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Problems with Global Education: Conceptual Contradictions

Global education is concerned with social justice and student empowerment. However, an understanding of the word global as merely international and/or intercultural may fail to challenge existing mechanistic and compartmentalized views of knowledge and curriculum. Such a global education limits students' agency and reproduces the very systems it intends to challenge. A holistic understanding of the word global allows for a relational or systems view of the world, mindful of the complex, multiple, and dynamic nature of living systems. It situates the students and their studies in the world and thus offers greater possibilities for action.

L'éducation planétaire porte sur la justice sociale et l'autonomisation des étudiants. Toutefois, une interprétation du mot «planétaire» qui se limite au sens d'international et/ou interculturel pourrait mettre en échec la possibilité de contester les points de vue mécanistes et compartimentés des connaissances et des programmes d'études. Une telle éducation planétaire limite le pouvoir des étudiants et reproduit les systèmes mêmes qu'elle veut contester. Une compréhension holistique du mot «planétaire» admet un point de vue relationnel ou systémique qui tient compte de la nature complexe, multiple et dynamique des systèmes vivants. Elle situe les étudiants et leurs études dans le monde et ainsi offre plus de possibilités d'agir.

That there are several versions of global education is generally recognized in the literature. For some this is considered a strength of the approach as it allows practice to shape meaning even as meaning shapes practice (Merryfield, 1993). However, it may also be considered a weakness as it allows a proliferation of any number of global education resources, programs, and policies with widely divergent (and sometimes opposing) objectives and focuses (Mundy, Manion, Masemann, & Haggerty, 2007; Pike, 1996).

One possible outcome of this diversity of visions is that little is offered in the way of scholarly critique of either the various versions of the approach or resources associated with them (Mundy et al., 2007; Pike, 2000b). Such critique is hampered at the outset by the lack of any clear definition (or even definitions): how does one critique concepts or practices with no clear definitions? As well, the lack of critique is probably due in part to the fact that relatively few education scholars, teachers' unions, or ministries give any priority to the examination of what is commonly termed *global education*. It received much attention in Canada in the 1980s and 1990s when the Canadian International Development Agency was actively promoting and funding a cross-provincial program and numerous projects across the country, but once the funding was cut in 1995, support and interest declined (Mundy et al.; Pike).

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In an attempt to contribute to a much needed critical discussion of global education, its potential, and prospects, in this article I offer a critique of a dominant version of the approach, one that understands global education as focused on international and intercultural studies (Anderson, 1991; Merryfield, 1997). This global education conceives the concepts of interconnection and interdependence in terms of human relationships (Werner & Case, 1997). Typically, it is found in social studies courses where the curriculum includes the study of other peoples and countries and students may explore global issues associated with the relationships between these groups (Mundy et al., 2007). But this version of global education does little to challenge the mechanistic and objectivist paradigm that dominates curriculum and knowledge in North American schools (the context in which this argument is situated), although this paradigm constitutes a great barrier to the goals of global education: to prepare students for the complexities of an interconnected and interdependent world and to empower them to create the world they wish to see.

In this article, my intention is to stir the waters and challenge those who have confined global education to some form of world studies. I draw on the global education literature to outline the dominant understanding of the approach as international and intercultural education. I show that this conception not only fails to challenge the dominant mechanistic paradigm, but may even support the compartmentalization of knowledge that this paradigm creates. An alternative understanding of interconnection and interdependence in global education, one that grows from systems thinking, offers another epistemological and ontological positioning: one with students as embedded and embodied in the world they study, one where understanding is found in the relationship between and among actors in multiple, dynamic systems. This conception expands global education beyond the limits of the international and intercultural and thus expands the students' perspectives, understandings, skills, and agency.

Conceptual Contradictions

What exactly is meant by the word *global* in global education? For some global refers to a holistic approach growing from an understanding of knowledge, experience, and phenomena as relational (O'Sullivan, 1996; Pike & Selby, 1988). For many (and indeed I suspect most), global clearly refers to a geographic or international focus: the study of cross-national and cross-cultural interactions, connections, and issues (Anderson, 1991; Merryfield, 1997; Tye, 1990). It is this second understanding with which I take issue as it leads to several problems, even contradictions, in global education.

