

# *Towards a Complicated Conversation Among Disability Studies, Complexity Thinking, and Education*

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It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us...from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.

-- Charles Darwin (1859), closing paragraph of *On the Origin of Species*.

In *Freaks of Nature*, Mark Blumberg (2009) illustrates the significance of developmental anomalies in learning about animal locomotion with a story of bovid bipedalism:

In the spring of 1940 in the Dutch city of Utrecht, shortly before Hitler imposed his vision of Aryan perfection on Holland, a horribly malformed goat died...although [it] had been born without forelegs, it had, despite its deformity, developed the ability to walk - upright...(p.15).

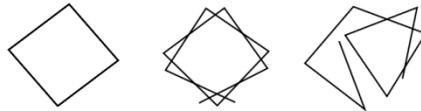
Blumberg (2009) explains how this goat 'learnt' to do what we humans have only recently accomplished as a species through a careful consideration of its (biological) development in its given environment facing a different set of (enabling) constraints to other 'normal' goats. He writes,

as the goat developed without forelegs, its spine curved, its bones reacted, its leg muscles thickened, its tendons adjusted. With each moment in developmental time, anatomy shaped behavior and behavior shaped anatomy...So, like us, this goat did not stumble into bipedalism. *It was built for bipedalism...*Humans and other animals have evolved bodies and nervous systems that are rich in possible solutions to unforeseen problems. They emerge dynamically through an unscripted process... of responses nested within responses... And when, as so often happens, we are surprised by what unfolds, we begin to appreciate the fact that *there is always more developmental potential than we know* (pp. 110-114,).

Blumberg's argument throughout, and the one that I draw upon here, is that when we take developmental potentials seriously, the anomalous no longer seems abnormal and the different is no longer able to be easily constructed as deviant. Rather, they regain their continuity and membership with/in the rest of what biologist E. O. Wilson (2006) might call "The Creation".

The anomalous has followed, and continues to follow, different developmental routes. As has often been reported (eg. Dominus, 2011; Holewa, 2011, Immordino-Yang, 2007) in the history of psychology, psychiatry, medicine, and education, there is much that we might continue to *learn* by taking seriously such embodiments that have gone by so many painful labels – sick, ill, twisted, deformed, abnormal, freakish, etc. Those histories, however, also illustrate that such learning has at times come at the expense of serious violations of the ethical responsibilities of individuals to individuals, as well as to minority communities (eg. Skloot, 2010). Such histories serve as potent reminders of a need to proceed more mindfully in the present.

### Complexity Thinking and a Limit



1

To see a world in a grain of sand,  
And a heaven in a wild flower,  
Hold infinity in the palm of your hand,  
And eternity in an hour.

-- William Blake, *Auguries of Innocence*

If there is one “human universal,” a fact of shareable knowledge that is accessible to everyone across all human experience...it is the fact of embodiment. We all experience that indirectly shareable fact. We all inhabit that shared knowledge in and through the fact that we are bodies. At the same time, we all experience the fact of

embodiment in absolutely singular, unique, unrepeatable, and, significantly, *unshareable* ways (Ellsworth, 2005, p.166).

Complexity science as a coherent branch of inquiry represents a fairly recent development in the history of modern scientific thought. Its philosophy is better described in terms of evolutionary processes, *adequacy* of fit, *adaptability* and *autopoietic* capacity, rather than *optimality* or survival of the fittest, *immutability* and *allopoeitic* activity that characterize deterministic and dualistic world views. Its core metaphors are found in the sensitive-to-seed conditions, self-similar, recursively generated mathematical images of fractals and dynamical (non-linear) systems; topologies of dynamic scale-free networks and co-creating and co-specifying ecological processes of matter, energy and information flow that allow a complex system to maintain a dynamic coherence in dynamic circumstances. At the same time there is no simple definition of a complex system and this is partly because complexity science is “defined more in terms of its objects of study than its modes of investigation” (Davis, 2004, p. 150).

The ‘objects-of-interest’ of complexity theorists are ambiguously bounded, dynamically adaptive, nested, dispersed collectives involving (sufficiently) large numbers of agents whose variations (similarities/redundancies and differences that *might* matter) relations and interactions within a given medium/environment give rise to ambiguously bounded yet perceptually/ physically coherent phenomena whose relations and interactions with other dynamically adaptive, nested dispersed collectives of ambiguously bounded yet coherent phenomena give rise to yet other collectivities. These objects of study, for example, range from cells to ecosystems (biological systems), sandhills to galaxies (physical systems), computer networks/algorithms to neural networks/algorithms (cybernetic systems) and classrooms to

cultures (social systems). In all of these, interactions between the many parts influence the probabilities of the occurrence or nonoccurrence of later events and thus long-term deterministic prediction becomes unreliable if not impossible. Many of these systems exhibit emergent properties, i.e. properties that are perceptible and enacted at the level of the system as a whole which are not seen to *belong* to individual agents but which arise through the collective interactions of the agents. They are an example of what is called self-organization. Complex systems are living/learning systems in the sense that learning/living might be considered to be the facility of a system to adapt and respond to changes in a dynamic environment while maintaining a dynamic coherence.

