



PLACE AS PANARCHY, ECOLOGICAL IDENTITY & TRANSFORMATION

# place as panarchy

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# place as panarchy

An Ecological Interpretation of Educational Research into  
Transformation, Ecological Identity, and Place

*bigleaf maple leaves of Nanaimo River*



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# abstract

*Let's face it, the universe is messy. It is nonlinear, turbulent and chaotic. It is dynamic. It spends its time in transient behavior on its way to somewhere else, not in mathematically neat equilibria. It self-organizes and evolves. It creates diversity, not uniformity. That's what makes the world interesting, that's what makes it beautiful, and that's what makes it work.*

*-Donella Meadows*

This book explores the leading research in transformative learning, change theory, biophysical places, spirituality, worldviews, and time. I investigate the landscape of current literature through five components of the panarchy model: holarchy, scale, time, cycle, and cross-scalar dependencies. These components shape a collection of research with seemingly disparate sources, such as existentialism, ecological identity, and Indigenous worldviews, through a lens of adaptive cycles, where the very research itself forms a panarchy of change, transforming through its own systems of knowledge. The book is framed through the questions: What are the leading minds discussing about the development of ecological identity through transformative experiences that occur in cherished biophysical places? And how do we know when we are transformed as a society of researchers? Critical findings include the powers of pluralism, perceptual change, slowness, multiple equilibria, and complexity as agents for supporting transformational ecological identity development.

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# preamble

North Americans spend an average of 8.6 hours each day in a sedentary state, with six or more hours of this time spent in front of a TV or computer screen. These numbers are steadily rising with the proliferation of technology (Active Healthy Kids Canada, 2011; Tremblay, Colley, Saunders, Healy, & Owen, 2010). With this increased sedentary state comes physical, mental, and spiritual disconnection from nature, the human communities, and ourselves. Within this proposal, nature connection and disconnection is characterized through the words of Glenn Albrecht's (2010) soliphilia, as "the love of the totality of our place relationships and a willingness to accept the political responsibility and solidarity needed between humans to maintain them at all scales of existence....[and] to keep healthy and strong that which we hold in common." Connection arises as physical, spiritual, emotional, and political engagement as it relates to place. Yet, an increased disconnection could be due to a media-perpetuated fear of natural and social environments (Storksdieck & Stylinski, 2010), socio-political North American governmental systems where environmental policies and procedures have been systematically gutted (Biro, 2010; Lukacs, 2012; Mazmanian & Kraft, 2009), and ongoing oppression of Indigenous peoples by public and private sectors (Kirmayer, Dandeneau, Marshall, Phillips, & Williamson, 2011). This disconnection continues to grow despite decades of directed environmental education, health programs, community outreach, reconciliation, and research that points to the critical importance of understanding and working with the natural world for humanity's continued global survival and well-being (Convention of Biological Diversity, 2010; Intergovernmental Panel on Climate Change, 2007; Louv, 2005; Spencer &



Blades, 2006). Our estrangement from nature calls for a (re)vitalization of our emotional, physical, spiritual, and ecological connections with the natural systems that sustain us, or in E.O Wilson’s words, a “biophilia” (E. O. Wilson, 1984). Yet even neologisms, such as biophilia (with adaptations and addendums like topophilia, ecophobia, solastalgia, and nature deficit disorder – all explored below) might be further pathologizing, disconnecting, or colonizing human relationships with nature. When I refer to (re)vitalization of emotional, physical, spiritual, and ecological connections with natural systems, I also mean a deeper acknowledgement that those natural systems are concurrently ourselves in and of nature.

Humans, place, thought, and (trans)formation act as a complex system of adaptation and our path, though often chaotic, requires a focus on resiliency of ourselves as well as helping to reduce our impact on the places in which we live. Our human presence on Earth should recognize and celebrate the existentiality of interbeing, rather than a simple consumer/producer existence (Nhat Hanh, 1998). In this same vein, research of humans in nature must aim to help decolonize research and its relations to discourse, worldviews, governance, and economic structures. To enact a decolonization approach, I resonate with Shawn Wilson’s (2007) call for an Indigenist research paradigm:

- .....  
• *Respect for all forms of life as being related and interconnected.*

- *Conduct all actions and interactions in a spirit of kindness and honesty; compassion.*
- *The reason for doing the research must be one that brings benefits to the Indigenous community.*
- *The foundation of the research question must lie within the reality of the Indigenous experience.*
- *Any theories developed or proposed must be grounded in an Indigenous epistemology and supported by the Elders and the community that live out this particular epistemology.*
- *The methods used will be process-oriented, and the researcher will be recognized and cognizant of his or her role as one part of the group in process.*
- *It will be recognized that transformation within every living entity participating in the research will be one of the outcomes of every project.*
- *It will be recognized that the researcher must assume a certain responsibility for the transformations and outcomes of the research project(s) which he or she brings into a community.*



- *It is advisable that a researcher work as part of a team of Indigenous scholars/thinkers and with the guidance of Elder(s) or knowledge-keepers.*
- *It is recognized that the integrity of any Indigenous people or community could never be undermined by Indigenous research because such research is grounded in that integrity.*
- *It is recognized that the languages and cultures of Indigenous peoples are living processes and that research and the discovery of knowledge is an ongoing function for that thinkers and scholars of every Indigenous group.*

*(Shawn Wilson, 2007, p. 195)*  
 .....

Admittedly, Wilson's 11 points of the Indigenist paradigm is still undergoing ground-truthing, some troubling points exist such as the statement that Indigenous cultures could never be undermined through a Indigenist research paradigm. This sort of statement might be categorized as a generalization. Despite this, the overall intent of Wilsons' work is admirable and should be central to the intentions of all current researchers.

At this point, it is appropriate for me to identify what I mean by Indigenous, indigenous, and Indigenist. I believe, like others who have written on this subject (Alfred & Corntassel, 2005; Aluli-

Meyer, 2008; Davis, 2009) that Indigenous peoples, who are rooted in place through language and culture have ancient and current understandings, wisdom, and teachings associated with the land and ocean that stretches from creation through present-day, and sometimes into the future. These Indigenous knowledges have both specificity and universality. This is in contrast to the relatively recent settlers of European or other ancestry in North America, who have arrived through colonizing means, and live in a shadow of colonizing methods (Chinn, 2007). This is not to say that all settlers are aloof colonials, and many settlers consider themselves to be indigenous to the places in which they live. Settlers can act as allies of the Indigenous peoples (Smith, 2005). This ally-ship is what Shawn Wilson is asking all researchers through the above Indigenist approaches. Approaches to land, ocean and culture are as diverse as the ecosystems, biomes, and bioregions in which Indigenous peoples inhabit (Davis, 2009).

I have now introduced three simultaneous and pluralistic streams of ontology that resonate with one another: endogeneity (the biophilic physical and interior connection to nature), complexity theory (the concepts of system resilience, interconnection, and (trans)formation), and Indigeneity (the acknowledgment of being of this Earth, with specific reference to the wisdoms of the land, ocean, culture, language, and ceremony of Indigenous peoples). These three streams are woven through this document to illustrate the transdisciplinary, compassionate, and integral



approach to research that as an activist-scholar, I am called to practice.

Despite considerable research in environmental education, place-based learning, and sustainable behaviour, few action-based research and knowledge dissemination projects have been conducted that examine these topics through the integrated and interbeingful lenses of endogenous, complexity, and Indigenous frameworks, where social and cultural systems are recognized as (inter)imbedded in ecological systems (Asfeldt, Urberg, & Henderson, 2009; Berkes, Colding, & Folke, 2003; Corbett, 2007; Lowan, 2009; Mueller Worster, 2006; Stanger, 2011b; Wason-Ellam, 2010). Much of the research that explores the connections between humans and nature has had restricted impact on educational practice and human behaviour, due in part to standard methods of knowledge dissemination – primarily through academic journals and edited books –which rarely engage active public participation in research production (Ballard & Belsky, 2010; Laessoe, 2010; McKenzie, 2009). However, recent movements of authors and change-makers such as Richard Louv, Louise Chawla, E.O. Wilson, Gregory Cajete, David Orr, Joanna Macy, David Sobel, Richard Atleo, David Suzuki, and Robert Bateman have helped galvanize the production of research and action around nature re-connection (Charles, 2009; Chawla, 2003; Macy, 2007; Peart, Stanger, & Hoskins, 2009; Sobel, 2004; Suzuki & McConnell, 1999). It is through their leadership, and other scholars that have supported their work, that we have some basic

understanding of the overwhelming challenges humans face and the importance of place, nature, and connection. In chapter two, I explore concepts raised by these thinkers using a complexity theory lens called panarchy. This approach, which is outlined in detail below, applies ecological systems-thinking perspectives to situate complex interacting holarchies of thought through space and time.

Humans' connection to place forms the basis of many Indigenous cultures through experiencing the wisdom of the land and ocean (Davis, 2009). This manifests through teachings around place-names, plant and animal uses, seasons, creation stories, and integrated and relational worldview. Indigenous approaches can be complimented by existing research, that discusses the connections to place that can reveal insights into our spiritual and ecological identities (Haigh, 2006; Thomashow, 1995). Thus by connecting identity development to place, story, and land-based wisdom and exploring how these influence behaviour and experience, this project contributes to an important body of research in ecological identity development, complexity and resiliency theories, and Indigenist research paradigms (Game, Liberatore, Popovich, & Zint, 2010; Krasny, Lundholm, & Plummer, 2010; Shih-Jang, 2004; Shawn Wilson, 2007). The challenge in this research area then lies in creating new knowledge through appropriate research methods that provides and reports on 'authentic' experiences in nature in order to understand how these experiences help (trans)form individuals by



influencing their long-term ways of knowing and behaviour. Authenticity is a complex concept. For example, in this paper I will affect the participants' voices by being complicit in dialogue and activities that are (trans)formative by nature. In this regard, I resonate with the Heideggerian view that authenticity is a temporal and relational openness of being human rather than some report of idealistic and individualistic exceptionality (Guignon, 2008). However, I want to extend and adapt this concept to include and acknowledge the relational spiritual interconnection, such that our authenticity consists of and connects with human and other-than-human relations and are storied into this world (Bai, Elza, Kovacs, & Romanycia, 2010; Cajete, 2000; Heilman, 2008). This manifests as a pluralistic understanding of the nature of reality, such that evidence is not always possible to prove through empirical study. Rather the perceptions of reality can be just as (and sometimes more) real, integrative, and valued (Wittgenstein, 1958).

In order to support an authentic and interactive approach to research and to disseminate it to wider audiences than just an academic readership, many have argued for the value of participatory research methodologies (Ballard & Belsky, 2010; De Vos, 2002; Hycner, 1985; Krasny & Tidball, 2009; Laessoe, 2010; Payne, 2006). When participants are encouraged to partake, influence, and connect with the process of research, they become more than the substance of a research methodology, and are considered active participants in its design and implementation

(Cohen, Manion, & Morrison, 2005; Morgan, 2009). This project seeks to align itself within the participatory action research framework as described within Chapter three.

From my own childhood and adolescent experiences and the landscape of research on this subject, I am intrigued by the question of how spending time and playing in outdoor places as children and adolescents might be (trans)formative (Stanger, 2011a; Stanger, Tanaka, Starr, & Tse, 2013, in press). I wonder whether this 'traveling in an awakened way' as described in the O'Donahue poem at the beginning of this document is a form of acknowledging the ever-present (trans)formation in a beingful way which might move us to change our thoughts and behaviours.

I locate the concept of (trans)formation as a existential and spiritual movement that creates fundamental cognitive, spiritual, ecological, or physical adaptations in a person: "If this process leads to a change in assumptions it also leads to a new way of interpreting the world, and transformation has taken place. Actions and behaviors will be changed based on the changed perspective" (Cranton, 1994, p. 730). In addition to this description of transformation, I believe that paradigmatic change is a form of transformation – even without action and behaviour change, rather a perceptual shift leads to a different lens, which eventually could adapt behaviour, even if imperceptible to others. Let me take a moment to comment on my intertextual approach to (trans)formation and other uses of parentheses in this

document. For some children, behavioural change, paradigm-shifts, and even existential thought might be occurring in a fundamental way for the first time, suggesting a ‘formation’ of identity, rather than a change from one being to another (trans) (Taylor & Kuo, 2006). However, my ecological understanding of human development and learning (discussed below as panarchy), restructures this understanding of the prefix trans- as a acknowledgement of the constant adaptation of all systems at multiple scales and times. Our individual ontological understanding is scaled within a larger societal ontology such that an individual might be undergoing a movement from one manifestation of understanding of their reality to another beyond the linear scope of transmissive knowledge development (Schatzki, 2003). This suggests that interacting in and with nature and the communities that connect in and among nature, can create lifelong emotional, physical, spiritual, and ecological connections by (trans)forming our sense of place, and through this potentially contributes to our understanding of the ontology of our own identities.

