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# Front Page

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# ENGAGING AT THE INTERSECTIONS

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# Riverspeaking: Transformative Learning Within a Relational Ontology

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Abstract: The co-authors perturb the modernist ontology of rationalism, cognitivism, progressivism, and the view of the self as autonomous that is predominant in current transformative learning theory. Entering into a co-learning relationship, one author as a scientist and the other as a social scientist, we have been exploring radical relationality as a new ontoepistemology. Through our stories of social and environmental transformative learning that we have had in relation to the rivers of the Rocky Mountains, we use the term Riverspeaking to explain this relational ontology and its importance for theorizing transformative learning. Informed by Indigenous ways of knowing and the work of physicist Karen Barad to further understand a relational ontology, we suggest that transformation is not just about 'form' but also about matter, process, and making meaning in (be)coming of the world. That is the meaning of the concept Riverspeaking.

#### Introduction

This paper emanates from our situated knowledge of the glaciers and rivers flowing out of the Canadian Rocky Mountains across the Canadian prairies, and the precious water resources in the Southern Rocky Mountains that feed the desert southwest of the USA. Rivers and water can speak to us about transformative learning within a relational ontology. In the space between cultural conditioning and the larger possibilities for our self, including our collective self as society, the process and dynamics of transformation flow. In this between-space, we can shake off conventional parameters and pull aside the veil of culturally provided thought constructs and frames of seeing reality, even momentarily. Rivers can help us to understand a relational ontology, if we listen to their speak.

While our theorizing builds upon aspects of Mezirowean and Freirean conceptions of transformative learning, their conceptions have been predicated on a conventional modernist ontology that includes rationalism, cognitivism, progressivism, and a view of the self as autonomous and unitary (Lange, 2004; 2012a; 2012b). Modernist forms of transformative learning also have an underlying androcentrism, ethnocentrism (specifically Eurowesternism) and anthropocentrism as well as maintaining a mind/body split and reason/emotion split which is already identified in transformative learning theory. Further, however, a mechanistic understanding of change considers entities fundamentally separate and change as causal, by tinkering with the properties of, or activities between, entities. In contrast, we build upon the New Science and relational views of reality and knowing, to examine understandings of change for transformative learning theory and practice.

We are a transdisciplinary team: an environmental scientist who is a surface water specialist and sustainability educator in higher education as well as a social scientist and educator of sustainability education in adult and community education. Over the recent years, the co-

authors entered into a transformative co-learning relationship in which we have been exploring and theorizing our way into a relational ontoepistemology (Barad, 2007). While this is a conceptual paper, it emerges from our experiential co-learning, related to the biographical and narrative turn in transdisciplinary sciences. Both authors will refer to their transformative learning processes related to their disciplines but also learning to really listen and watch the natural world. They enfolded their disciplinary perspectives: one author participating in shared practices and embodied ceremonies with Aboriginal and non-Aboriginal colleagues while the other delved into her personal experiences with water against the background of scientifically validated knowledge on water scarcity, pollution and degradation in the Southwest United States. Both have been exploring complex natural and social issues in their respective bioregions of the Rocky Mountains culminating in their transformative learning around rivers and water as well as witnessing social and environmental healing.

# A Relational Ontoepistemology

Just as rivers flow in a perpetual hydrological cycle, the convergence of the New Science and Indigenous ways of knowing tells us that the nature of reality constantly ebbs and flows. While the Western tradition veered toward logical empiricism, various Eastern and Indigenous epistemologies continued their focus on relationship, process and change. Ruiz (2000) explains the Toltec worldview:

Everything that exists is in an eternal transformation... Energy is always transforming because it is alive. Life is the force that makes the transformation of energy possible. The force of Life that opens a flower is the same force that makes us grow older...imagine how you used to look when you were five years old compared with now. It still is you, but the body is completely different... The trees and mountains — all of nature is changing because Life is passing through everything and everything is reacting to Life. (p. 119-120)

For Cree, Blackfoot, and the Stoney Indigenous peoples in Canada, the lakes, rivers and streams form a "sacred geography," where the "deepest mysteries of creation and the hidden rhythms of the world" are accessible. As late Stoney Chief Frank Powerface claimed, "the landscape holds stories of transformation" inviting us to listen (in Kostash & Burton, 2005). Furthermore, rivers are the lifeblood of the continent and their movement is a visible materialization of the nature of reality.

