along the temporal dimension necessitates an inclusive, wide-ranging, and all-embracing (catholic) notion of time. People must also be able to accommodate varying cultural orientations to and conceptions of time as they juggle their understanding of the past, present, and the future when dealing with global issues (in other words, catholically conceived time) (Selby, 2000b).

Selby (1999, 2000b) further recognized that the temporal dimension of global education theory can reflect *quantum wholeness*, which is fundamentally a new kind of togetherness. To help explain this idea, Zohar (interviewed in Volckmann, 2013) invited us to consider a person's ego as the particle self. Ego is the explicate, outward part that others see and engage with. The wave function of a person does not have an ego. It is the implicate part that has not made itself known yet. The wave self spreads out over time, and the ego self (particle) periodically peaks and makes itself known. That is, the particles come up out of the wave then disappear back into it; this is repeated with the particles and the waves always there. When the particle is visible, people can influence it and it can influence them – a new kind of *temporal togetherness*. When applied to dealing with the temporal dimension of global education theory, "this is called backward causation. There is never a split between past, present and future... it's pure potentiality" (Zohar as interviewed in Volckmann, 2013, p. 8).

Quantum Issues Dimension

Selby (1999, 2000b) added several quantum-inspired constructs to the issues dimension of Pike and Selby's (1998, 1999, 2000) global education theory. First, he proposed that global issues have the property of *embeddedness*. Global issues exist along multiple levels (micro, meso, macro, and global) and are in perpetual movement. Every portion of their flow contains the entire flow. Imagine a lava lamp again where viscous fluid is always moving with new things bubbling up and then falling back into the whole. Everything within the lamp is interconnected and dependent on each other for its existence (see Figure 7, Microsoft clipart used with permission). The same holds for global issues. People cannot deal with one issue without

considering other issues and other people's perspectives on those issues.

Figure 7
Lava Lamp Representation of Quantum Embeddedness

Using the metaphor of Indra's pearls or Indra's net (Cook, 1977), Selby (2000b) further explained that global issues comprise a network wherein if you look at one issue (a pearl) you see many others reflected in it (like a mirror) (see Figure 8, Microsoft clipart used with permission). This theoretical innovation suggests that each issue does not standalone but involves other issues. It is hard to discuss the environment without including thoughts on global health, poverty, and security. Thus, global educators need to study the *interface* among issues appreciating that one issue cannot be more fundamental than another because *all* issues are connected and reflect off each other. People must thus study both the issue *and* its relationship with the other issues surrounding it (Selby, 1999).

Figure 8
Indra's Pearl Net Representation of Issue Embeddedness

Second, Selby (2000b) formally acknowledged the importance of global educators aligning their thinking with likeminded fields (e.g., peace, citizenship, human rights, and environmental educators), something that Nordkvelle (1999) had found problematic. Selby (2000b) coined the term *mutuality of interests* to reflect their shared common concerns but from

different or complementary perspectives. Bringing all to bear on a global issue enriches the finding of solutions.

Third, Selby (2009b) pushed this further with the *mutually illuminating* construct that refers to Western and nonWestern global theorists and educators learning each others' perspectives. They can all shed light on (illuminate) an issue. This construct captures the need to create more holistic conceptualizations of global issues and reflects the quantum principle of the *unbroken whole*. Brought to global education theory, Selby proposed that while maintaining separate identities, people (eddies in a stream) working on the solution to an issue draw on the strength of the life energy core underlying the whole (i.e., the *entire stream* represents the energy emergent from working on interconnected issues). Intellectual fusion and creativity ensue.

In summary, quantum global issues present as noncausal, nonlocal, cyclical, and nonlinear. Each issue is not merely itself but involves other issues with everything connected. Each facet of an issue contains the total order of the issue's universe including the past, present, and future. A problem is now defined as a manifestation of interwoven and multilayered webs of relationships, and solutions are at best provisional adjustments within an ongoing, dynamic, and emergent process.