#### Author Positionality

As a trained ecologist who has studied some of the tallest trees in the world, I come to this work with an eye of a scientist and someone who has been humbled by the mystical and mysterious experiences garnered from long days spent in the tops of old-growth trees in western British Columbia. One experience in

particular helps articulate my connection to (trans)formation and place. It is a personal story, one that was gifted to me by a tree within the traditional territory of the Huu-ay-aht First Nation. I share it here and acknowledge and respect the land and tree, in which I had this unexpected experience, as you will read below:

.....  
*Growing up in a upper middle-class, rational, science-based household, where strep throats were cured with antibiotics, and emotions were doled out in precise and regulated quantities, I developed a view of the world through a predictably positivist framework. This came to a culminating overture when faced with my undergraduate degree in Natural Resources Conservation at the University of British Columbia, arguably a social-sciences degree tucked inside an ecologically scientific framework. I studied the succession of forest ecosystems, the legal framework of First Nations treaties, the politics of resource extraction, and fish biology. Of course, it was peppered with social complexities of stakeholders, resource planning, and First Nations collaboration techniques, but the learning moments didn't mean much until I started to thrash around in the scientific morays of my own honours thesis.*

*With recent canopy research and tree-climbing experiences under my belt from a year living in New Zealand, I was hired by Weyerhaeuser's Adaptive*



*Management Research Group, a consequence from the days of the Clayquot Sound protests (Magnusson, 1997). This group's task was to understand the affects of a new technique of harvesting trees on the regeneration of forest ecosystems and the maintenance of old-growth characteristics across a landscape. Working on this project, there were arthropod experts, slug experts, foliage experts, ungulate experts, and a number of other species-groups experts conducting baseline and empirical research across the tree-farm-licenses of Weyerhaeuser Canada, which represented much of the remaining old growth forest in British Columbia at the time.*

*My job was the riskiest; I climbed trees with arborist colleagues and crossbows, looking at the complex distribution of epiphytes (plants that grow on top of other plants) in various forest ecosystems. One day, after climbing up to the top of one of the largest Sitka spruces in on Earth (approximately 90 meters tall), I spent my usual break gazing over the lake below me. It was a blue-sky, windless day and I was alone with the trees, arboreal insects, plants, and turkey vultures. I found myself staring off at the unique mountainous landscape of old growth trees, and the occasional emergent tree candelabras, all sacred territory, ancestors, and significant places of the Huu-ay-aht First Nation. I looked down at the water of Sarita Lake below me and saw how no wind broke the*

*surface. In that moment, “it” happened. I realized that the tree was swaying. “Odd,” I thought, “there is no breeze and none of the other trees are moving.” I was puzzled by this movement, the tree likely weighs many tonnes and should have been immovable by my insignificantly little weight. I had no idea what was going on. What made this tree sway? I checked through my tick boxes of my reductionist positivism:*

- no wind - so no chance that it could be swaying from wind*
- my weight was insignificant compared to the weight of the tree*
- when alive, Sitka spruce is one of the strongest trees, so it wasn't breaking*
- there wasn't a bear making its way up the tree to make a lunch-time snack of me*
- I had never experienced vertigo in any of the trees that I had previously climbed.*

*Reductionism wasn't helping me explain why there was movement. Also, from my Dendrology 101 course at UBC, I knew that trees were alive; you know, in that science way: phloem, xylem, Calvin cycles and the whole bit.*

*And then....I found myself hovering above my body watching myself.*

*I didn't feel scared. But something inside me was drastically different. What was the tree doing? Can trees do things? Two simultaneous notions popped into my head: "Cool! This tree is really ALIVE and it is communicating in a way that my human-beingness has little understanding of" and "This is why I am here on Earth, so that I can help others experience moments like this, not to write short strange scientific papers about littler and stranger plant species." Before this experience, I had been having internal battles over the lack of change I was making in the conservation community. I interpreted this moment as if the tree had asked me to help others experience the world around them in profound and transformative ways.*

*In Nuučaahut - the Nuu-chah-nulth language of the Huu-ay-aht peoples, the common word for Sitka spruce is 'tuuhmapt'. But because this tuuhmapt had such a presence, it could be considered an ancestor and would be referred to with a more respectful term like grandfather, grandmother, father, mother, or brother. This tree, now my brother, had invited me into seeing it as an ally, a friend, a relation – and through this invitation, I saw the world in a different way. I saw it as a nested complexity of family.*

*It was also in this moment, that I merged with the ecology of the Coastal Western Hemlock ecosystem but more*

*significantly with the stories and place of the Huu-ay-aht peoples. In Joanna Macy's language, I saw the "world as self" and it profoundly changed my life. I had seen its complexity, its consciousness, and its interconnection through different eyes and realized that life is more than the biological components of this world, it is also the spirit, soul, and essence of all things. This is an experience I have called disembodied-embodiment where my body and ecology had connected through a spiritual and intuitive space (Stanger, 2011a). This was what I wanted to spend my life doing: helping people experience moments of awe and connectedness with and in nature, such that they might transform.*

.....

My position and argument in this book is there is a potential for others to (trans)form through meaningful and engaging connections to place. Whether it is a transcendental experience like I describe above, or a subtler experience of finding solace, experiencing engagement, and learning/working with nature, these places and the memories they elicit help guide our connection to the world. Thus, I am biased towards helping people (re)connect and (re)place themselves on Earth and through that connection live like the Earth and its stories matter.



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# introduction: place as panarchy

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The landscape of disciplinary research that pertains to the understanding of place is an ever-changing complexity of interactions, much like that of ecological systems. That our ecological evolution is entwined with human cultural evolution adds to the complexity of this system of research.

*controlled fire in Mlilwane, Swaziland*



# Endogeneity, Complexity, and Indigenist becoming

*reef shark, Eleuthera Island, The Bahamas*

The development of ecological identity, connection to place, and emotional-spiritual (trans)formation enables contextual compassion for our existence on Earth (Cajete, 2005). In order to achieve resilience as human beings and connection to other-than-human beings, we should live in and with the ecological and social communities with compassion, as described by E.O. Wilson's hypothesis of biophilia (E. O. Wilson, 1984). Wilson locates biophilia through the manifestation of human beings' "innate tendency to focus on life and lifelike processes" (p. 1). Despite this endogenous quality of humans being drawn to life and processes, many have chosen to ignore, suppress, numb, or overpower these connections through promises of development, economic gain, power, and apathy (Bowers, 1995; J. R. Miller, 2005). Some argue that this ignorance and short sighted greed is the result of a social repression: a colonization and alienation of our beings from nature that disassociates ourselves from the very sources of life that sustains us (Orr, 2004). If biophilia is innate in human beings, it might be evident through behaviour, peak-experiences, memories, and (trans)formational moments. My research seeks to explore what (re)animates a return to experiencing and acting upon our curiosity about life, or even

some deeper visceral connection, where we draw on the congenital and Indigenist sources of connection and continue to develop our love of life and all life forms and beings (Price, 2007).

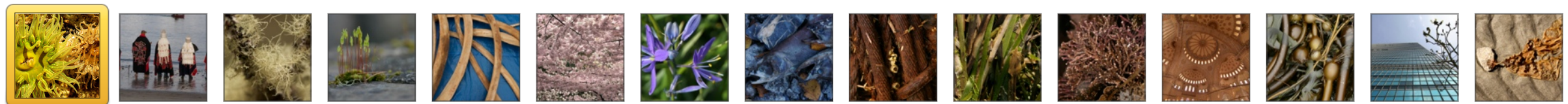
The mycelia of transdisciplinary research pertaining to nature connection are an ever-changing complexity of interactions, much like that of ecological systems. That our ecological evolution is entwined with human cultural evolution adds to the complexity of this system of research (Bateson, 1972). Thought and behavior are seen to evolve, change, and interrelate similar to that of evolution, change, and interrelation of ecological systems. A term that explicates this evolution of thought was coined by Richard Dawkins (1989): meme, "a unit of cultural transmission, or a unit of imitation and replication" (p. 192). Meme theory has taken its own memetic path, growing beyond an analogy to a mode of synthesis where pathways of thought evolution can be mapped (Costall, 1991; Laland & Brown, 2002). This literature review leans partially on the evolution of thought, looking for locations of paradigmatic change within scholarly research, and extends beyond memetic synthesis to the analogy of ecosystem-level adaptation, namely panarchy theory



**Gallery 1.1** Panarchy represented in photos - pinch them open to see them full size



*anemone, Savary Island BC*





(Gunderson & Holling, 2002). Despite using these analogies, I acknowledge that there are limitations of ecological systems being used to describe social systems such as green-washing (when organizations or individuals seek to appeal to conservation-minded audiences through weak associations with, or cooption of ecological terms), western worldview-centricism (that ecological thought can be seen to derive from reductive science-based perspectives of the world), and “othering” (that one creates a binary structure of either working with the ecological description or not) (Stanger, 2011b). With these limitations in mind, I have attempted to be careful to not overuse the analogies of ecology but to see panarchy as a method of synthesis. I also want to acknowledge an attempt to connect panarchy with an Indigenist framework when looking at literature such that I continue to refer to the interrelated wisdoms of land and Indigenous voice (Cajete, 2005; Chinn, 2007; Korteweg, Gonzalez, & Guillet, 2010; Ng-A-Fook, 2011; Smith, 2005; S. Wilson, 2009). That is I see my work with complexity theory and endogeneity as allied with Indigenist scholars, seeking to break down modern (and even post-modern) paradigms that maintain colonizing, racist, prejudiced, co-opting and other-ing characteristics. I weave Indigenous research views through this proposal under the direction of Shawn Wilson’s (2007) call for a more Indigenist paradigm:

.....  
*I use Indigenist to name or label the paradigm that I am talking about rather than Indigenous. It is my belief that an Indigenist paradigm can be used by anyone who chooses to follow its tenets. It cannot and should not be claimed to belong only to people with "Aboriginal" heritage. To use an analogy, one does not need to be female to be a feminist. Researchers do not have to be Indigenous to use an Indigenist paradigm, just as researchers do not have to be "white" to use a Western paradigm. Nor do Indigenous researchers have to use an Indigenist paradigm. It is the use of an Indigenist paradigm that creates Indigenous knowledge. This knowledge cannot be advanced from a mainstream paradigm. That would simply be mainstream knowledge about Indigenous peoples or topics. It is the philosophy behind our search for knowledge that makes this new knowledge a part of us, part of who and what we are. And it is then the choice to follow this paradigm, philosophy, or worldview that makes research Indigenist, not the ethnic or racial identity of the researcher. (pp. 193-194)*  
 .....



# panarchy as a theoretical framework

*old male lion, Kruger National Park South Africa*

Panarchy theory helps guide my exploration into the literature and research relevant to (trans)formation, place, and ecological identity by framing my search through interpretations of dynamic synergies and resonances in seemingly disparate or alternative-education fields (Cutting & Cook, 2009). Originally designed to describe the connections among chaos theory, complexity theory



*springbok, Kruger National Park South Africa*

and ecological system management, ‘panarchy’ is a term that “explains the evolving nature of complex adaptive systems” (Holling, 2001, p. 392). Panarchy theorists argue that humans need to move beyond interpreting systems using simplistic equilibrium models and acknowledge the more complex and

dynamic set of equilibria that describes the states of ecological, societal, and economic systems (Gunderson & Holling, 2002). In this paper, instead of describing the equilibrium-nature of a singular set of literature (i.e. environmental education research of one or two particular threads of thought) and subsequent thought-events that move them out of that equilibrium, I am primarily interested in the ramifications of using panarchy to describe how humans move and adapt through multiple equilibria of thoughts and actions (Varey, 2011). This is useful when analyzing thought over space and time through transdisciplinary lenses and thus events and experiences in peoples’ lives. “Features of the panarchy approach involve discerning dynamic systems at different scales, in sub-systems of adaptive cycles, with cross-scalar dynamics coupling those systems” (Varey, 2011, p. 513). Transdisciplinary research can be described as an adaptive cycle with cross-scalar dynamics helping us see the value and critical importance of understanding and incorporating the viewpoints of Indigenist (S. Wilson, 2009), western (Heidegger, 1962), eastern (Nhat Hanh, 2008), and ecological (Orr, 2004) scholarship.

# the ecology of panarchy

Salish Sea, Victoria BC

A way to illuminate this panarchy approach can be deciphered through the work of Gregory Bateson, the anthropologist and system theorist who was influenced by the ecologies in which he worked. Bateson's (1972) *Steps to an Ecology of Mind*, frames this concept of thought as an interrelated system from an anthropological lens. That is, he states that cultural systems of humans and ecology are conditionally interrelated:

.....  
*The questions which this book raises are ecological: How do ideas interact? Is there some sort of natural selection which determines the survival of ideas and the extinction or death of others? What sort of economics limits the multiplicity of ideas in a given region of the mind? What are the necessary conditions for stability (or survival) of such a system or subsystem? (Bateson, 1972, p. xxiii)*  
.....