This is consistent with findings and a new interpretation of quantum physics that describe the subatomic reality of the universe as interchangeable between matter and energy, part of a vast creative and living network (Barad, 2007; Spretnak, 2011). Building from living systems theory, Capra (2002) suggests that the entanglements of four elements need to be considered—form, matter, process, and meaning—which can co-emerge into new patterns so, the "form that transforms" (Kegan, 2000) is only one facet of transformative learning. In a relational ontology, matter is both human and nonhuman, overcoming anthropocentrism, so that the co-authors and rivers are fundamentally in relation, continuously active. O'Neil (2015) has adopted Barad's definition of "performative" and adds to it, "transformation" as a process in which, "meaning is not a property of individual words or groups of words but an ongoing performance of the world in its differential dance of intelligibility and unintelligibility" (Barad, 2007, p. 149).

For Barad, relationality goes beyond ideas such as: symbolic interactionism where the self is the product of social interaction and symbols such as language that carry meaning; social constructionism where reality is construction of human thought; or transactionalism where

autonomous entities interact and influence the other. Barad refers to the iterative intra-activity as accounts of material-discursive performances. These discursive practices are not static linguistic representations, but rather multiple senses of meaning, being, valuing, and as a way of knowing and (be)coming of the world in its ongoing intra-activity (p. 184). This perturbs a Mezirowean interpretation of transformative learning which holds the process of reflection, dialogic representations and imagery of experience, at a distance. Rather, transformative learning is an entangled state of the material and the discursive. In this process, "human and nonhuman organisms, matter and things, the contents and subjectivities of students emerge through learning events" (Lenz-Taguchi, 2012, p. 289) which O'Neil (2015) calls "performative transformative learning." A performative transformative learning process is one that occurs in-action, in-between and over time.

As Spretnak (2011) asserts, we have only begun to explore "the deeply relational nature of reality" (p. 1), part of a posthumanist "Relational Shift." Barad (2007) says:

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

Spretnak (2011) adds, "[i]nherent relationships with our bodymind, with other people, with animals, with the rest of nature all interact and infuse each other, making us what we are. It is not merely a matter of having relationships but being relationships" (p. 11). One way to understand this is the Haida view that without their ancestral land, they cease to be Haida (Gill, 2009). Going further, "(be)coming relationships" is an indeterminate, iterative, nonlinear evolving relationship. There is no steady state but dynamic balance and a performative state of (be)coming that merges past, present and future.

For transformative learning, our (be)coming is a constellation of relationships and our mind is a collective affair, largely opposed to what we have been taught in modern education. Thus, the most confounding feature of transformative learning is that the dynamics of change are also constantly changing. There is no universal or predictable process; it is sensitive, nonlinear, and self-renewing, part of the mystery of transformation.

Learning to Flow into Deep Relationality

Standing in the chill breeze and roaring stillness of massive limestone and quartzite hulks, I stare across the mammoth valley to a spider web of rivulets that emerge from the toe of Saskatchewan Glacier. This origin of the North Saskatchewan River in the Columbia Icefields in the Rockies flows across the prairies toward Hudson's Bay. The shrinking of this glacial mass tears at me every time I see the diminishment. As part of climate transformation, the river patterns have been changing—earlier flow in spring, more melting in summer, and many flash floods with the added ferocious downpours of rain; a balance has been lost brought home by the flooding of my home.