Quantum Inner Dimension (Formerly Human Potential)

Finally, the inner dimension (formerly human potential) of global education theory deals with the learning journey people go on when they engage with global education curricula. While engaging with others to deal with controversial, global issues, students experience self-learning, and they gain new knowledge. They also come to appreciate that learning is a process not a destination – lifelong learning (Pike & Selby, 1988). Using global education to focus on the inner self-world is just as important as focusing on the outer world (Selby, 2000b). With this appreciation, Selby quantumly augmented the inner dimension of global education theory.

To elaborate, Selby (1999, 2000b) used quantum theory to suggest that people's self-world is a coevolving inner world that changes as it encounters and interacts with the wider world to which we are all connected. He called this inner and outer journey *embodied learning,* meaning that as people learn together and within themselves, new learnings become part of them (mind and spirit) (the lava lamp again, see Figure 7) and affect their actions.

The verb embodies also means expressing an abstract idea in concrete, real ways (Anderson, 2014). For example, embodied learning about sustainable production practices (e.g., child labour) could manifest in real-time consumption decisions wherein people would feel more connected with others as they engage in consumer behaviour. Their self-world does not just evolve; it coevolves with people making the goods and delivering the services (Selby, 2000b).

Indeed, in this quantum-informed iteration of global education theory, Selby (2000b) suggested that people may be born *individuals* (a single, separate entity), but they become *persons* when engaging with global education curricula that are informed by quantum physics. "A person is a relational entity and can only be known when it is seen in relation to others" (Karlson, 2008, para. 2). Persons are defined by their deeper, more intricate, and highly developed relationships with others, nonhumans, and the planet (Selby, 2000b). "A person knows herself and thinks about herself as a social being. An individual, in contrast, thinks himself to be unrestrained by social ties and believes that to be fully himself he does not need to take anyone else into consideration. The individual has a sense of totally unrestrained freedom. For the person, on the contrary, being herself carries a social mortgage: she knows her freedom is related

to that of others" (Isasi-Díaz, 2012).

Selby also expanded the inner dimension of global education theory to accommodate the quantum principle of *uncertainty*. He recognized the role of "an interpenetrative reality of *delicious uncertainty* in which all 'places', 'events' and 'moments' touch each other at every point" (Selby, 2000b, p. 7, emphasis added). Rich (2012) urged educators not to be afraid of quantum theory. They can choose instead to view uncertainty as having an upside. It gives people a chance to be receptive to surprise and unpredictability and to find value and opportunity in "delicious ambiguity" (Rich, 2012, para. 4). Instead of being overwhelming and unnerving, even scary, quantum uncertainty can become "a field of infinite possibilities" (Rich, 2012, para. 4).

Finally, drawing on the *unbroken wholeness* principle, Selby (2000b) proposed that students would learn that perceptions of themselves flow in and out of the stream of eddies because they are constantly anchored to the core, the underlying energy of the stream (the whole). This anchor gives people the opportunity to step in and out of the core and constantly form and reform (change) their inner self as they become a global *person* (see again Figure 2). The inner "self is woven into the waves of other selves and therefore part of a bigger entity" (Scaruffi, 1999, para.1) (see Figure 9, Microsoft clipart used with permission).

Figure 9
Eddy and Stream Representation of Unbroken Wholeness Principle
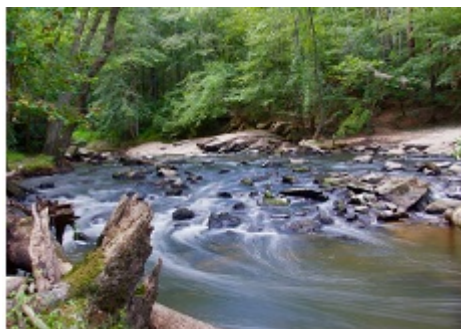
Applying Selby's (1999, 2000b) quantum augmentation of global education theory to inform global education curricula, frameworks, and guidelines radically pushes intellectual and conceptual boundaries. Radical means things have departed from tradition or the accepted mainstream wisdom (Anderson, 2014) of what constitutes global education, which Pike and Selby (1988) initially framed through holistic systems thinking. A quantum perspective frames *everything* in perpetual movement and in dynamic relationship (i.e., the unbroken whole and complexity thinking). Selby's quantum framing profoundly changes how to apply the four theoretical constructs of global education theory when designing global education initiatives.