Bateson's exploration of the ecology of the mind provides insights into the critical connections between ideas and theories. Notable to this concept, he interpreted 'ecological thought' beyond the individual level of thought to a 'societal mind' level, similar to Jung's collective unconscious (Hunt, 2012) or Tielhard's Noosphere (Moiseev, 1989). Bateson's questions frame some of

my own inquiry that arises in both the ecological identity development and (trans)formative research that this research describes. The acknowledgement of the complexity of overlapping and adaptive systems can frame the beginning of a new approach to understanding how change can occur at the individual, societal, spiritual and ecological levels. Complexity theory has particular resonance with the pantheistic worldviews of many Indigenous peoples: that the Creator is Earth and is in and of us, connecting our physical beings with place through spirit, story, and wisdoms of past and future relations.

Some ecological psychologists, and especially deep ecologists, echo a similar pantheistic view of the world (Haigh, 2006; Naess, 1992; Quick, 2006; Reed & Rothenberg, 1993). They suggest that space, scale, and relationships affect the ongoing evolution of thought through story, discourse, and research (Ackerson, 2000; O'Donoghue, 2006). Panarchy theory helps articulate ontological (trans)formation in this literature through its five interrelated components: holarchical, scalar, temporal, cyclical, and cross-scalar dependency (Gunderson & Holling, 2002) as explained in Interactive 1.1. Notice how each component also resonates with tenants of Indigenous ontologies.



## Interactive 1.1 Components of Panarchy

# panarchies are holarchical

This means that they are a nested complexity of systems, but not 'small to big' with absolute 'tops and bottoms'. Rather, each component of the system has functional inter- and intra-relations to each other and to other systems.



1/5



*Click through each of the slides to read the interpretations of the components of panarchy*



# rationale for panarchy

barred owl tail feathers, Victoria BC

Part of my interest in a panarchical approach is to avoid the over-utilized and simplified use of critical theory, which I interpret as further legacy of the aggressive and logical thinking architecture of argument/statement> warrant 1> warrant 2> counter-argument> logical critical approach (Denzin, Lincoln, & Smith, 2008). Critical theory has been established as a useful approach within societies of oppression as it empowers groups to challenge established social order, and conduct comprehensive explorations of inequities with the intention of finding solutions or (trans)formational paradigm shifts (Dewey, 1916; Freire, 2000; Habermas, 1979). Yet in academic settings, critical theory seems to be practiced all too often as simple criticism or the identification of deficits, fostering an aggressive approach to knowledge creation (Garrard, 2010; Grande, 2004; McKenzie, 2004). Rather than focusing on ‘what is lacking’ or where oppression might lie in this research field, my research seeks to celebrate the complexity of inquiry that connects to ecological identity, literacy, sense of place, or (trans)formation as a panarchical system and Indigenist system. This a sentiment that is shared by Donella Meadows who wrote a manifesto for a more resilient future for

humans by celebrating complexity rather than seeking superficial simplicity:

.....  
*Let's face it, the universe is messy. It is nonlinear, turbulent and chaotic. It is dynamic. It spends its time in transient behavior on its way to somewhere else, not in mathematically neat equilibria. It self-organizes and evolves. It creates diversity, not uniformity. That's what makes the world interesting, that's what makes it beautiful, and that's what makes it work. (Meadows, 2002, ¶ 55)*  
.....

In light of this celebration of complexity, William Varey (2011) recently asked a similar question to the one that I have posed: “Is there evidence that systems of thought demonstrate panarchy-like qualities?” (p. 516). Varey justifies the use of panarchy theory within his field of socio-psychology with distinct relevance to the conundrum of ecological and thought sustainability:

.....  
*When examining the dynamics of human systems of ascent and decline, the ‘quantity’ of thought occurring is not an issue. It is presently the ‘quality’ of our thinking that presents the greatest challenge to our self-governance. To find new ways of learning about our ways of appreciating, particularly of the management of our own resilience, is one focus in a series of human importances. (Varey, 2011, p. 521)*  
.....

Varey’s interpretation of Holling, Peterson, & Allen (2008) connects psychology to the five major components of panarchy theory. In this book, I expand Varey’s approach to look at the ‘quality’ of thinking as it relates to managing our own resilience. This expansion of Varey’s work helps interpret change, movement, and transformation, providing language to the quality of my participants’ experiences that derive from their transformative outdoor places. To do this, I explore the relevance of the five components of panarchy and their relation to the research and literature of the change and (trans)formation process. This includes understanding development of individual ecological identity, with a special concentration on issues and the importance of place, childhood, and spirituality. Below, I outline some of the advocates of environmental education and Indigenist scholar-activists, reflect on my own research, and step outside the traditional educational researcher space to discover

resonances within the academic (and non-academic) wisdoms of researchers and thinkers of 19th, 20th, and 21st century.



*barred owl, Wildwood BC*



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# holarchy

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Holarchies are a nested complexity of systems, but not 'small to big' with absolute 'tops and bottoms'. Rather, each component of the system has a functional relation to each other and to other systems.



# psychological development

*grasses, Chilcotin BC*

The statement that ‘psychological developmental processes are stimulated by our experiences in biophysical settings’ (Martin & Gillespie, 2010) elicits visions of epistemological quarrels between Vygotsky and Piaget running around outside yelling at each other about how climbing trees help us construct our realities. Despite the banality of this statement, simply ‘doing stuff in nature’ does not always trigger a series of events that sets us on a process of naturalistic psychological development or biophilia (Scott, 2010). Instead, the ‘doing of stuff’ can be explored as number of holarchical events occurring simultaneously and in dependence of each other. Consider some of the most influential psychologists in education; both Vygotsky’s and Piaget’s well-known theories act as guidance for understanding this process of development. Vygotsky’s Zone of Proximal Development (ZPD) and Piaget’s schemata, represent aspects of holarchies of thought and development. Each of the theories discusses the complexity of experiences and life-events requiring a multitude of nested factors for psychological change (Piaget & Inhelder, 1967; Vygotsky, 1962, 1978). However, these theories are explained as somewhat causal systems of ontological development and they fall short of describing an

entirely holarchical system. An example of this is that they have hierarchic stage-based descriptions with discrete hierarchies of systematic learning. Though constructivist approaches encourage an interpretation of the world as a way to ‘understand’ through multiple constructs or lenses, they maintain an often rational and dichotomizing description of a complex process (Mingers, 1991). Complexity theories, and systems-thinking in general acknowledges and integrates other-than-human influences, evolutionary and nuanced behavioural phenomena, and the influence of local environments (Holling, 2001). One particular framework that exhibits a much more explicitly holarchical description of human development is socio-ecological models.



*grizzly bear mother and four cubs, Chilcotin Mountains BC*

# eco-sociological development

Esquimalt Lagoon, Colwood BC

Originally proposed by Urie Bronfenbrenner (1979), socio-ecological models were described in his book Ecology of Human Development which explores the multi-scalar, nested holarchical systems of environments that influence the development of humans. These systems range from microsystem (family, school, and peers), mesosystem (inter-relationships of these factors), exosystem (governmental, cultural structures), macrosystem (overarching beliefs and values, to chronosystem (factors over time). Bronfenbrenner's ecological structure of the environments that influence development is rooted in a metaphorical interpretation of ecosystems. Its foundation is that human relationships resemble ecological relationships. Emotional, social, cognitive, and spiritual development in humans does not occur in an ecological vacuum, it is directly linked to the biophysical world around us (Swick & Williams, 2006). In a recent article (Stanger, 2011b), I move to update Bronfenbrenner's socio-ecological models and discuss the reorientation from the anthropocentric method to an eco-sociological method that celebrates and acknowledges the complexity of life on earth as the major influencers of our lives:

.....  
*It is time to embrace the multiple interpretations of "ecosystems" within the models we use to describe human development rather than letting the anthropocentric politicians and economics drive our space-ship earth. If we adopt this eco-sociological technique in schools and school-based research, perhaps we will see and think differently. It will make us reject marketing and sponsorship from extractive and deleterious industry, refuse to continue to build schools like prisons, and dismiss curriculum that supports factory-like settings. We will quickly see the need to build more livable schools with more green space, connection with local community, sustainable materials, sustainable pedagogy, local healthy foods for cafeterias, and integrated buildings that support ecological habitat development and student creativity. It is time to re-orient the way we see young people develop through a true ecological lens. (Stanger, 2011b, p. 172)*  
.....

The eco-sociological model I propose suggests a holarchical approach to research on the development of individuals, which would include multiple ways of knowing and interacting with the world. This encourages us to look deeply at numerous forms of

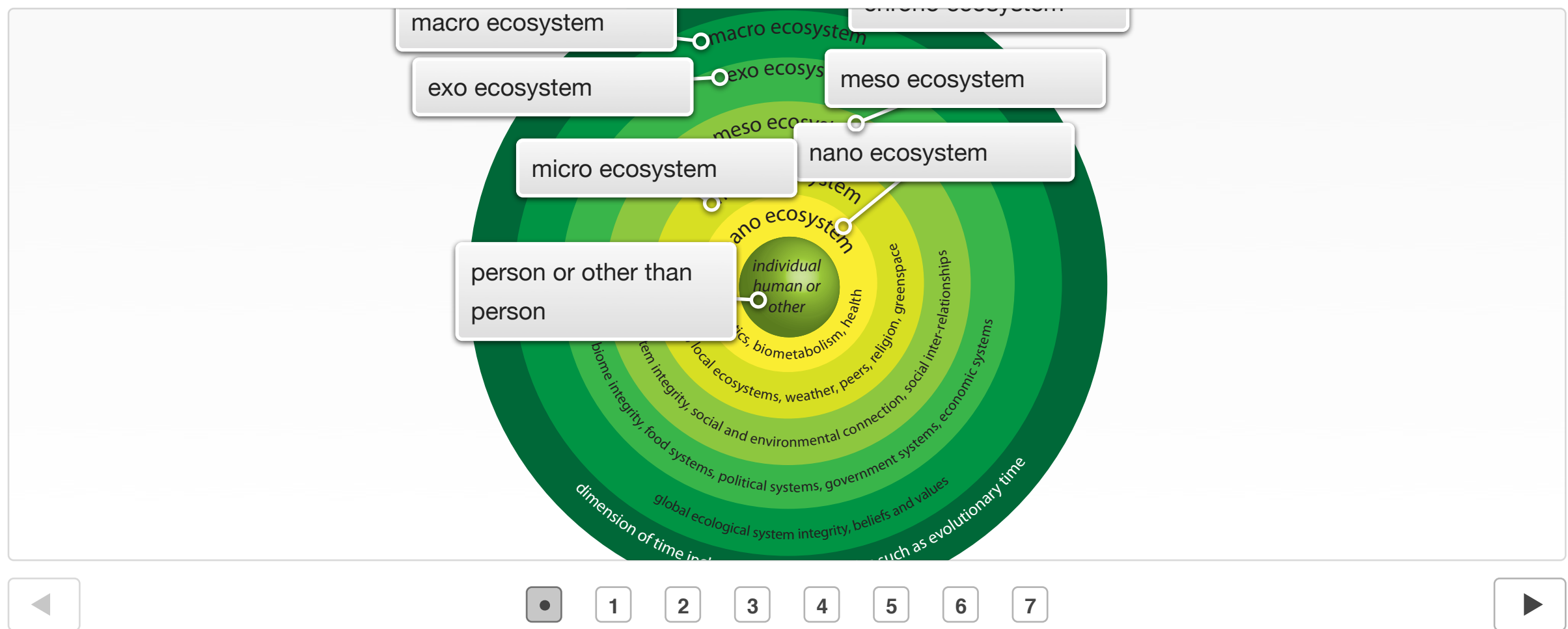


knowledge in a pluralistic capacity such as Indigenous knowledge, scientific knowledge, ecological knowledge, emotional knowledge, and social sciences knowledge (Lotz-Sisitka, 2009). These knowledge domains exist as holarchies of thought, interacting in discrete and symbiotic relationships.

Holarchy can also be seen in Indigenous ways of knowing. For instance, the practice of ethnobotany, where medicinal and food plants are intrinsically linked to place and place-names and are

passed through generations through story shows a complex interbeing of many different systems built into each other (Turner, 2005); that is Indigenous knowledge, story, place, and time. Without one of these systems, the others don't exist. In Heiltsuk culture, the rice-root plant forms the basis of starch in a basic meal. However, Grizzly bears are also rice root eaters. These two systems are not seen as separated between human and Grizzly, rather, each species connects and exists in the same place.

### Interactive 2.1 proposed revised socio-ecological model





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# scalar

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Ecosystems are scale-dependent, being any size as long as they have organisms, physical environment, interactions, and a specified extent as a way to bound and define them (Pickett & Cadenasso, 2002). In the case of panarchy systems, multiple systems of scale are considered concurrently, allowing for an amalgam viewpoint into the occurrences being studied.