For years I remained unconscious of the energy and voice of this prairie place below the surface, invisible to the eye. While I love the Rockies, I did not see the connection with the prairies as one ecosystem, a connected watershed. Through significant ancestral work I discovered that the bones of my ancestors lie under three different prairies globally. I have an intergenerational cellular connection to prairies; this particular river flows through my veins, deeply shaping me. This ancient storied land is now part of me and Riverspeaking enables me to hear this.

It is this relationship that First Peoples honor and mirror in their rituals and ceremonies, communicating to land and water as their kin. Water is the living presence of womb, woman and mother. Considering other species and elements as beings and teachers who speak and inspire how we live, was lost to my people centuries before in the shift from paganism to Christianity and then in the delicate negotiation with a scientific worldview. Their view of kinship became restricted to family, ethnicity and religion. While my pioneer grandparents approached land and water as a gift from God with respect for its sustenance, sacredness was limited to the human/God relation and the churches they built. Potawatomi biologist Kimmerer (2015) asserts the land is not only part of one's identity and sustenance but also sacred ground where we respond to what we hear.

For indigenous people, water is the connectedness between creation, animal life, and the flow of time. Prechtel (2012) suggests that intact natural people live for land instead of off or on land. The Maya speak by "talking into a mental field of vision" (p. 73) that emanates from their storied land. The traditional Maya believe their language came from the land and other species, forming a tonal ecology that was part of a natureculture matrix (Prechtel, 2012). They kept the world alive by the "beauty of the motion of their speech" to feed the spirits of the land, as all is enspirited (p. 72). This keeps the world alive, becoming.

My prevailing Western epistemology of static entities, representationalism, linearity, cause-effect and pre-determined categories has begun to unfreeze and slowly give way to an ontology of flow and relation. Humans are not the locus of ethicality as we are already ontologically entangled within responsibility, in "the becoming" in which all material forces, river, mountains, humans, and glaciers entangle to make meaning. Learning how to intra-act responsibly means understanding that we are not the only active beings and that we are inseparable from other beings and forces. The river is not only a metaphor or inanimate phenomena, but kin, compelling respect.

(Be)coming with Riverspeaking for Social and Environmental Healing

As a child growing up in the Southwest desert sun of Paradise Valley, Arizona (USA), the flow of any river was truly a paradise. My early memories with Riverspeaking were with the ones that were not really rivers at all; they were temporary river-like flows made during an infrequent storm event in my Sonoran Desert neighborhood. I could smell the dust filled rain droplets bounce off the thirsty desert Earth floor. That meant it was my time to jump on my bike and ride through the desertscape behind my house where I could find milk chocolate-colored rushing flows of water and deep puddles of mud. My day would conclude with my body and bike encrusted in the color of the desert, melding. Rainfalls never lasted long, but the flow of water in the street gutters continued to flow like spring runoff. I never questioned where the water came from or where water would go. I was too busy celebrating in my unconscious and perhaps uninterested state of being. All I knew was that water would flow for another couple of hours – long enough to summon my brother and make stick boats to race down the street curb "river." These were early memories with Riverspeaking; I had yet to listen.

Another early encounter with river was capturing rain drops before having a chance to become part of the river. Both sides of my family were peasant farmers of Mexico and Eastern Europe, so harvesting water in this manner was our lifeline. I spent many summer days with my grandmother learning lessons of the past; one day, in her broken Russian-English she told me how the rainwater we harvest would make the garden and chickens happiest. She did her best to impart her ecological wisdom. She listened, for survival. I had no choice but to hear her stories, but I had yet to listen.

Later, I chose to study environmental science which fostered my thinking of biogeochemical cycles of the Earth. It gave me the space to think about the interconnections of rivers to people and, in my graduate studies, specializing in surface water resources. I conducted my research in the urban portion of the Santa Fe River in New Mexico. The river in this reach is mostly fed by storm events; this means that the river and the species living within can suffer from erosion, sedimentation and oil slick pollution. I scientifically monitored river health to include (but not limited to) peak flow, pH, turbidity, dissolved oxygen, total dissolved solids, water clarity and water temperature—indicators of river health. Exceeding parameters meant the river and the organisms living in and around the river would suffer. Still holding myself separate from the apparatus, I communicated this science with stake holders to engage people in healing waterways. Yet, my objective scientific knowledge alone was not enough for them to listen. This is where we seem to fall short. How do we relate if we do not listen?