Merryfield's Said and Ngugi wa Thiong'o-Inspired Global Education Theory

Merryfield is "one of the leading scholars in the field of global education" (Burnouf, 2004, p. 5). Hicks (2007) described her contributions as one of the "key works on global education in the American context" (p. 20). Merryfield's most valuable contribution to global education theory is the addition of Edward Said and Ngugi wa Thiong'o's constructs: *decolonized minds, double consciousness*, *contrapuntal,* and *hybridity* (Merryfield, 2001, 2002, 2009; Merryfield & Subedi, 2006).

Edward Said was a Christian Palestinian who grew up in Egypt and studied in the United States. "He came to understand that Americans had more myths than theories about the Middle East. He forms another perspective in the topic of global education by writing about... how scholarly misinformation of different cultures came about" (Burnouf, 2004, p. 7). Said (1978, 1993) took issue with the fallout of both imperialism and colonialism and coined the concept *postcolonialism* to refer to the critical academic study of their cultural legacy. Ngugi wa Thiong'o (1986, 1993) is a Kenyan scholar who encourages African writers to use their own language rather than their colonized language (e.g., English, French, Dutch). He calls this *decolonizing* the mind. Merryfield (2001, 2009) drew from their vanguard theorization to enrich global education theory.

For clarification, imperialism is a policy of extending one country's political and economic power and influence into another (without significant settlement) through colonization (establishing a colony in a place), military force, or some other means. Imperialism does not *have to* involve colonialism (e.g., Britain did not colonize India; Rome did not colonize Britain). Colonialism is the practice of acquiring control over another territory, occupying it with settlers, and economically exploiting the territory and its Indigenous people (e.g., Britain, France, and Spain colonized the Americas) (Kraidy, 2005; Merryfield, 2002).

Colonization entails one nation (the occupying force) engaging in the acquisition, establishment, maintenance, and expansion of its power by exploiting people in a foreign territory. The colonizing nation subjugates (conquers, dominates, and controls) the foreign nation (regarded as culturally or racially inferior) usually to acquire natural resources. Examples include human labourers, land, wood, oil, coal, natural gas, stone, sand, soil, water, native species (e.g., animals, birds, fish, plants), and precious metals. The result is an uneven, exploitative power relationship and the domination and suppression of a once-free people (Kraidy, 2005; Merryfield, 2002).

Decolonize Minds

Merryfield's (2009) overriding concern was that the imposed worldviews of the colonizing nation live on in people's minds long after the latter have regained their independence. Colonial assumptions and worldviews (usually unstated) continue to shape today's citizens including both those who experienced the colonization process and those influenced by this process (Said, 1993). Merryfield and Subedi (2006) called this "the baggage of colonialist assumptions" (p. 284).

In order for global education to work, Merryfield (2001) asserted that global education theory should be augmented with the construct of *decolonizing minds*. When this happens, people who were oppressed and living with this lingering baggage finally become conscious of the fact that the colonizers imposed their world view *so* deeply that ensuing generations cannot *see* that their present day decisions are shaped by the past even when they think they have liberated themselves. Their colonized identity is embedded and deeply entrenched in their mentality and collective psyche (Merryfield, 2009; Merryfield & Subedi, 2006; Ngugi wa Thiong'o, 1986). They are still prisoners in their own mind thus in their daily lives.