Various Conceptualizations

First, it is necessary to offer some idea of what global education entails. As pointed out above, there are no clear, agreed-on definitions or even goals. There is, for example, a version of global education that is concerned with helping students acquire intercultural capital in order to be economically successful, and by extension increase their nation's economic might (Lamy, 1989; O'Sullivan, 1999). In this article, however, I focus on versions of global education that are described in most of the literature: global education in the planetary interest rather than the more narrow concern with national or economic

interest. That is, it is intended to prepare students to participate in a more globalized world characterized by increasing interconnections and interdependencies between and among human and natural systems in order to make the world a “better place” for all. Although this better place is not clearly described or predetermined, it is generally understood as a more peaceful, just, and democratic place than we currently have.

Not surprisingly, global education proponents describe varied paths to this better world. Some focus on the inclusion of global content into curricula, for example, studying other countries and cultures and their relationships particularly to one’s own nation (Hanvey, 1976; Kniep, 1986). Others would include skills such as cross-cultural effectiveness and participation skills and attitudes toward others and toward the complexity of human/national interaction (Case, 1993; Merryfield, 1998). Various versions of global education as well place varied emphases on the role of student action. For some, the preparation is for future action, that is, after leaving school when students are adults (Case; Werner & Case, 1997). For others, students are seen as already active participants in the world, and thus global education is an approach that allows them to explore this in their lives as students and practice the skills that they need to realize more fully their agency in their now and in their future (Evans & LaVelle, 1996; Toh, 1993). For many, working in the Canadian context global education entails a new approach to all curricula, an approach that is driven by a need to prepare students to address global problems and issues. This may take the form of using global issues as themes through which to study the world (Pike, 1996) or it may provide a rationale for a more holistic approach to curriculum (Young, 2006).

The elements most commonly ascribed to global education are peace and human rights education, intercultural and multicultural education, development education, environmental education, and education for democratic citizenship (Osler & Vincent, 2002; Pike, 1996). Connecting these diverse educations are the concepts of interconnection, interdependence, and perspectives awareness. It is these concepts that are most commonly referred to in definitions of global education (Pike, 2000b), and it is these concepts that are the concern of this article.

The central problem lies in the understanding of the word *global*. For many, it clearly refers to an international and intercultural focus. Pike (2000a) has identified a distinctly international and intercultural focus in United States versions of global education. Both Becker (1979) and Merryfield (1997) define global education in contrast to nationalist or regional perspectives. Others explicitly state that global education is concerned with international interdependence (Anderson, 1991; Begler, 1993; Johnson, 1993; Tye, 1990). Some Canadian proponents too have highlighted the international when discussing interconnections and interdependence (Case, 1993; Lyons, 1992; Roche, 1989; Werner & Case, 1997).

Another interpretation of *global* can be found in conceptions with more holistic epistemologies that grow from systems thinking (O’Sullivan, 1996; Pike & Selby, 1988). In this case, interconnections and interdependence move beyond the spatial or even temporal dimensions. Connections between peoples, institutions, and environments are not studied as objects; rather, the

relations between and among peoples, institutions, and environments are the source of knowledge and understanding, and the student explores these relationships from a position in the world, not outside it (Selby, 1999).

Systems thinking as an approach to the study of the world has been called a paradigm shift: it grew out of new understandings of the nature of the universe in the natural and social sciences (Doll, 1987; Pike & Selby, 1988). This systems view of reality can be generally described as follows.

- Much of the world can be understood as multiple, interconnected, and interdependent systems that interact with each other in myriad complex ways. Each system is acted on and acts on many other systems. In addition, in each system are subsystems that act on one another.
- The nature of such systems cannot be fully comprehended by examining component parts separately: the systems change when the components are separated, and the components themselves lose their meaning: their relationship to each other and to the whole defines them. Changing their context changes them. The whole in effect is greater than the sum of its parts.
- Because living systems (and indeed subatomic and some chemical systems) are open systems, there is a constant exchange of energy, matter, and information in and between systems and subsystems. This means that systems are always in a state of flux, always in a process of change.
- This change may not be fluid or incremental; rather, it may be transformative. The systems may be chaotic, turbulent, feeding on flux in order to transform themselves. There are errors and instabilities, but these are necessary to development, to internal restructuring.
- The complexity and relationality of open systems and our position in them require recognition of the multiplicity of knowledge, that how you view a system, your perspective, will influence what you see.