The UN's Water for Life Decade, like the Decade of Education for Sustainable Development, is seeking ways to build an efficient and equitable ability to strengthen the resilience of social, economic and environmental systems (WWAP, 2015). As a sustainability educator, one of my questions is how to enact transformative learning for social and environmental healing. After a long journey of co-learning into a relational ontology, I am (be)coming with river in a way that demands I listen. As I entangle my material-discursive stories, I am conscious of Riverspeaking in Arizona, along with seven other states and the 40 million people (McKinnon, 2014) who share the Colorado River. The very water I played with in Arizona that at some point converges with my water studies many years later—they are both major waterways and the lifeline to human and non-human inhabitants of the Southern Rocky Mountains. Each of those storm events I so enjoyed as a child began to bring new meaning.

Riverspeaking can inform transformative practices of social and environmental healing. Today, more than 1.7 billion people live in river basins where depletion through use exceeds natural recharge, a trend that will see two-thirds of the world's population living in water-stressed countries by 2025 (WWAP, 2015). If we can gather and listen to our own many stories of Riverspeaking, let us listen. Now, I listen to the stories of my past relationship with river, my grandmother's lessons, and my scientific knowledge, and enfold them into meaning anew. Now, I listen as Riverspeaking manifests responses to rapid and unpredictable changing times.

Riverspeaking: Radical Relatedness in Transformative Learning We no longer need to flow in the channel of Western epistemology and ontology but hear Riverspeaking with its profound transformative teaching. Riverspeaking is becoming conscious of flow between process thinking and analytical thinking. This new posthumanist ontoepistemology is no longer "morally mute" (Knutson & Suzuki, 1992, p. 124). It is living closer to phenomena, becoming conscious of the voices of kin, and actively engaging within cosmic responsibility. Riverspeaking expands our perceptual channels to hear the natural world speak and to recognize the intra-active agency of our kin. Riverspeaking is learning a new grammar with which to think and speak of our relations in a fluid reality.

Adapted from New Science, seeing the world does not lie in the eyes or mind alone; rather, the "subject" is the phenomena—with the river as the convergence of particles and waves, and not the extraction of particles from waves (Barad, 2007). Whether a scientist monitoring the river or a social scientist seeking the cultural and geographic implications of our ancestry or the ancient spiritual origins of Riverspeaking, human senses and emotion are a part of knowing and the knower is not separate from the apparatus used to measure or subject. An entangled, spiral

process is evident; the river and everything that surrounds river acts upon our thinking as much as our thinking acts upon river. "As humans, we need to understand ourselves as material objects of the world, just as any other beings and matter" (Lenz-Taguchi, 2010, p. 47). Transformative learning, therefore, is a material-discursive entangled state. While we transform rivers, rivers transform us. It is only then that this performative transformation (O'Neil, 2015) opens us to comprehend Riverspeaking, as the "world kicks back at us" (Barad, 1998, p. 112).

Just like a thriving river, fostering relationally-based transformative learning is to create disturbances (not casual interventions) in the water so that oxygen can flow and life will flourish. Just as a responsive riparian habitat surrounds a thriving river, educators can help trigger "stabilizing and destabilizing processes of iterative intra-activity" (Barad, 2007, p. 152). Albeit a potentially slow and unpredictable process, we must take the chance for that critical point of tension and instability of meaning to occur; there may be the creation of novelty, structural transformation and a breakthrough into a new state of order and process that can be more lifegiving (Capra, 2002). This historic challenge to transformative learning and humanity is as significant as the shift from a medieval worldview to a scientific Enlightenment worldview. A richer perspective of transformative learning understands we are in an intra-active corelationship with human and non-human species that involve form, matter, process and meaning-making of (be)coming the world. This is Riverspeaking.

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