Drawing on the decolonized mind construct aids global educators in helping Western students gain "insights into ways of knowing that resist and challenge the histories, literature, and worldviews of people who have used scholarship to justify their culture's imposition of power upon others. [Students] can begin to see the world from other perspectives and learn from people

whose voices they may never have had the opportunity to hear" (Merryfield & Subedi, 2006, p. 290).

Double Consciousness

Hand in hand with decolonizing minds is the theoretical construct of double consciousness. Pioneer global education theorist Hanvey (1976) proposed *perspective consciousness* wherein teachers help mainstream students become aware of different world views other than their own. Double consciousness, in contrast, pertains to people who straddle the boundary between their own world and that of the mainstream. Mainstream society is characterized by institutionalized (uncritically accepted as the norm) racism, sectarianism, stereotyping, and discrimination or other biased and unfounded beliefs (Merryfield, 2009). Examples include African Americans, Latinos, or First Nations (Aboriginal or Indigenous) citizens trying to survive and thrive while marginalized within the mainstream society where they live.

In order to survive, marginalized people must figure out how to *be conscious* of both (a) what they have learned about themselves at home and in their community (ideally pride, respect, and belonging); and (b) how the rest of the world perceives them and how this perception makes them feel (usually inferior, displaced, an outsider, and hopeless) (Merryfield, 2009; Merryfield & Subedi, 2006). They need *double consciousness*, which is "the ability to see one's world both from the mainstream and from the margins" (Merryfield, 2009, p. 226). Gaining and exercising this ability can be a profound and enduring struggle as well as a freeing insight.

Double consciousness entails understanding how people in power use their dominant culture to justify injustice, inequality, and structural violence against those on the margins – those people straddling cultural, religious, gender, language, socioeconomic, and other borders (Merryfield, 2009). In his book about the color line (racial segregation) in the United States, DuBois (1989) poignantly observed its impact. "One ever feels his two-ness … two souls, two thoughts, two unreconciled strivings, two warring ideals within one dark body, whose dogged strength alone keeps it from being torn asunder" (p. 3).

In a global education classroom informed by this theoretical construct, teachers can help mainstream students become conscious of what it is like to be considered inferior, to be placed on the periphery of society, to be looked at as an outsider who does not nor will ever belong – to always be on the outside looking in. Gaining this consciousness can be facilitated by studying history or literature that is authored by people straddling this boundary, people who *have* double consciousness (Merryfield, 2009; Merryfield & Subedi, 2006).

More than an academic exercise, this teaching strategy better helps mainstream students understand the premises upon which *someone else's* marginalized truth is viewed. Including the worldviews, knowledge, and lived experiences of people with two-ness (Dubois, 1989) gives mainstream students a chance to learn what it *feels* like when their human differences are the *sole* (soul) basis for being excluded and pushed to the sidelines (Merryfield, 2009; Merryfield & Subedi, 2006). An anticipated outcome is enhanced empathy – far beyond sympathy.

Contrapuntal

Merryfield (2009) also intuitively brought Said's (1993) notion of *contrapuntal* to global education theory. Said (1993) was convinced that "no identity can ever exist by itself and without an array of opposites, negatives and oppositions" (p. 52). Hence, it is untenable to learn about other people's perspectives using information created by someone other than them. The

information is too distorted (Merryfield, 2009). Contrapuntal (i.e., a musical concept for *note against note*) means counterpoint or point against point. Counterpoints can be complementary or contrasting. In musical theory, counterpoint focuses on the melodic *interaction* instead of the sound (harmonies) made by that interaction (Rahn, 2000).