To explore systems from a position outside, an objective position, would contradict the very nature of systems thinking. Therefore, I would extend this ontological and epistemological view to include the positioning of the subject, specifically the student. So I would add one more characteristic.

- We are part of these systems (natural, social, cultural, technological) individually and as groups. To separate us from these systems is to change both ourselves and the systems of which we are part. We create them even as they create us.

Both interpretations of the word *global*, whether international or holistic, may lead to global educations in the planetary interest. Both can be said to help students begin to develop the knowledge, skills, and attitudes they will need to address global problems, consider multiple perspectives, and actively participate in their local and global communities. But it is my contention that a global education understood primarily as a study of the world outside of the student or nation is one that limits and in some cases contradicts the very purpose of the approach.

The Problem

As stated above, a geographic understanding of the word *global* is pervasive in much of the literature. The problem is that a global education that grows from this understanding of the word *global* does little to challenge the dominant

paradigm in education: a positivist, mechanistic approach to knowledge and knowledge construction. This epistemological position has been criticized in philosophy (Meyer, 2001; Grene, 1966), in the sciences (Bohm, 1985; Capra, 1982), and in education (Doll, 1987). A mechanistic paradigm has been held accountable for the compartmentalization of knowledge into separate subject areas and discrete units and for a belief in ordered and incremental learning with a high degree of control and predictability (Doll; Orr, 1994).

The problems with this view of knowledge and the world are many. We do not experience the world in discrete subject-area blocks; and without context, what is studied may have little or no meaning or relevance. This can have a negative effect on the depth of understanding as well as the long-term retention of knowledge (Gulyaev & Stonyer, 2002). As well, plan as we will, we cannot predict what will happen in a classroom. Too many variables are at play from the world, community, the school and its systems, the students, and their families. Nor can we unerringly predict what students will learn: learning is too complex; too many factors are involved to allow for accurate predictions (Doll). That our educational structures are informed by mechanistic, positivist beliefs is almost certainly one reason for many of the challenges we face.

If global education does not directly challenge the dominant paradigm, then it accepts the status quo. In this case, what chance is there for teachers to move beyond it? Swimming against the current is difficult enough for those with a clear philosophical and moral objection to the mainstream; if global education does not offer such purpose, what incentive is there for global educators? Indeed, such a global education does not even recognize that there is a current to swim against.

An internationally focused global education not only fails to challenge the mechanistic structures of schooling: it may directly support these structures. Consider the nature of interconnection and interdependence in such a global education—between countries, between peoples. These are connections through space, but not necessarily through time, ideas, phenomena, or actions. With a focus on the international and intercultural as content, subjects of study that are themselves often oversimplified and compartmentalized, we have automatically reduced the idea of global education to a particular subject area where the curriculum typically includes the exploration of international issues and intercultural learning: social studies. And indeed, social studies is the subject where we are most likely to find any inclusion of “global education” (Mundy et al., 2007). Thus we are creating and maintaining the compartmentalization of knowledge into separate pieces. Although social studies teachers may include connections to sciences or math in their classrooms, it is unlikely that a science or maths teacher would include the social. This version of global education situates itself immediately in the subject-area structure; it supports the idea of separating knowledge into pieces and studying these pieces separately. And so we return to the mechanistic, reductionist paradigm where, for example, science can be divorced from social studies, where we learn about the world from an objective stance, observing the world rather than interacting with it. The results of this paradigm are discussed in more detail below.