# sense of place

Japanese maple, Victoria BC

From my teaching experience, I understand the power of place as a facilitator of awe, peace, calming, connectedness, aesthetic appreciation, delight, and deep learning. When we spend time in biophysical places, our experiences support an essential understanding of our surroundings and help us connect with ourselves physically, cognitively, and spiritually (Maller, 2009; Malpas, 1999; Mueller Worster, 2006; Sobel, 2004). Place is steeped in story, history, interiority, community and other-than human community, and sometimes a deep sense of solace (Albrecht, 2010). Thus place, and its nested places, are inherently scalar both in the biophysical world and also in the cognitive developmental landscape. We can experience the scalar-nature and developmental aspects of place by simply ‘staying put’ for a moment, whether it is in our minds or in our bodies ‘in place’ (Payne & Wattchow, 2009). In education, this manifests through helping people find connections to the places where they live, learn, and love (Berger & Lahad, 2010; Ruitenber, 2005). Functionally, place-connection occurs through helping people develop a “sense of place,” or the construction of a compassionate context to the local and global (Duhn, 2012). Place, environmental education, and place-based learning (and its research) is inherently action-based because it

asks individuals to embody, reflect on, and connect with their experiences. Yet the embodiment, reflexiveness, and connection does little justice to the complexity of place when these experiences address space, time, emotional literacy, creativity, inspiration, spirituality, healing, and learning (Kuo, 2010; Somerville, 2010). Harrison (2010) comments on Malpas’ (1999) suggestion of the scalar aspects of place-based learning and sense of place as a nested complexity of these items:

.....  
*The discussion of ‘why’ engage with place-based approaches to environmental education implies a research methodology that does not simply measure sense of place, but looks at how it is developed, investigating the relationship between epistemology (‘place-based learning’) and ontology (‘a sense of place’). Furthermore, with regards to care and responsibility for more distant places, the research method requires the ability to move across different scales, negotiating what Malpas calls the ‘nested’ character of place (Malpas, 1999): the glen, the watershed, the region, etc., and follow the interconnections of modern life. (Harrison, 2010, p. 12)*  
.....



Inculcating sense of place supports the tenants of (trans)formative learning and positive psychology; meaning-making, pleasure, and engagement (Berman & Davis-Berman, 2005; Knapp, 2006; Sobel, 1998). It is scalar to the ultimate degree of scale (that being atomic to cosmological). Astronauts come across this scale as a foundational element to the work that they do. On his first view of Earth during a space-walk, Story Musgrave described his experience in terms of physical connection: “....and when I looked back, it was all I could do to keep my hand still enough to take photos of her [Earth]. The beauty and size struck me so viscerally” (S. Musgrave, personal communication, June 20,1996) (Illustration 3.1).

One doesn't need to spend billions of dollars and thousands of gallons of jet fuel to experience this beauty. Connection to place can be just as enthralling through honouring and respecting the

land as a mentor and guide, parent and nurturer, and healer and spiritual leader. This is best articulated through Indigenous practices of place-names. Of course, all humans are steeped in place-names and their history, however, the nuance of place-names within the First Nations communities of what is now called North America, is likely greater than 15,000-years-old - or in the words of a colleague of mine “as old as all creation” (XEMFOLTW N. Claxton, WSÁNEĆ, personal communication, November 22, 2012). The Indigenous stories of place and place-names function as teachings, entertainment, nostalgia, time-markers, and geo-orienting place-markers (Davis, 2009; Salmon, 2000). They also help monitor change in these places by the very nature of oral history being passed from generation to generation. This can include events such as fires, earthquakes, and landslides, but also spiritual and cultural shifts of the people and other-than-humans that are interacting with these specific places.

**Illustration 3.1** Story Musgrave space walking



# Solastalgia, Indigenous place and spirit, and NDD

Wolf Dance, Koeye BC BC

Imbedded within sense of place, but with necessary distinction, is the neologism solastalgia, coined by Albrecht (2010). Solastalgia is an etymological hybridization among the terms solace (provision of comfort), desolation (feeling of abandonment), and nostalgia (the pain of homesickness). Albrecht situates solastalgia as psychoterratic distress, where pain or sickness is caused by the loss of, and inability to derive solace from a person's home or special place due to physical environmental changes, usually resulting from development, climate change, or other negative (trans)formations. With reference to the ongoing illnesses that Indigenous peoples around the planet are feeling from being physically, culturally, and spiritually removed from their home territories (through reservation systems or other colonizing actions), Albrecht illustrates a compelling description of the effects of interrupting the human-nature connection:

.....  
*Both social and medical epidemics that afflict some Indigenous people can be partly understood as their attempt to relieve themselves of the distress and pain of solastalgia. Perhaps solutions to such problems can come from the diagnosis of solastalgia and its negation by*

*empowered Indigenous people being directly involved in the repair and restoration of their 'home.'* (Albrecht, 2010, p. 228)  
.....

Despite the power of the term solostalgia, and soliphilia, the contrary response to connection to home, the consideration of using these terms as diagnoses or pathologies could be a troublesome route to head down. The benefits of identifying people's illnesses can be considered instructive behaviour-changing events, as seen in the medical profession. Yet, identifying social-ecological phenomenon as illnesses couches these experiences in a deficit-mentality; that if I were to take this prescription of nature or restore/repair my relationship with nature and home, all will be well, and I can continue on as a 'healed' individual. This is one of the chief scholarly challenges that Richard Louv, the originator of the term Nature Deficit Disorder, has also faced (Louv, 2005). He acknowledges that his term, though sounding pathological is more illustrative than medical. However, philosophically, our connection to nature is more than simply a clever term (i.e. biophilic, topophilic, soliphilic); it is at the very biophysical, spiritual, and reverential

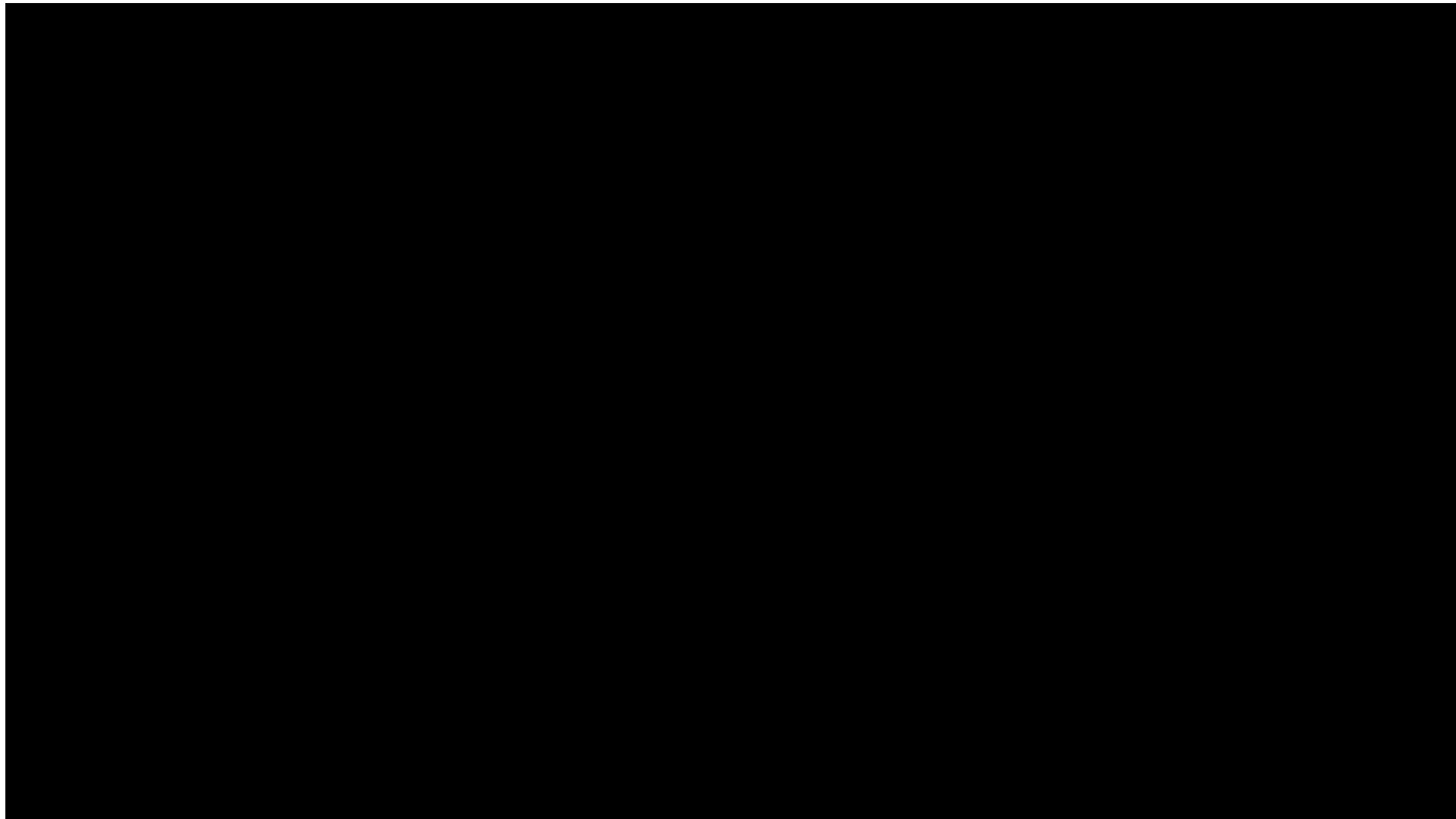


essence of who we are as humans, such that nature itself is interior to our very way of being (Berkes, 2008; Nhat Hanh, 2010). I abandon the use of a deficit mentality but instead recognize my human connectedness among all other species and beings including Earth as an understood living, thinking, and feeling

place. I return to this interdependence in an upcoming section on Interbeing.

What about you? Where would you go if I asked you to take me to a transformative outdoor place? (Movie 3.1).

### **Movie 3.1** Re)placing ourselves in nature



*If you were asked to remember your special outdoor place as a child, where would your mind go?*

# ecological identity

*nest hole, Colwood BC*

A human's development of sense of place is supported by (trans)formative methods such as linkages, elaborations, curiosity, and assessment through interactive and connecting experiences. For instance, when a child plays in a Garry oak meadow, they are reacting and engaging in a mixture of sights, sounds, smells, textures, and tastes that form a complex interconnected system of modalities. The pedagogical elements of nature (in the case of the Garry oak meadow – oak trees, snowberry, camas, dark-eyed juncos, and black-tailed deer, red ants, arachnids, microbes, and millions of other un-named species and beings) connect with inherent and innate



forms of curiosity and are the essence and fiber to the very fabric of our relational identity in life (Kahn & Kellert, 2002; Kellert & Wilson, 1993; Thomashow, 1995). That we connect and reconnect with these ecological landscapes of origin, and also the original human and human-like creatures' ecological

landscapes, the savannah ecosystems, has profound impact on our identity as animals who are imbedded in our ecologies (Kuo, 2010; E. O. Wilson, 1984). In our childhood, The stubbing of toes, inspections of stumps, planting of seeds, building of huts, climbing of trees, chasing of brothers, licking of salty-lips, digging of pits, trapping of insects, and building

*gum tree, Wellington New Zealand*



of curiosity are playful risks that enable a movement from seeing the world as a trap, to seeing the world as self (Chawla, 2003; Macy, 2007; Stanger, 2011a). As we grow older, our work can continue to connect us to place, even if exploitative, by engaging us as guides, miners, foresters, farmers, and fishers, just to name a few. Our relationship has always been that of the receiver of the bounty of the Earth, which historically required us to have a much more attentive relationship to nature. However in the past few hundred years that critical openness and reflexivity of (trans)formation has been numbed by promises of efficiency, economic prosperity, and fame (Wright, 2011).

From miniscule to enormous, scale exists as a frame of our imagination, and when perception of scale is changed, the perceiver is changed as well (Arnold, Cohen, & Warner, 2009). This might be best illustrated by the simple act of climbing up a trail to the top of a hill for a new perspective of the landscape around us. We start seeing interactions amongst larger forms of systems. At the very same moment, we are also perceiving ourselves differently, as organisms connected to a larger and highly dynamic world (Scott, 2010; Stanger, 2011b). This 'endogeneity of being' acts as a connection, even a sense of belonging to the earth – who am I and how do I connect to this place?