Students come to global education classes with their own story (in music theory, this is called *the fixed melody*). To gain a global perspective, they must listen to and *hear* the actual stories and accountings of others' history and their cultures – direct from the source and not second hand from colonizers and their adherents. Adding contrapuntal to global education theory lets educators presume that when students' stories and others' stories are overlaid (multiple voices: note against note), a *polyphonic* whole or a music texture is created that is different from many voices singing the same song at the same time (*monophonic* – a choir). Polyphonic is best described as many voices making many sounds at the same time (Rahn, 2000). It may sound like a cacophony (harsh and discordant), but there is order in the disorder. In effect, mainstream students' perspectives are broadened by being exposed to other people's stories aside from their own, which are erroneously judged as authoritative and privileged (Merryfield, 2009).

Interestingly, contrapuntal is about more than contrasting or complementary perspectives (Rahn, 2000). It is also about what happens when there is *interaction* among peoples living in cultures that hold different perspectives (Said, 1993). Contrapuntal can thus refer to the dynamic process in which the colonizer and the colonized are changed *because* of this interaction (e.g., when they experience respective lifestyles, technologies, goods, services, communities, spirituality, and governance) (Merryfield, 2009; Said, 1993). The contrapuntal theoretical construct helps global educators facilitate students being able to both (a) "identify the power that comes from who frames the questions" and gain (b) "insights into how identity, power and history interact" (Merryfield, 2009, p. 228). Basically, students would learn that one's own story *is* valid but insufficient to understand the world and address its complex issues and problems.

Hybridity

Finally, Merryfield added the *hybridity* construct to global education theory to help "global educators decolonize [curricula so they can] teach global perspectives" (Merryfield & Subedi, 2006, p. 289). Hybrid means a mix or combination of different elements to get something new. A mule is a cross between a horse and a donkey (Anderson, 2014). Hall (1992) recognized *hybrid talk* (rhetoric) as fundamentally associated with the emergence of Edward Said-inspired postcolonial discourse and its critique of cultural imperialism. Merryfield (2009) was interested in the effects of *mixture* (hybridity) on identity and culture. She was convinced that global education theory must include this construct. For her, hybridity referred to the effect of globalization (top down and bottom up) on cultures. Because of globalization, traces of other cultures now exist in every culture – things are getting very mixed together (Merryfield, 2002).

To reflect this reality, Merryfield and Subedi (2006) explained that global educators should move beyond one, homogeneous (*same*) interpretation of the world's story and augment it with hybridity (combination of different elements). This approach would emphasize and respect people's heterogeneous (*different*) experiences and histories (i.e., life stories and narratives). With this theoretical innovation, global educators could focus on the connectedness of people rather than teach the colonial presumption of 'us vs. them' with 'us' being superior.

From a hybridity perspective, global educators could teach "students to critically examine and question their own historical understandings [and engage with] multiple and contested

histories" (Merryfield & Subedi, 2006, p. 289). Most especially, hybridity better helps students "understand the complexity of the human condition" (Merryfield & Subedi, 2006, p. 289) made possible when they are exposed to the pervasive, debilitating power of colonial homogeneity and experience empowerment from diversity, differences, and hybridity (Merryfield & Subedi, 2006).

Conclusion

"Global education is a dynamic and evolving field" (Quittner, 2008, p. 2). One of the most powerful evolutionary forces for any academic field is theoretical innovations. Reimers (2020) claimed that there is no good theory of global education. That claim was contested herein by showcasing four leading-edge global education theoretical initiatives tendered nearly 35 years ago but still with deep relevance to the global issues facing humanity. All initiatives were predicated on the imperative of replacing the outdated Newtonian worldview (see Table 1) to accommodate what is needed to address complex global issues. Outside-the-box thinking and theoretical innovation prevailed with heavy reliance on systems thinking, complexity thinking, quantum physics, and postcolonial constructs.