Limiting Perspectives

In line with the interpretation of the word *global* as international, many conceptions of global education reduce the idea of multiple perspectives to the cultural or the political. In some cases, preparing teachers to teach global perspectives has been situated solely in cross-cultural experiential education (Tyson, Benton, Christenson, Golloh, & Traore, 1997; Wilson, 1982). In his analysis of the perceptual dimension of global education, Case (1993) expands on the meaning of global perspective with a comprehensive analysis of what is needed for this more broad-minded way of viewing the world: open-mindedness, anticipation of complexity, resistance to stereotyping, inclination to empathize, and nonchauvinism. Although his conception of a global perspective includes much more than the merely cross-cultural, he situates his explanations in particular issues, giving as examples beliefs about the value of democracy or individual freedom or opinions on international trade. Perspective is associated with human relationships, with issues and judgments.

Pike (2000a) suggests that the notion of perspective in global education common to most conceptions has two senses: global perspective, which entails looking "beyond the confines of local and national boundaries in (student) thinking and aspirations," and multiple perspectives, which is "a belief in the educative value of considering differing views on any issue before reaching a judgement" (p. 65). The first is concerned primarily with the purpose of global education, that it is in the planetary interest, but there are also connections to how we view things, from what other points of view we might view things: beyond local or national. The second encompasses not only how we view things (in varied ways), but what we are viewing (issues) and why (to reach a judgment).

This implies that perspective is understood to be a human positioning situated in either cultural views or opinions (something we judge); that is, both the subject (human) and the object (human relations, human issues) of the points of view seem to be predetermined. Because certain issues are most commonly associated with global education (e.g., poverty, conflict/peace, human rights, environmental protection), it is safe to assume that these are the issues that students will be judging. But is perspective limited only to our cultural views or opinions on selected issues? Could we not imagine that other living creatures have perspectives or that we might need to consider them? Or that we might position ourselves to view something from a perspective other than the cultural: philosophical, spiritual, or relational, for example, or embodied, emotional, rational? This is not to deny that we view the world through cultural lenses; rather, the idea is to expand our ideas and experiences of subjectivity and intersubjectivity. In addition to focusing on our perspective of the issue of human rights, might we not also explore our perspective of the relationship between living creatures, how we create each other, objectify each other, and/or care for each other? The positioning of perspective as a subject-object duality focused on issues might itself be culturally bound in Western notions of how we observe the world and what is worth observing.

Similarly, might we not stretch our minds to consider other objects of our perspectives? We could consider our perspectives on knowledge or how we know things; we could look at situations or phenomena that do not invite

judgment. Students might, for example, consider the role of perspective in examining an electron: depending on how they look, they may find a particle or a wave. In this case, the observer affects what is observed; its very nature is to some extent determined by the perspective of the observer (see Bohm, 2003, and Capra, 1982, for discussions of Heisenberg's Uncertainty Principle). There is no position for judgment, but there is a sense of the multiplicity that perspective creates and uncovers.

If perspectives consciousness is limited to the cross-cultural and the political, then other areas of knowledge are exempt from this notion of multiplicity, typically science and mathematics. Evident in this is the belief in a perspectives-free knowledge, that in these areas perspectives are irrelevant. There is an inherent double standard in this understanding of perspectivity: knowledge associated with human systems can be multiple, but knowledge associated with the "hard sciences" can be universal, it can be truth (Bohm, 1994). So the idea of multiple perspectives is reduced. And yet who determines which knowledge is privileged as truth?

Consider the case of mathematics: the Platonic ideal of mathematics continues to dominate science and society (and thus curriculum, Davis, 2005). That is, mathematical laws are universal ideals existing outside of space and time in a realm beyond the reach of humankind (Johnson, 1998). This fails to recognize the human and therefore cultural construction of mathematical ideas. Bishop (1995) points out that anthropological evidence demonstrates varied numerical systems developed by diverse cultures. There are alternatives to base-10 numerical systems. There also exist other conceptions of space that do not fit with the linear, object-oriented conception that underlies Euclidean geometry.

A global education with a limited conception of what constitutes perspectives limits students' understandings about the nature of truth and reality. Rather than challenging their thinking with the complexity and ambiguity of their world, rather than encouraging them to become comfortable with uncertainty, this approach creates a mythical universe of order and control. But will this prepare them to participate effectively in a world of multiplicity and change?