Vision quests (a European term) continue to be practiced in Indigenous communities around the world. Often taking form as



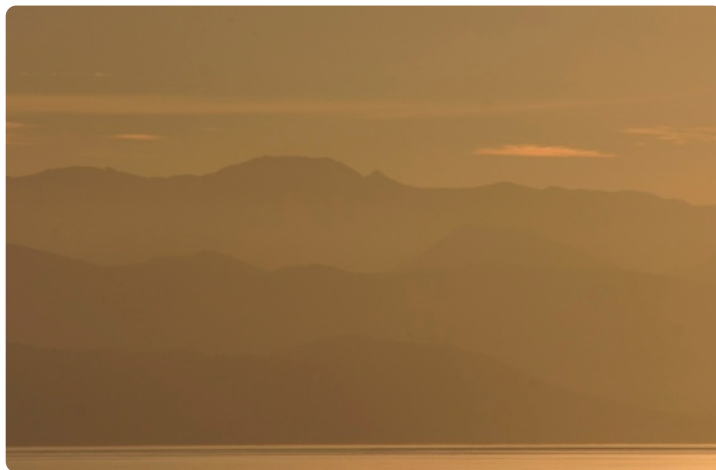
*baby humpback whale, Maui, Hawaii*

coming of age ceremonies, they provide a time-marker in a young person's life. Ultimately acting as spiritual (trans)formational events, these practices are an activity that connects the understanding of the self within the matrix of community, spirit, and Earth (Grimes, 2000; Plotkin, 2003). I have witnessed three stages of a vision quest as an Indigenous youth mentor: a) isolation from community and material-goods b) (trans)formation of mind, spirit, and body; c) incorporation of thought, behaviour, ways of knowing. Often connecting to a totem or life-spirit, these youth move beyond a lucid state to engage with spiritual and ecological stories of the world around them. They then bring this identity back with them to their home community and begin the next part of their life, which asks them to learn song, stories, dance, regalia-making, and wisdoms of their totem life-spirit.

# place-based research

*melons, Safranbolou Turkey*

Environmental educators, geographers, and psychologists have shown that place plays a central role in human development (Harrison, 2010; Mueller Worster, 2006; Naess, 1992; Ruitenberg, 2005) The research itself is characteristically dynamic and scalar, with a diversity of themes and disciplines. Harrison (2010) suggests that research that is focused on ‘place’ can be divided into two worlds within English-speaking communities, though this is not without some error of over-generalization. First, an Australian/New Zealand/Canadian ‘place’ within environmental education focuses on the role of outdoor educators, interpreters, and alternative/exceptional programs utilizing place as a central



*Olympic Mountains, Washington USA*

aspect of their curriculum (Asfeldt et al., 2009; Duhn, 2012; Sauvé, 2005; Stewart, 2006). Second, an American “place-based education” (Krasny et al., 2010; Orr, 1990; Takano, Higgins, &

McLaughlin, 2009), is concerned with adapting current “educational institutions to embrace local community and environment as part of the learning context” (Harrison, 2010, p. 6). Though the distinction between these two camps is somewhat indicative of binary thought, the subtle differences of how place is considered in education helps us articulate the multiple scales in which we engage. For instance, in 2007, The Outdoor Alliance for Kids Society in the United States sought to counteract the failing No Child Left Behind Act through a counteractive Act named No Child Left Inside. This new act seeks to engage the entire K to 12 system in environmental education within the United States: 81.5 million students (U.S. Census Bureau, 2011). It is much more challenging to create a significant paradigm-changing impact in Canada due to our governmental structure where education is provincially mandated and we have significantly fewer students - 5.2 million (Statistics Canada, 2011). Panarchy theory as defined in this work suggests that understanding the commonalities of these two research camps is useful as a study of its transferability in western culture and among all cultures on Earth.





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# time

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Mapping, observing, or connecting with biophysical spaces is often constrained by the time-availability of the observer, rather than acknowledging the multiple timelines of systems that are interacting in nature. Panarchy theory argues that multiple systems of scale and their interrelated holarchies operate across a diversity of time periods, which requires appropriate forms and lengths of observation.



# slowness

Coast Mountains, BC

Whether it a peripheral glimpse of a bald eagle diving into a sun drenched sea to catch a fish or the visceral and contextual connection to a tree’s slow growth over a whole lifetime, connection to place at the individual level is characterized by the diversity of experiences of time. Further to this, time plays curious tricks on us through our perceptive memory and imagination (Payne, 2010b). The often rose-tinted memory-lenses we use when we look into our own past can be both exciting and disappointing upon revisiting childhood places (O'Donoghue, 2006).

Despite the variable nature of time and the role that time plays on our memory, one temporal concept is exceptionally useful when considering time and panarchy through an individual’s experience in nature; that is slowness. Our glut of ‘efficiency’ through increasingly distracting technologies has reduced our physical presence in biophysical habitats (Louv, 2005; Tremblay et al., 2010). To support connection to the biophysical world, we should support a paradigmatic shift towards slowness as an approach to life. The popularized notion of slow-food is in part responsible for the international movement: the ‘Slow Movement’

celebrates slowness as a method for experiencing the world in an enriching and healthy way:

.....  
*By taking aim at the false god of speed, it strikes at the heart of what it is to be human in the era of the silicon chip. The Slow creed can pay dividends when applied in a piecemeal fashion. But, to get the full benefit from the Slow movement, we need to go further and rethink our approach to everything. (Honoré, 2004, p. 17)*  
.....

This call for slowness incites a (trans)formation of our economic structures, so obsessed with efficient competition at the expense of all others. A (trans)formation to slowness could intentionally intervene on the current system of hyper-active economic, political, and military-industrial-intelligence complexes.

One such relevant ‘rethinking’ approach to slowness is found in the ‘slow education movement’ where increasing interest in teaching slowly has led to learning in the ecological and cultural landscapes that surround us (Claridge, 2011). Slowness allows us to find meaning that is deeply relevant to our own experiences. Reflecting, and collecting our thoughts within an



experience contributes to seeing patterns, connections, and finding ways to express this knowledge through creative means (Graham, 2007; Stanger, 2007, 2011a). Wabi Sabi, a character in the hermeneutic research project of Seidel and Jardine's (2009), talks about the compelling nature of the complex world, a realization enabled through the act of slowing down:

.....  
*The more I have come to know a work of art, a piece of music, a track of forest, a bird's call, the meaning of a name like Wabi Sabi, quadratic arcs, or the beauty of a beloved novel—the more I experience such things, the more compelling they become, the more they are experienced as “standing there,” over and above my wanting and doing, there, in the midst of the world.*  
*(Seidel & Jardine, 2009, pp. 17-18)*  
.....

In a recent conversation with the National Geographic Explorer-In-Residence, Dr. Wade Davis about his work advocating for one of his (trans)formative places the 'Sacred Headwaters,' the source of the Skeena, Nass, and Stikine rivers in Northern British Columbia, slowness, place, and pedagogy all came to a head: “What we really need to teach in order to live our lives more sustainably is to slow down and to stay put” (Dr. W. Davis, personal communication, June 2011). I find this a profound concept and have heard it explained as living “like you plan on staying” (Dr. R. Kool, personal communication, March 2006; (Astbury, Huddart, & Theoret, 2009, p. 167), living “as if the world

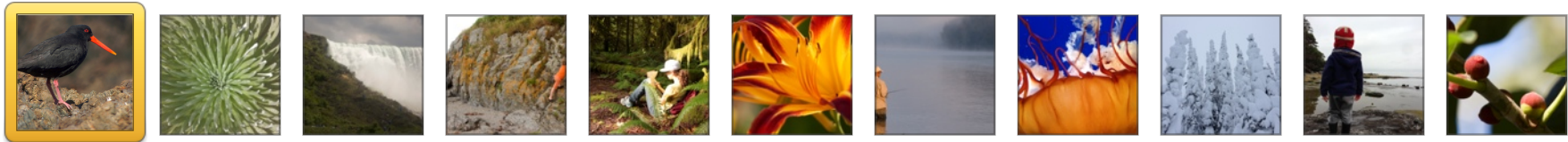
mattered” (Jickling, 2009, p. 215), and living more “sustainably by becoming rooted in place” (Turner, 2005, p. 67). “Staying put” requires us to understand, celebrate, and engage with our local ecological and cultural places in ecologically sustainable ways (Bowers, 1995).

Slowness is a way of culture for many Indigenous peoples (Aluli-Meyer, 2008; Kirmayer et al., 2011). This doesn't mean that speed is non-existent, but that space and time is honoured through an intention of appropriate protocol, respect, and wisdom is practiced for the appropriate moment. Whether it is acknowledging the land, ancestors, or connection to the Creator, First Nations around the world use time as a source of presence through respectful ceremony (Smith, 2005). This intentional time can open avenues for deeper and more meaningful thought and connections and engages the community in a relational dialogue to the complexity of family, culture, story, and place.

Time's role in place and (trans)formation can be confounded by the concepts of presence and expediency, especially in relation to the looming environmental crises that humans now face (Convention of Biological Diversity, 2010; Earle, 1991; Heller & Zavaleta, 2009; Intergovernmental Panel on Climate Change, 2007; J. R. Miller, 2005). Thus slowness is both about being present and being aware of what is happening in that presence, such that we can learn to love where we are and fight for its ongoing integrity.



*oyster catcher, Wellington New Zealand*





# flow

Pink Valley, Goreme Turkey

Flow is a critical temporal component of connecting to place and slowness. I recently attempted to research my own reaction to returning to my favourite childhood place on the top of Gonzales Hill in Oak Bay, Victoria, British Columbia. This project led me to publish an interactive research paper and video as an exploratory auto-ethnographic exercise (Stanger, 2011a, 2011c). I was attempting to investigate the validity of my proposed doctoral dissertation research methodology. Accompanying this video is an article that discusses my reflections from this day as they relate to the scholarly literature on pedagogy of place and (trans)formative learning:

.....  
*That I existed in ecstasy, or outside of my body, allowed for deeper and richer observation of the world around me. My playing with scotch broom and Garry oak trees re-affirmed my abilities and clarity. These steps of flow should be the basis for educational reform combined with the understanding that outdoor play, even within structured schools, must celebrate the acts of fun, engagement, and meaningfulness (adapted from Csikszentmihalyi, 2004):*

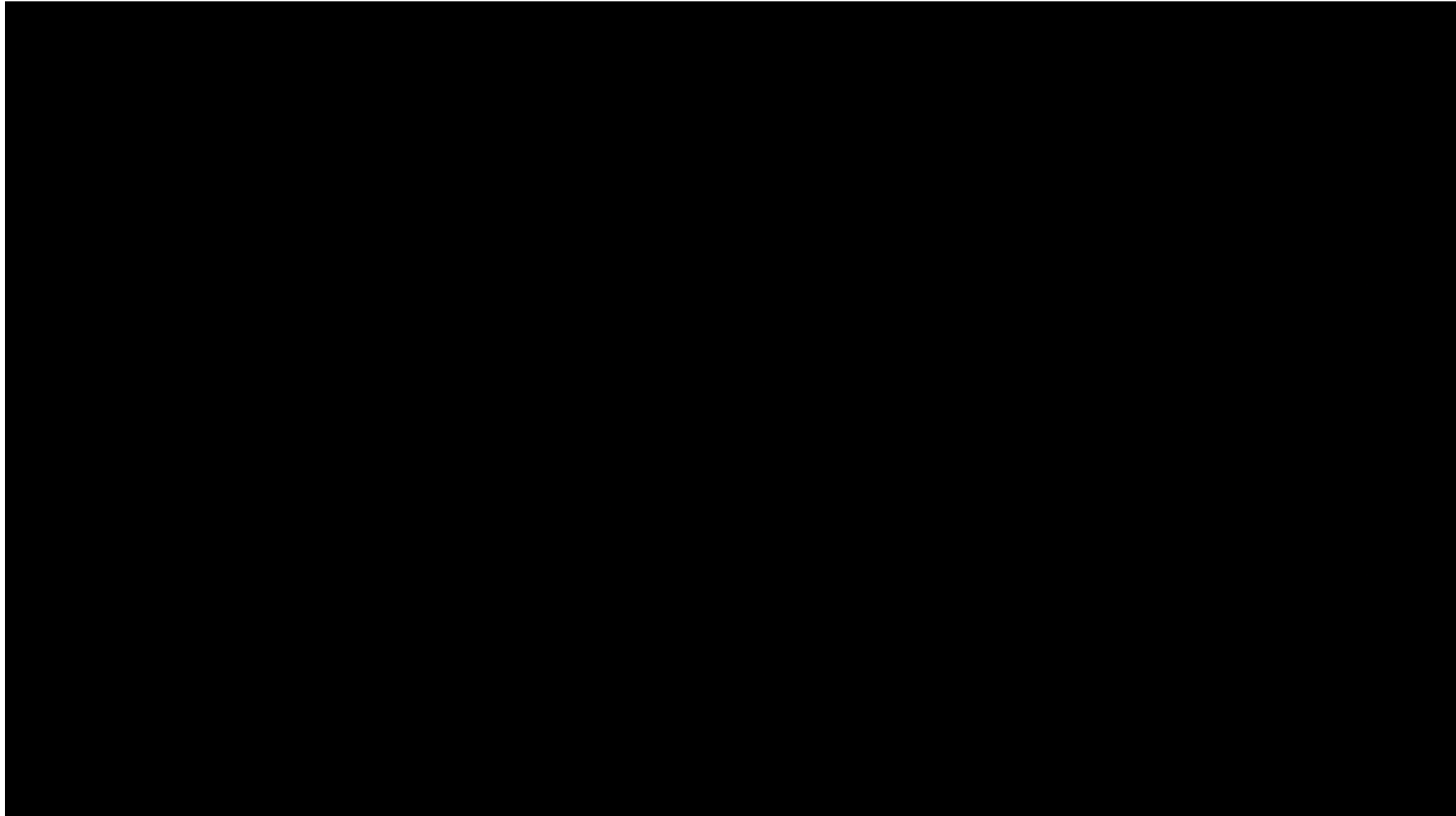
- *Focused: completely involved in what we are doing*
  - *Ecstasy: being outside everyday reality*
  - *Clarity: knowing what needs to be done and how well we are doing*
  - *Do-ability: knowing that our skills are adequate to the task*
  - *Serenity: having no worries about oneself, beyond the boundaries of ego*
  - *Timelessness: being thoroughly focused on the present*
- Motivation: being motivated through the activity itself (Stanger, 2011a, pp. 87-88)*  
.....