Pike and Selby, inspired by global educators from the seventies and early eighties (e.g., Case, Hanvey, and Kniep – see Appendix) theorized global education in 1988 with revisions in 1999/2000. Hicks augmented their approach with his own theoretical additions a few years later. Selby deeply enriched global education theory with quantum physics. Merryfield drew on Ngugi wa Thiong'o and Said's postcolonial thinking to develop her global education theory. These theoretical contributions have stood the test of time. I confidently submit that they constitute the gold standard for global education theories. Alone or in combination, they remain available for global education curricular architects to use when planning pedagogical philosophy, content, instructional and learning activities, assessment and evaluation exercises, and learning resources.

All global educators have to do now ... is use them.

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Appendix
Collection of Global Education Principles (1976–1993)

HANVEY (1976, 1982)

Perspective consciousness – people have a world view that is not necessarily shared, but it can be influenced; people have to be receptive to others' perspectives

State of the world and planet awareness – people must be aware of global conditions, trends, and developments that are impacting justice, rights, freedom, and so on; they must develop a future orientation and an awareness of responsibilities and consequences

Cross-cultural awareness – people must get to know others, meet with others, seek diverse views, and see people as a diverse human species; this includes empathy and transpection, which mean, respectively, understanding the other through one's imagination and through actual practice in their culture

Knowledge of global systems and dynamics – people must know about each global system (e.g., legal, economic, political, and trade) and then how they all work, on their own and together (dynamics)

Awareness of human choice – humans have choices when making decisions that are problematic (i.e., require mental acuity and are hard to solve), and they must face the consequences; nothing is predetermined – there *are* alternatives to the way things are being done

KNIEP (1985, 1989)

Workings of global system – people must know about four major interactive systems that dominate our interdependent world: political, economic, technological, and ecological (Kniep made no mention of social, cultural, or family systems)

Knowledge of global history – people must know about the evolution of human values, the historical development of contemporary global systems, and the origins of current global issues and problems

Issues and problems are persistent, transnational, and interconnected. Their solution depends on people seeing themselves as global citizens. Global issues deal mainly with peace and security, environment, rights, and development.

Study of human values – people must study (a) diverse cultural values (group membership and identity) that can contribute to unique worldviews; and (b) universal values about what it means to be human that transcend cultural values (e.g., justice, equality, liberty)

CASE (1993) inspired by HANVEY and KNIEP above

Global interconnections (akin to global systems and global dynamics) – people must be able to distinguish among (a) *interconnectedness*: there is a link, a tie, a bond; (b) *interrelatedness*: an awareness of the link and the ability to see potentials due to seeing the link; and (c) *interdependency*: the link is mutually beneficial and entails reciprocity ... everyone gains

Knowledge of global history – people must know about the origin and past patterns of worldwide affairs leading to current problems and global issues (i.e., what Selby called *temporal dynamics*)

Knowledge of alternative future directions in worldwide affairs – people must be aware of alternatives to the way the world is currently being run, especially alternatives to unrestrained economic growth, technological progress measured as prosperity, unsustainable consumption practices, and the exploitive use of foreign aid in international development policies

Understand universal human and cultural values and practices – akin to cross-cultural awareness, and the study of human values

Perceptual dimension – people must formulate opinions about the world only after extensive, open-minded inquiry instead of using unexamined or questionable assumptions; people must reach their own thoughtful conclusions after considering a fair airing of opposing views

Anticipation of complexity – people must appreciate that enduring global predicaments are messy, intricate, and complex (many parts twisted together); they must learn to recognize the unequal dependencies and power arrangements in many global relationships

Resistance to stereotyping – people should not question or judge the adequacy of others based on a narrow range of characteristics or by grouping everyone together thereby losing diversity

Inclination to empathize – people must temporarily suspend their feelings, so they can mentally (perhaps literally) walk in others' shoes, experience their response to a situation, and then behave toward them in ways that take their perspective into account

Non-chauvinism – people must not judge or dismiss someone or something just because it is at odds, or is not affiliated, with their group; people should impartially assess policies and global events

Open-mindedness – people must be *willing* to hold off on forming, or be willing to change, their opinions and beliefs until after seeing or hearing and considering others' perspectives and thoughts