Limiting Understanding, Limiting Skills

A mechanistic perspective allows for, indeed encourages, the study of the world through the examination of simple, static phenomena; this constitutes an unchanging reality. This is an epistemology that says that the best way to understand the whole is to take it apart and study the pieces; that is, to take discrete sections from complex living systems (also called open systems) and create simple closed systems. The multiple variables that can affect the functioning of the systems are omitted. Then these closed systems are used as templates for determining rules of behavior and interaction. This is the method of science, the method of Newton. From this grows much of our understanding of how the universe works, for we apply these laws, these rules of behavior, to the same or similar phenomena. This may work well with closed systems. With open systems? Perhaps not so well.

An example of this is the common practice in elementary classrooms of growing beans. Students each receive a cup (often Styrofoam) filled with soil in which they plant a single bean. As their bean plant grows, they learn the names

of various parts of the plant, how it grows, what it needs to grow, and then they can eat the produce at the end. Now there is nothing wrong with this activity in itself; the problem is that this may well represent the totality of physical experience about plant growth that the children will receive until secondary school, perhaps even through secondary school. This little closed system allows the teacher to control the activity and to focus on teaching the predetermined “facts” that are required in the official curriculum.

But this bears little resemblance to the reality of plant growth in the world, where a bean plant grows in context with a lot of other beans and probably a variety of other plants as well; where weather and insects, animals and humans will interact with those bean plants and their surroundings; where the life of a bean plant is unpredictable, even improbable; where some bean plants do not make it, some provide food for us, and some go to seed, allowing the cycle to continue. Or maybe none of them survive—this year. In this complex system, the past has an effect on the present (Were there beans here last year? What animals or humans might come to check?) and the future has an effect on the present (We anticipate a bumper harvest or a dangerous weather pattern. An economic downturn is predicted, or it looks as if we might go to war. This affects what, how, when, if we plant and harvest.) This is what those students do not see with their bean in cup.

What the students do see when growing a bean in a cup is that this is how plants grow, and from this experience perhaps grow their own understandings of agricultural systems, ecosystems, and food systems.

What does this mean for global education? Besides the questionable act of presenting simplified versions of complex phenomena as if they represented reality, there is a direct challenge here to the goal of preparing students to address global problems. Global problems are by their nature complex; if they were simple, they would not be problems. How would the examination of simplified versions of how living systems work in the world (biological, social, cultural, political) cleared of all their messiness prepare students to take on this task? An important feature of living/open systems is the exchange of matter, information, and energy with other systems and between subsystems in them. Although we can discern patterns and relationships, the number of uncontrollable variables means that the behavior of such systems is often unpredictable. Furthermore, it means that they are subject to change through time. Simplified versions of understanding complex phenomena are all about controllable outcomes. Controllable outcomes are not a common feature of open systems—living systems—and it is living systems with which students have to deal in their lives in and outside school and in their future as active participants in addressing global issues.

Limiting Agency: Universals

Reducing complex phenomena to simple closed systems allows the creation of laws or rules of behavior: the creation, in fact, of universals. These “truths” are used to explain how the world is. But a belief in a single truth directly contradicts the global education goal of developing awareness of multiple perspectives, diverse ways of knowing. If there is one truth out there, then these other perspectives must be wrong. The intersection between the acceptance of closed systems as templates for reality and a limited understanding of perspec-

tives consciousness results in an acceptance of universals, limiting at the outset students' choices as they seek to make the world a better place.

The acceptance of universals, coupled with the static nature of the closed systems created for studying phenomena, restricts the possibilities of agency. If knowledge and phenomena are fixed, then so too is the reality we perceive around us. The human systems at play in the world—social, cultural, political, economic—the systems in which the global problems we have identified operate, take on a quality of inevitability. Rather than viewing the systems in which we live and work as created by people and as dynamic and changing, and therefore capable of being changed by intention, our agency is limited to working in this reality that we perceive.

An example of this can be found in the study of the global problem of poverty, a common topic in global education. A perhaps typical approach to this topic is to focus on a selected developing country or a community in that country and learn about the culture(s) of the people, their lifestyles, beliefs, and social structures. After identifying the challenges to economic development faced by this community, students might (naturally) wish to help, and because the teachers wish to encourage a spirit of activism and an attitude of care, they decide on and implement a service project. Typically this involves some fundraising either to support an NGO's work in the country or more directly to fund a specific project (for a description of such a project, see Young & Cassidy, 2004).