Csikszentmihalyi's exploration of time as a component to flow is a critical one that is somewhat undervalued in our research literature. This is especially true when considering the multiplicity of timelines in panarchy systems combined with the limitations on educational structures, 'calendarization' of young lives, and societal efficiency norms (Campbell & Timmerman, 2007). As humans connect with place through slowness, recognition of complexity, ecological identity building, and sense of place, the

function of time and flow in these moments are the ecstatic experiences of wonder, awe, and inquiry when time ceases to

exist. They help us experience timelessness and foster deepened and relational love of the places in which we live (Movie 4.1).

#### **Movie 4.1** The art of revisiting my special place



*How does connection to place manifest itself in research? This video was created as an exploratory auto-ethnographic exercise. I was attempting to experience what I will ask my research participants for the completion of my doctoral dissertation in Education at the University of Victoria. Accompanying this video is a paper that discusses reflections from this day as they relate to the scholarly literature on pedagogy of place and transformative learning: The intertextuality of environmental art in childhood special places: How play, flow, and pedagogy of place can reform education.*



Heidegger (1962) relished the physical nature of being and found his most present and ‘real’ moments were when he was working at his cottage in rural Germany. His 1927 work, *Being and Time* was written as a way to describe an average person’s life and their sense of being. One of the major concepts he proposes in this book is the term Dasein: the being for whom being is a question. Dasein can be further described as a social practice of becoming, where all other realities are based through perception of the being that is asking the question (Heidegger, 1962; Walters, 2008). He argued that people in rural spaces are fully absorbed in the world and therefore are Dasein, but those people who live in large cities are leading inauthentic lives, by living in the future and for another’s will. The idea of ‘absorption’ arises as a theme throughout many existentialists, hinting at the concepts of flow and slowness as elements of being and time (Benhamida, 1973; McPherson, 2001; Rousseau, 1888). Time and absorption are also fundamental principles of environmental education as shown in examples of rural/urban research (Acle, Roque, & Contreras, 2005; Corbett, 2007) and meaning-making (Payne, 2010a).

Therefore, in order to appreciate our surroundings, we need to prioritize our time so that we engage in the absorption of being, the flow of experiencing, and the slowness of observation in an Indigenist way:

.....  
*Temporal thinking means that time is thought of as having a beginning and an end. Spatial thinking views events as a function of space or where the event actually took place. Understanding the space-time difference in conceptualizing history is necessary in order for the [social scientist] to realize that the two ways of thinking are different yet part of the same continuum. Although the social scientist may be interested in when something happened, the participant/community may be more interested in where the event took place. The idea of being in space versus time does not have to be a rigid one, and the [participant] may or may not want to relate events in a more space-time integrated approach, although time may not have the same linear quality that it does for the Western person. (Duran & Duran, 2000, p. 91)*  
 .....



We experience these systems as rhythms of other-than human ceremonial or ritualistic relationships such as bird migration, weather patterns, flowering plants, glacial till, volcanic eruptions, and shooting stars. Through this temporal experience, we can

gain understanding of the world around us and the world within us – we are dasein.



*Merlin with Joy, Powell River BC*



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# cycles

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Panarchy theory acknowledges that systems move through four stages of adaptation: growth, conservation, release, and reorganization. This never-ending cycle might be seen revolting or remembering, where systems are in an ongoing creative and conserving process. I explain this adaptive cycle as part of the insights into transformative learning theory in the Cycles, adaptive system, transformation, ecological literacy, and Indigenous worldviews section of this book.



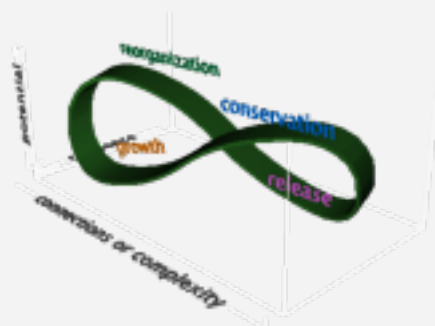
# adaptive systems

peeling paint, Victoria BC

## ADAPTIVE SYSTEMS

The very nature of using panarchy echoes my research approach. Panarchy not only forms the framework for this paper, but for the ecology of (trans)formation in general. The cyclical component of panarchy can be represented through a three-dimensional model of an adaptive cycle (Interactive 5.1):

**Interactive 5.1** Click to interact with the adaptive cycle



*Three dimensional panarchy model showing the relationship among potential, connectedness, and resilience within an adaptive cycle (Holling, 2001).*

In Figure 1 there are four familiar stages of ecosystem dynamics within the adaptive cycle: growth, conservation, release, and reorganization (Gunderson & Holling, 2002). These stages exist within the three dimensional space constructed by the interaction among x-axis: connectedness, y-axis: eco-socio-spiritual capacity, and z-axis: resilience. Growth occurs in this system through a rapid expansion of a population where there is a plethora of ecological niches (personal learning example: developing a knowledge of canopy research through study and practice over many years). Over time, when biodiversity and complexity of interactions increase (connectedness), the Conservation stage represents the role of carrying capacities and an apparent equilibrium (personal learning example: providing empirical research and being an authority in epiphyte research within my community of practice at Weyerhaeuser). In this moment of the panarchy cycle, the systems resilience is lower, due to its vulnerability of equilibria, and reduced adaptability (personal learning example: reduced new learning as the status quo was working for my research). The shorter Release stage occurs when a stochastic event or competitor/predator alters the conditions that supported the equilibrium, reducing the resilience, and complexity of the interactions (personal learning



example: being faced with a new way of seeing the tree as ALIVE from the experience of the tree swaying). Reorganization is the reconstruction of the population based on the available options such as successful organisms that survive natural selection processes associated with the stochastic event (personal learning example: the reflecting and reprocessing that led me to changing professions and orienting myself with my knew self-knowledge). This process then cycles into the future, with potential to spin into other loops ‘above’ and ‘below’ this one through events called remembering and revolt (Illustration 5.1):

Over periods of time, these adaptive cycles might experience a revolt, where a series of rapid stochastic events leads to the escalation of the adaptive cycle to a much larger and slower cycle:

.....  
*An ecological version of this situation occurs when conditions in a forest allow a local ignition to create a small ground fire that spreads first to the crown of a tree, then to a patch in the forest, and then to a whole stand of trees. Each step in that cascade moves the transformation to a larger and slower level. (Holling, 2001, p. 398)*  
 .....

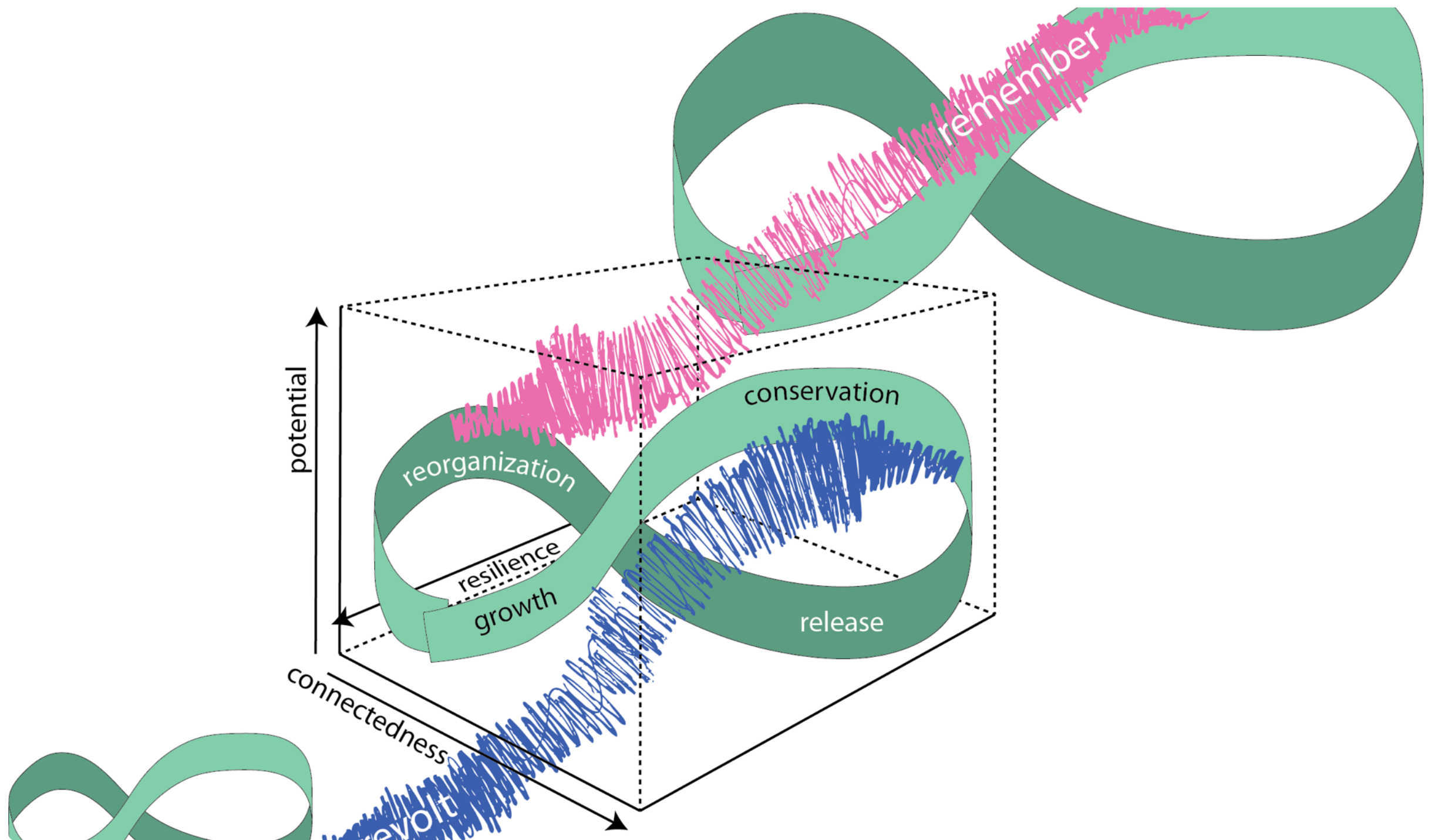
Similarly, remembering is triggered by a cross-scalar event, pertaining to the use of legacy items such as seed banks after a stand-replacing forest fire. In terms of scholastic research, a revolt might be a series of events that expose a new paradigm

(i.e. the research leading to the current understanding of role of unstructured play for children’s mental and physical health (Orlowski & Hart, 2010). Another example of Remembering could be a major re-organization of thought based on a hermeneutic analysis of long-forgotten texts (i.e. the environmental significance of the Diamond Sutra (Nhat Hanh, 2010)). My tree experience that I shared above, could resemble a revolt where multiple moments of understanding built on one another to catapult me into another much slower movement in my learning cycles

The best insight into how this apparently highly ecological model pertains to (trans)formation at the individual level is through Holling’s discussion of the socio-ecological ramifications of panarchy on resilience and ultimately sustainability:

.....  
*The panarchy describes how a healthy socioecological system can invent and experiment, benefiting from inventions that create opportunity.... The whole panarchy is therefore both creative and conserving. The interactions between cycles in a panarchy combines learning with continuity. (Holling, 2001, p. 402)*  
 .....

## Illustration 5.1 Adaptive Cycle illustrations



*Remembering and revolt as a function of moving among multiple equilibria and scales of systems (Holling, 2001).*



# transformation and ecological literacy

*hellabore, Koeye BC*

Interpreting the panarchy model at an individual level could be described as new knowledge creation (growth), ethics and moral judgment (conservation), worldview shifts (release), and evaluation of core values (reorganization). These experiences can be contextualized through the biophysical and societal aspects of place. Yet even places change. Places can be recursively returned to, through physical and imaginary means, as sources of reflexive understanding and new experiences due to their permanent impermanence. Cynthia Chambers refers to the evolutionary perpetuity of place in the curricular question of “what are the living literacies of this place?” (C. M. Chambers, 2009). Literacy is a word often used within environmental education contexts to describe understanding the connectedness and complexity of the environment and how humans integrate with it (Battles et al., 2003; Daudi, 2008). Referred to as ecological literacy, it can be defined as “how people and societies relate to each other and to natural systems, and how they might do so sustainably” (Orr, 1992, p. 92). Further to this, an ecologically literate person understands ecological systems, and how people and communities impact the systems in which they live (Balgopal & Wallace, 2009; Cutter-MacKenzie & Smith, 2003). Through this literacy and interpretation of place,

humans with higher ecological literacy also recognize that places are always changing. They are drastically altered through destructive economic and socio-political greed, climate change, mudslides, and volcanic eruptions, just to name a few. These occurrences, though sometimes brutal, can act as part of the curriculum of a place so that the evolutionary nature of the “living literacy” connects people to places through solutions-based advocacy, spirituality, environmental despair, or physical dissociation.