Although there can be positive learning experiences with this approach, there are also several problems: it may oversimplify a complex situation; it does not necessarily include an examination of the dynamic nature of systems in the world, that they interact and change through time; and there is an assumption of universality in the understanding of the word *poverty* that cannot be sustained under examination. An investigation of what is meant by poverty and who determines standard definitions might lead students in many directions. But it is the presupposition about the permanence of the systems at work in the country or community, particularly the economic system, that constrains the students' ability to act. Rather than examining how current economic and political systems create and maintain unequal power structures that privilege some and disadvantage others, students accept the status quo and seek to address economic imbalance through charity. Rather than, for example, creating a relationship of solidarity between groups of people who wish to change current power structures, the relationship of the students to the community they study is one of donor and recipient. The point here is not that charity is necessarily a bad thing, but that the agency of the students is limited by the unexamined acceptance of "the world as it is." This flies in the face of the stated aim of global education: to empower students to change the world.

Limiting Agency: Objectivity

A belief in our ability to be objective grows out of a Cartesian duality: the division of body and mind. According to this philosophy, we are able to remove ourselves from a situation or phenomenon, to be apart from it, and so observe the objective truth without influencing what we observe. Further, we can observe from an intellectual perspective without being influenced ourselves by our own emotions or our embodied connection to the environment.

We can observe from without, neither influencing nor influenced by our relationship to the material world. The critiques of this position abound: in the natural and social sciences, in philosophy. Yet it is a key understanding in the mechanistic paradigm and continues to dominate the structure of much curriculum and instruction (Doll, 1987). This belief in objectivity is intertwined with the belief in universals: in objective truths.

However, this objectivity, which appears to give us the power to perceive reality as it really is, actually limits our agency when it comes to changing that reality. It runs counter to the position of global education, which is to help students become active citizens able to change their world.

This time, I take the example of a creek that supports salmon and trout populations. Residential and infrastructure development have over the years resulted in a great deal of silt build-up. This affects water flow, creek depth, and fills the nooks and crannies in which juvenile salmon and trout hide. A grade 4 teacher notes the connection between this problem and what she is teaching: the science curriculum is concerned with habitats and communities, and the social studies curriculum calls for a focus on Aboriginal people's relationship with the land. A grade 10 teacher also notes that her science class will be focusing on the sustainability of ecosystems and that here is an opportunity to situate that learning in real life. Each teacher wishes to encourage his or her students to develop the skills, attitudes, and knowledge they need to help protect the environment. But their practices are informed by diverse understandings of their place in the world.

The grade 10 teacher is acting from a belief that we learn about the world from an objective position. We create closed systems over which we have some control, and we study these systems as observers. We can choose to intervene, and our position of control allows us to act on the world. Alternatively, we can choose not to intervene, and then things will run their natural course and we will not be involved in the results.

The teacher takes her students to the creek, and they study the interactions between the water and the land, the vegetation, the insects, and the animals. They determine that the silt is causing a problem and they decide to do something about it. Starting where the silt build-up begins, the students take on the huge task of dredging the creek. When they have succeeded in the project of stream recovery, they once again study the local ecosystem, take note of the changes, and prepare comprehensive reports comparing the stream assessments before and after the reclamation. They predict that the salmon and trout populations have a good chance of recovery.

The teacher (and perhaps the students) is aware that development continues upstream, but she is concerned with their particular piece of the creek. The creek passes through borders, and these have the power to effect change only in their section, where they have some control. Nor does the teacher wish to bring a controversial issue into the classroom. After all, this is a science class, and political issues are not their concern. So they will not get involved.

The grade 4 teacher, on the other hand, is moved by another epistemological position, subjectivity and intersubjectivity. She believes that we are each embedded and embodied participants in the systems of the world, that we understand the world from a position within. Thus our every action or inaction

affects our environment and the interactions around us. The focus is on the relationships between ourselves and other participants in the systems in which we live.