However, these physical and reactionary manifestations of change are only one component of (trans)formation. Change, at an individual level might occur as an adoption of values and beliefs that alter the very nature of underlying worldviews, a literal (trans)formation of integral values and beliefs of the spiritual, emotional, mental, and physical (Jorge, Marina, & Ramon, 2006). Moving beyond the literacy of a place, we attribute our own values to that literacy and connect belief to thought as a process of (trans)formation and interpretation. So the model of panarchy can only be as strong as the conversations and interpretations that arise from it. Despite reaching a new height of complexity description, it falls short in explaining or helping to interpret the





salal leaf, Juan de Fuca, BC

ceremonial or emotional aspects of places and how humans connect at levels beyond simple biophysical relationships.

Transformation as an academic discipline is captured within education through transformative learning theory. Originally described by Mezirow (1991), transformative learning theory is the process of affecting change in a personal 'frame of reference' through discourse, critical reflection on assumptions, and the development of autonomous thinking. The word autonomous is a troublesome term in this case, as it lacks the acknowledgement of the very real potential that autonomy is a fallacy. That our creativity and understanding is in fact a co-constructed and interrelated ecological intelligence (Bowers, 1995) points to validity of the panarchy theory as a descriptor of (trans)formation. Our (trans)formational change requires the holarchical, scalar, and temporal interactions of the systems we live in. These systems can be described as the biophysical world, memetic/knowledge world, and spiritual worlds:

.....  
*Today, the orthodox belief in the primacy and autonomy of the individual remains shielded from scrutiny by its taken for granted status among classroom teachers and educational theorists, and by the widespread practice of identifying it as one of the primary social expressions of progress and modernization... Illuminating the consequences of basing educational practices on an individually-centered view of intelligence will require thinking against the grain of the most deeply held*



*conventions of modern thought... Just as an ecological model of understanding leads to a profoundly different approach to moral education, creativity, and to how we think about the educational uses of computers, an ecological view of intelligence has equally important implications for the reform of public schools and university education. (Bowers, 1995, pp. 93-94)*  
.....

Mezirow's vision is one of change in the individual, yet to separate the mutual relationship between an individual and their communities is an unreliable and reductionist practice. Embracing a eco-sociological or panarchical view of (trans)formative learning, one can interpret it as a "comprehensive and complex description of how learners construe, validate and reformulate the meaning of their experience" (Cranton, 1994, p. 730) across systems, scales, time, and cycles.

(Trans)formation can be followed by feelings of excitement, satisfaction and freedom as well as sadness associated with loss of the old self (Johnston, 2009; Lof, 2010). For (trans)formation is not necessarily always timely or a "good thing." It can be introduced by facilitators of knowledge (be they mentors, wisdom-keepers, or enlightened teachers) and can also occur due to stochastic events deriving from the complexity of the holarchical systems that are interacting with us.



*palm leaf, Maui, Hawaii*



# Indigenous worldviews

mask, Koeve BC

I have referred to Indigenous Knowledge throughout this paper in various ways, but I want to focus directly on it as it relates to cycles. In a way, the adaptive cycle is the keystone component of panarchy theory, helping explain the complexity of (trans)formation. In this same sense, Indigenous ways of knowing can be thought of as integral to the very concepts of this research on place and human-place-connection. It would be a great folly to attempt to assimilate all First Nations perspectives in North America through a few simple sentences. The diversity of Indigenous ways of knowing are rich with nuance and complexity. An entire life's work could be devoted directly to these multiple worldviews. I draw on a few wisdom-keepers to help articulate the connections among Indigenous knowledge,



big house opening celebration, Koeve BC



adaptive cycles, and endogeneity. Gregory Cajete, a Tewa Indian from Santa Clara Pueblo, suggested that an Indigenous approach to the world can be language through ‘sacred

ecology’ (Cajete, 1999, 2000). Sacred ecology is inclusive of humans, and the changes that we make to the environment, spirits, organisms, and stories around us, but not without those places affecting change in ourselves:

.....  
*The land has become an extension of Indian thought and being because, in the words of a Pueblo elder, ‘It is this place that holds our memories and the bones of our people...This is the place that made us.’...This refers not only to the physical place but also a place of consciousness and an orientation to sacred ecology. Sacred orientation to place and space is a key element of the ecological awareness and intimate relationship that Indians have established with the North American Landscape for 30,000 years or more.(Cajete, 1999, p. 3)*  
.....

This truth that humans are as much part of land as the very place-consciousness in which we inhabit helps demonstrate the idea of panarchy as an ecological and spiritual descriptive theory. Indeed all humans, whether labeled Indigenous or not, could and should understand that the places that we inhabit hold conscious and physical connections. It is this acknowledgement and subsequent actions of the ties to place that is missing from many



modern cultures, which has contributed to the environmental and paradigmatic conundrums that educators, policy makers, and human-kind currently face (Barry, 2010). Cajete (1994) focuses specifically on Indigenous education and the role of educators as facilitators of (trans)formation, especially in regards to the ongoing sustainability of Indigenous cultures. He believes that the three most important questions for educators today are: How do we learn to take care of the planet? How do we learn to live together? And, how do we care for our souls? In many Indigenous and Religious communities these processes of (trans)formation are planned (eg. Bar Mitzvah and Vision Quests). Yet, (trans)formative movement is challenging to force at a larger societal scale. Change requires some intention or opening of the individual and /or community of support as well as a perfect storm of factors, including socio-political, environmental, and economic (Anglin, 1996). Is there a space for planned (trans)formational activities within the public school system? Indigenist approaches to education could play this vital role, providing spaces and techniques for more grounded, spiritual, ceremonial and civic practices, such as connecting with local community, relational accountability, and historic connection (Battiste, 2009).

Incorporating Indigenous worldviews can be a fine line to walk when referring to the deeply pedagogical works of Indigenous scholars and cultures due to the compromising position of ongoing colonizing oppression (Chinn, 2007) – especially as someone who is non-Indigenous. Shawn Wilson (2007) and

Manulani Aluli Meyer (2008) invite scholars like myself, who don't identify as Indigenous, into the world of Indigenous perspectives, as mentioned above: the Indigenist approach. The Indigenist approach helps articulate my research as being allied with Indigenous cultures:

.....  
*It is not sufficient for researchers just to say that they are Aboriginal and are therefore using an Indigenist paradigm. We must explain the paradigm clearly so that we can make sure that good work is being done. For me it is a part of my relational accountability to ensure that research conducted in the name of an Indigenist paradigm lives up to the title. (S. Wilson, 2007, p. 194)*  
 .....

In scholarly research, we are in the midst of change when a pluralistic openness of the academic community values authenticity through an Indigenist perspective of auto-ethnography, intrinsic knowledge, oral tradition, intuition, and discourse. It calls on all of us to be allies rather than opponents, such that we can focus on movement and (trans)formation for the greater good. The very fabric of many Indigenous worldviews is the acknowledgement of ever-changing and living realities (S. Wilson, 2007). An Indigenist paradigm could provide a counterpoint to the positivist, reductive paradigm so prevalent in educational and political spheres (Smith, 2005). The challenge lies in involving theories such as Panarchy to the larger and more wholistic and relational approach of Indigenist paradigms.





# cross-scalar dependencies

Panarchy theory acknowledges the role of complexity within systems as an entwined multi-variable and highly dependent set of interactions, such that when systems interact across scales they can come into multiple states of equilibria. Panarchy allows for some level of prediction of these states.



# worldview development

*malachite kingfisher, Mlilwane Swaziland*

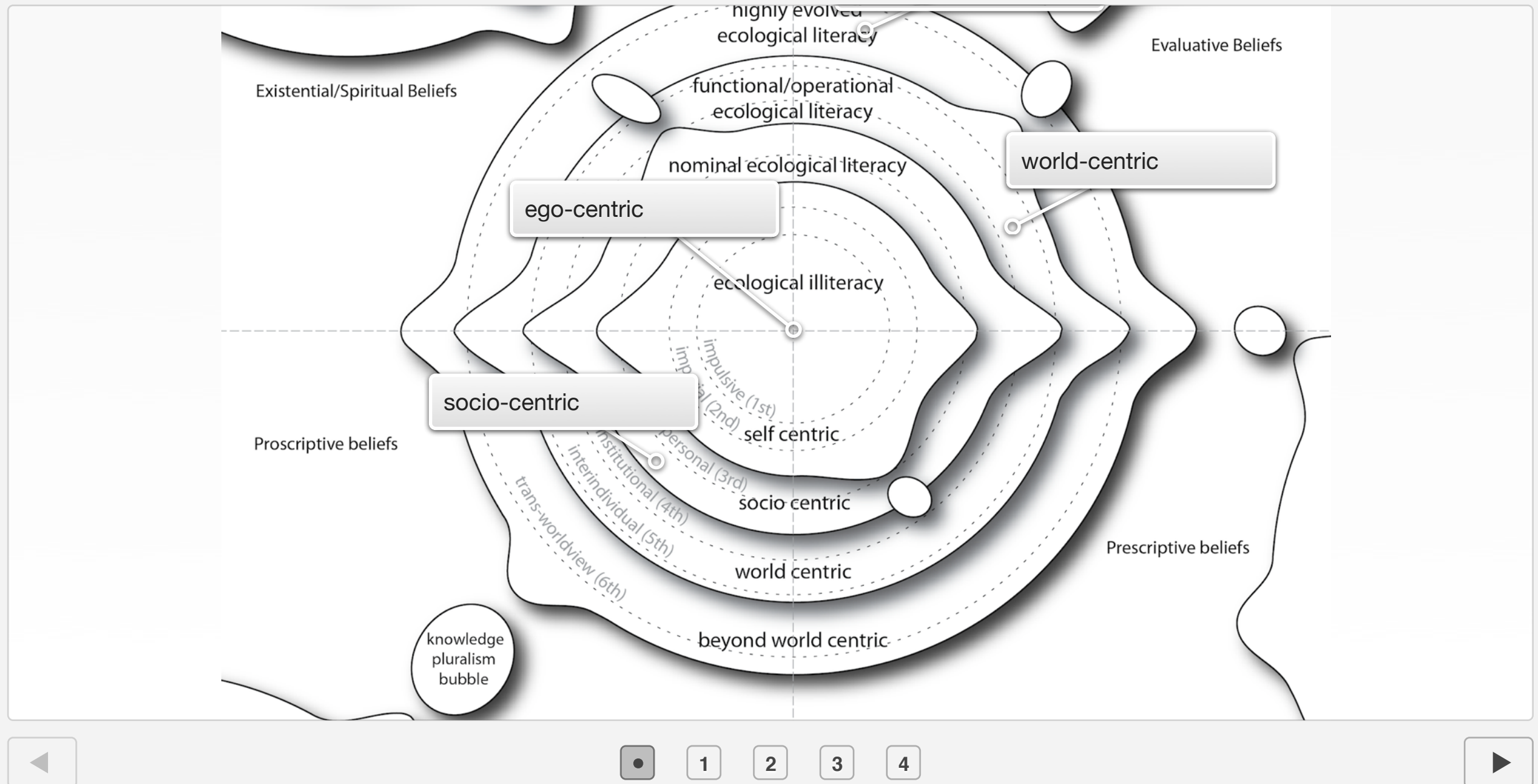
Worldviews are a necessarily complex concept. Frequently defined as a set of values and belief systems, they can exist as clandestine views into our day-to-day experiences (Koltko-Rivera, 2004). That is, many humans have light understanding of how their worldview orients their interpretation of life (Clacherty, 1993). Humans can carry multiple clashing aspects within their worldview at one time, and these items interact in complex ways as a type of dependency for (trans)formation (Koltko-Rivera, 2004). In my Master's research (Stanger, 2007) I explored the potential use of mapping worldviews through the multi-scalar and cross-dependent model that combined multiple lenses of ecological literacy (Cutter-MacKenzie & Smith, 2003), multi-centric ontologies (Wilber, 1998), Kegan's order of consciousness (Love & Guthrie, 1999), deep ecology pluralisms (Naess, 1992), and worldview construction (Koltko-Rivera, 2004) (Interactive 6.1).

This model is highly complex, and likely suffers the same limitations of all models being maps, but not territories. It suggests that humans build an ecological worldview through the movement away from an egocentric center to a beyond eco-

centric-spiritual connection to Earth. Joanna Macy (2007) describes the multi-scalar aspects of worldviews through the concept of four *weltbilds*, German for the 'way we picture the world,': World as battlefield, World as trap, World as lover, and World as self. Keeping the model of panarchy as a focus, one could interpret World as battlefield or World as trap as an egocentric narcissism of nature/society "I'm-here-to-conquer" or "the-world-is-out-to-get-me." These battle- and trap-lenses exist in all of us as the center of our ego, perhaps arising in places of helplessness, where flight-or-fight responses seek to protect ourselves, and perhaps what we hold sacred. Whereas Macy's World as Lover and World as Self celebrates natural interconnectedness of living in a world that exists in a symbiotic relationship with us. Lover and Self in these *weltbilds* could be interpreted as ecological-centricisms, rather than self-centricisms, truly an eco-sociological lens. That is, to be in love with the world, we can see it as a partner through all interpretations of love: *éros* (Brady & Swimme, 2012), *agape* (Bratton, 1992), and *philia* (Sobel, 1999; E. O. Wilson, 1984). Therefore when we move through multiple worldviews in our lives we are engaged in a complexity of belief systems that interact

amongst each other and with the biophysical environment through cross-scalar dependencies.

### Interactive 6.1 Lorem Ipsum dolor amet, consectetur



*Ecological literacy matrix. This matrix is represented through layers of orders of consciousness, ecological literacy, and worldview beliefs. Super-imposed on this figure (extraneous bubbles) are other un-identified worldviews that are bumping in and providing pluralistic bursts of transformation (Stanger, 2007, p. 34).*



# interbeing

giraffe, Kruger National Park South Africa

This idea of eco-centric-spiritual connection is one that is well articulated through certain Buddhist practices. Thich Nhat Hanh's (2008) concept of 'Interbeing' illustrates the connection between loving Earth and living on Earth. It is best described as the interconnectedness of all things. There is also etymological usefulness by returning to the original Vietnamese term for interbeing, Tiếp Hiện, translated by Nhat Hanh as 'continued realizing'. By continuing to observe and question the notions of realizing where and when we are, humans can reawaken our intrinsic connection to Earth (Nhat Hanh, 1998). I lean on Nhat Hanh's original poem of interbeing to demonstrate the nature of his theory (next page). He shows through his writing that everything is indeed connected and absolutely dependent on each other, whether it is the cloud that makes rain for trees to grow, or the logger who cuts the trees to make paper that this very essay is written on – one can see the cloud within this piece of paper. He has also written many love poems to interbeing, where evidence of the complexity of change and transformation is apparent (an excerpt from The Old Mendicant):

.....  
*Being rock, being gas, being mist, being Mind,  
being the mesons travelling among the galaxies  
at the speed of light,  
you have come here, my beloved.  
And your blue eyes shine, so beautiful, so deep.  
You have taken the path traced for you  
from the non-beginning and the never-ending.  
(Nhat Hanh, 1999, p. 144)*  
.....

Interbeing could be considered a pedagogical transitional tool where a person is encouraged to explore the notions of humans 'being of nature' to concepts of the 'nature of being' (Stanger, forthcoming). It is an eloquent explanation of cross-scalar dependency by exemplifying the absolute connectedness of all materials, experiences, and thoughts in every moment. It is concepts such as interbeing that provide potentially-paradigmatic shifts in how we connect with nature and ultimately how we come to understand and love Earth.

**SELECTED SECTION FROM PEACE IS EVERY STEP: THE PATH OF MINDFULNESS (NHAT HANH, 1991, P. 93)**

If you are a poet, you will see clearly that there is a cloud floating in this sheet of paper. Without a cloud, there will be no rain; without rain, the trees cannot grow; and without trees, we cannot make paper. The cloud is essential for the paper to exist. If the cloud is not here, the sheet of paper cannot be here either. So we can say that the cloud and the paper inter-are. “Interbeing” is a word that is not in the dictionary yet, but if we combine the prefix “inter-“ with the verb “to be,” we have a new verb, inter-be.

If we look into this sheet of paper even more deeply, we can see the sunshine in it. Without sunshine, the forest cannot grow. In fact, nothing can grow without sunshine. And so, we know that the sunshine is also in this sheet of paper. The paper and the sunshine inter-are. And if we continue to look, we can see the logger who cut the tree and brought it to the mill to be transformed into paper. And we see wheat. We know the logger cannot exist without his daily bread, and therefore the wheat that became his bread is also in this sheet of paper. The logger’s father and mother are in it too. When we look in this way, we see that without all of these things, this sheet of paper cannot exist.

Looking even more deeply, we can see ourselves in this sheet of paper too. This is not difficult to see, because when we look at a sheet of paper, it is part of our perception. Your mind is in here and mine is also. So we can say that everything is in here with this sheet of paper. We cannot point out one thing that is not here – time, space, the earth, the rain, the minerals in the soil, the sunshine, the cloud, the river, the heat. Everything co-exists with this sheet of paper. That is why I think the word inter-be should be in the dictionary. “To be” is to inter-be. We cannot just be by ourselves alone. We have to inter-be with every other thing. This sheet of paper is, because everything else is.

Suppose we try to return one of the elements to its source. Suppose we return the sunshine to the sun. Do you think that this sheet of paper will be possible? No, without sunshine nothing can be. And if we return the logger to his mother, then we have no sheet of paper either. The fact is that this sheet of paper is made up lonely of “non-paper” elements. And if we return these non-paper elements to their sources, then there can be no paper at all. Without non-paper elements, like mind, logger, sunshine and so on, there will be no paper. As thin as this sheet of paper is, it contains everything in the universe in it.



---

# conclusion: place as panarchy

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When thought domains transform into worldviews, when belief systems engage each other as holarchies, when taking time to slow down elicits flow, and when changing perspective contributes to understanding complexity, our innate sense of curiosity about life and desire to connect to the Earth allows us to appreciate place as panarchy.



# place as panarchy

*rushes, Delta BC*

I want to step outside of this writing process for a moment, to allow for some metacognitive insight. It behooves me to comment on how place influenced the writing of this paper. I intentionally chose the University of Victoria as a geographic location for my research on place as it is in the city that I have grown up in. Thus, everywhere I look I see layers of complex history and (trans)formation from my own experiences and the historical and spiritual fabric of Victoria's pre- and post-colonial times. One such place, Uplands Park, known in SENĆOTEN, the language of the WSÁNEĆ peoples as part of SNAKE, is a quiet sanctuary of old-growth Garry Oak trees amidst a very wealthy suburb, provided a grounding space while writing this. It represented a sense of autonomy when I was 12-14 years old. It was a place that I visited with friends on my bike to explore the ocean-side, the bizarre bluffy exposed rocks, and camas fields of purple. It was in this park that I found solace but also a sense of wonder that is inexplicable. A glow of sorts that fills me when I see and connect with ecological systems that are so full of diversity and integrity. I returned here

for motivation and found a place in the deep interior of the park to connect with this personal and spiritual history. While I lay there looking at the mosses, lichens, arthropods, and grasses, bursting with greenness and activity, I thought about systems, scale, time, cycles, and interactions. These components are in a constant symphony, sometimes in tune with each other and sometimes not. That our bodies have the biophysical and social architecture to connect with these components is truly a gift worth celebrating. And in returning to these places we are enacting personal and community ceremonies, something that has been going on for humans since the dawn of our species.

When thought domains (trans)form into worldviews, when belief systems engage each other as holarchies, when taking time to slow down elicits flow, and when changing perspective contributes to understanding complexity, our innate sense of curiosity about life and desire to connect to the Earth allows us to appreciate place as panarchy and place as ceremony.



*baobab tree, Kruger National Park South Africa*



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# postamble

# acknowledgments

# biography

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*The photography and illustrations are all original by me excepting:*

*Page 18: Story Musgrave Space Walking*

## **ABOUT THE AUTHOR**

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*Nick currently shares his time between deep outdoor play and high-tech online multimedia projects. This paradoxical interest has helped form his understanding and embodiment of the human-digital-nature conundrum we currently face in our westernized social fabric. The main focus of his research is on the learning that occurs within childhood special places, and their lasting effects on our lives. He currently lives with his wife in a a little yellow energy efficient 1906 house in Victoria, BC where they grow food, collect water, and live a fulfilling and meaningful life.*

*Front cover: arbutus tree, Saanich BC*



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*pile of conch shells, Eleuthera Island The Bahamas*



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*paintbrush, Koeys BC*

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# Cross-scalar dependency

Panarchy theory acknowledges the role of complexity within systems as an entwined multi-variable and highly dependent set of interactions, such that when systems interact across scales they can come into multiple states of equilibria. Panarchy allows for some level of prediction of these states.

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## Related Glossary Terms

Cyclical, Holarchy, Panarchy, Scalar, Temporal

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**Index**

- place as panarchy - preamble
- place as panarchy - preamble
- place as panarchy - preamble
- Chapter 1 - Endogeneity, Complexity, and Indigenist becoming
- Chapter 1 - Endogeneity, Complexity, and Indigenist becoming
- Chapter 1 - Endogeneity, Complexity, and Indigenist becoming
- Chapter 1 - the ecology of panarchy
- Chapter 6 - worldview development
- Chapter 6 - interbeing



# Cyclical

Panarchy theory acknowledges that systems move through four stages of adaptation: growth, conservation, release, and reorganization. This never-ending cycle might be seen revolting or remembering, where systems are in an ongoing creative and conserving process. I explain this adaptive cycle as part of the insights into transformative learning theory in the Cycles, adaptive system, transformation, ecological literacy, and Indigenous worldviews section of this book.

## Related Glossary Terms

Cross-scalar dependency, Holarchy, Panarchy, Scalar, Temporal

## Index

Find Term

- Chapter 1 - panarchy as a theoretical framework
- Chapter 1 - the ecology of panarchy
- Chapter 5 - adaptive systems
- Chapter 5 - adaptive systems
- Chapter 5 - adaptive systems
- Chapter 5 - adaptive systems
- Chapter 5 - adaptive systems
- Chapter 5 - adaptive systems
- Chapter 5 - Indigenous worldviews
- Chapter 5 - Indigenous worldviews

# Holarchy

Holarchies are a nested complexity of systems, but not ‘small to big’ with absolute ‘tops and bottoms’. Rather, each component of the system has a functional relation to each other and to other systems.

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## Related Glossary Terms

Cross-scalar dependency, Cyclical, Panarchy, Scalar, Temporal

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### Index

Find Term

- Chapter 1 - the ecology of panarchy
- Chapter 2 - psychological development
- Chapter 2 - psychological development
- Chapter 2 - psychological development
- Chapter 2 - eco-sociological development
- Chapter 2 - eco-sociological development
- Chapter 2 - eco-sociological development
- Chapter 5 - transformation and ecological literacy
- Chapter 5 - transformation and ecological literacy



# Panarchy

Originally designed to describe the connections among chaos theory, complexity theory and ecological system management, ‘panarchy’ is a term that “explains the evolving nature of complex adaptive systems” (Holling, 2001, p. 392). Panarchy theorists argue that humans need to move beyond interpreting systems using simplistic equilibrium models and acknowledge the more complex and dynamic set of equilibria that describes the states of ecological, societal, and economic systems (Gunderson & Holling, 2002).

## Related Glossary Terms

Cross-scalar dependency, Cyclical, Holarchy, Scalar, Temporal

## Index

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Chapter 1 - panarchy as a theoretical framework

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Chapter 3 - place-based research

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Chapter 5 - transformation and ecological literacy

Chapter 5 - transformation and ecological literacy

Chapter 5 - Indigenous worldviews

Chapter 5 - Indigenous worldviews

Chapter 5 - Indigenous worldviews

Chapter 6 - worldview development

Chapter 7 - place as panarchy

# Scalar

Ecosystems are scale-dependent, being any size as long as they have organisms, physical environment, interactions, and a specified extent as a way to bound and define them (Pickett & Cadenasso, 2002). In the case of panarchy systems, multiple systems of scale are considered concurrently, allowing for an amalgam viewpoint into the occurrences being studied.

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## Related Glossary Terms

Cross-scalar dependency, Cyclical, Holarchy, Panarchy, Temporal

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## Index

Find Term

- Chapter 1 - the ecology of panarchy
- Chapter 3 - sense of place
- Chapter 3 - sense of place
- Chapter 3 - sense of place
- Chapter 3 - sense of place
- Chapter 3 - place-based research
- Chapter 5 - transformation and ecological literacy
- Chapter 6 - worldview development
- Chapter 6 - worldview development



# Temporal

Mapping, observing, or connecting with biophysical spaces is often constrained by the time-availability of the observer, rather than acknowledging the multiple timelines of systems that are interacting in nature. Panarchy theory argues that multiple systems of scale and their interrelated holarchies operate across a diversity of time periods, which requires appropriate forms and lengths of observation.

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## Related Glossary Terms

Cross-scalar dependency, Cyclical, Holarchy, Panarchy, Scalar

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Find Term

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