Because of this, her students look at their own relationship to the creek and the life in and around it and how their practices affect this environment. They look at their school and their homes to see how this relationship affects the creek. They examine the practices of their community and the relationship between economic development and habitat protection. And because of this broader concern with relationship and the understanding that each of us is embedded in this web of relationship, the students have infinitely more agency than the grade 10 students. Their actions may have big, unpredictable consequences along the web of interconnection. Even inaction has an effect: both through a tacit acceptance of the status quo and through the effect that their being has on their environment.

So these students could choose to clean the silt from the creek; they could work with their parents to reduce any harmful effects from their homes; they could work in their communities to educate, to question, or to advocate for certain positions. These students are creating their world.

Studying the world from a position of objectivity removes the subject from what is studied. Thus the subject's ability to influence the object is confined to that with which he or she has immediate connection, over which he or she has direct power. In the case above, it is one section of the creek during one period of time. In the case of global poverty, it is by giving charity to poor people in developing countries through an NGO. With a bean in a cup, it is a case of providing or denying water and light. But the big, giant global issues (environmental protection, global poverty, agricultural systems), the concern of global education, seem to be beyond our control. They are too big, too far away. So we vote for those we think might address these issues best, or we hope that one day one of our students will be in a position of real power.

A subjective/intersubjective positioning grows a different view of individual power: first, in that just being here on the planet has an effect. Through our relationships with others and with the world, we are both creating and created. Second, as actors in a web of interconnections, all our actions have consequences, potentially huge, unforeseen consequences, far along the web. Our local actions can affect our global reality. Informing ourselves, awareness of the big picture, and reflective action can transform us and our world. This is the sound of the butterfly flapping her wings: the long-term effects may be profound.

Conclusion

When I compare the geographically bounded versions of global education with what grows from systems thinking, I am struck by the difference in potential. It seems to me that a global education that grows from an international, intercultural interpretation is limited at the outset, confined to current structures of school and schooling, reproducing the structures against which it purports to struggle. A global education rooted in a relational epistemology like systems thinking, however, has few limits either in terms of what the students can study or what they can do.

This is not to say that the international and intercultural have no place in global education. On the contrary, such human systems of relationship and interaction are key to students' understanding of knowledge systems, social and ecological systems, and their own roles in those systems. The argument here is that although the international and intercultural are an integral part of the bigger picture, they should not constitute the whole. A systems perspective considers not just physical systems and their relations, but (far more importantly) sociocultural, political, historical, and spiritual systems, all as dynamically intersecting.

Global education is intended to be a response to our changing world, another education for an interconnected and interdependent planet. Yet if our approach to curriculum and knowledge remains the same, if we do not challenge dominant views of knowledge, dominant practices in classrooms, then we may be simply reproducing what we struggle against. Dividing knowledge into separate pieces, dividing the students from the world, limits their ability to recognize multiple perspectives, to develop an understanding of and comfort with our complex and unpredictable world, to acknowledge and appreciate their own power to act and have an effect in the world they create. A physically oriented, mechanistic paradigm promotes reductionism: it focuses on the objective world, ignoring the subjective and the intersubjective, the position from which agency has a greater potential, where students can engage in the interaction in and around them. How we view knowledge and the world—our epistemological and ontological positioning—affects our understanding of and relationship with and in that world. A global education that does not actively work in an alternative paradigm, one that is not limited to the mechanistic, contradicts its own goal of changing the world.

A systems thinking view of the world transforms our approach to curriculum and instruction. It results in a more integrated, contextual learning experience with an appreciation for the complex, multiple, dynamic nature of our world and our place in it.

Global education is nothing less than the educational expression of an ecological, holistic, or systemic paradigm and as such has implications for the nature, purposes, and processes of learning and for every aspect of the functioning of a school or other learning community (Selby, 1999).

The word *global* conjures up visions of the planet, of the diversity and complexity of our nations, our peoples, our environments. It also evokes the image of Gaia (Lovelock, 1990), the Earth as a living, breathing whole. Both are present in a global education that grows from a systems thinking epistemology, the multiplicity and the irreducible totality. A global education that puts aside this seeming paradox is a global education that limits its own potential and the potential of our students. A global education that embraces this paradox is filled with possibility.

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