Complexity thinking's major intellectual contribution, thus far, has been to call attention to 'biological/ecological' considerations and processes across phenomena of educational interest across all scales – from the sub-personal to the personal, through the interpersonal, across the social and cultural, past the species level, to the interspecies space of the biosphere. It has benefited immensely from (and contributed to) embodied perspectives (eg. Wilson, 2002) inside and outside of education. However, as a nexus from which political engagement might emerge in education (and elsewhere), concerns about its potential to adequately address and speak to unjust, unequal, corrupt, and oppressive relationships among social, economic, and political 'forms' have been raised by scholars who dwell more closely within critical, emancipatory, or libratory neighborhoods. This "uncritical approach" to the texture of realities arising from patterns of exercise of social and political power is described by Best and Kellner (1999, cited in Osberg, 2008, p. iii) as complexity's "Achilles heel" (p.155), the location where it is vulnerable.

In education the case is similar, as Osberg (2008) notes in the editorial of a special issue of the *Journal of the Canadian Association of Curriculum Studies (JCACS)* devoted to exploring the potentials/possibilities of a

*Complex Criticality in Educational Research*: “there is still very little work that draws on complexity to address education’s political concerns and in this regard complexity’s potential to be critical in an educational context is largely overlooked” (p. iii). Many ‘critical’ perspectives, however, as Ellsworth (1989) pointed out, are based on rationalist assumptions that leave untheorized and unquestioned, assumptions around goals, implicit power dynamics and issues of who produces and can produce valid knowledge, that often in practice end up perpetuating unjust social relations. In focusing on the ‘health’ or ‘wealth’ of the body politic, critical (and I include postmodern which is part of the critical lineage) perspectives have often ignored important and relevant aspects in the knowledge of the body biologic.

More recently, Erevelles (2005) notes that attention to ‘bodies’, within (some) post-structuralist traditions which situate the body’s script discursively and which rely on performance to reconfigure and rearticulate the inscriptions of meaning that are made on or about the body, is severely limited when confronted with the vulnerable realities of differently-abled, disabled embodiments (*dis-embodiments*). I wonder if the same might not be true for some complexity thinking? How might ‘disability’ trouble and problematize some of the underlying assumptions, or complexify complexity thinking in (and out of) education?

Complexity thinking *as* an attitude/approach towards the study of learning/living systems is positioned as an interdiscourse suited to transphenomenal projects such as education and political change. Davis and Sumara (2006) suggest that

complexity thinking recognizes the limitations of human consciousness, but does not equate such constraints with limitations on human possibilities. On the contrary, complexity thinking within education is oriented toward

the means by which humanity *seems to have transcended* its biological limitations (p. 26, italics added).

They point to the structures of systems which enable or disable different types of interactions between neighbors in the system, which is the source of the system's resiliency and possibilities for adapting and learning. What I am arguing is that we have not yet even begun to plumb our imaginations on what the biological limits of the human might be and disability studies requires that complexivist educators think about embodiments in very different ways and offers a caution about such transcendence.

The desire for transcendence, as McRuer (2006) argues, generates a "romanticism" which, he suggests is a dangerous place upon which to attempt to forge any postidentity politics as it depends upon "a coherence and harmony that exclude[s] difference, [require that] the objects being transcended...be basically inert" (p. 151) and runs a risk of reinscribing colonial ideologies. He argues further for the fundamental need to "incorporate a critical analysis of able-bodied/disabled definition" (McRuer, 2006, p. 152) in any attempt to understand or transform modern Western cultures and makes a complexivist call for attention to what Davis and Sumara (2006) call "vital simultaneities" that "acknowledge the complex and contradictory histories of our movements, drawing on and learning from those histories rather than transcending them" (McRuer, 2006, p.151). He asks that we consider how the work that we do "generates not just solutions but problems[.] What issues are never identified...? Why? Who haunts the margins of the work...? [and] What would an ongoing commitment to those spectral presences entail" (p.153)?

This paper is my 'experimental' (Ellsworth, 2005) attempt to take McRuer's questions and commitments seriously and asks what place do systems or individuals find who, as defined within a complexivist

framework, are decidedly 'unfit' or seem unable to easily adapt and whose *dis*-embodiments point to perhaps radical theories of learning? What if our initial conditions consisted of a deep consideration and valuing of the potential role of disabilities in teaching and learning? What is it that *dis*-embodiments *might* teach?

The histories of how *dis*-embodiments have been dealt with speak to the dangers and correspondences between mechanical and evolutionary views that link normalized ideologies of ability and productivity with economic, social and moral value and which enact eugenic and exclusionary policies in education and elsewhere. I want to argue that disabled 'bodies' ("*dis*-embodiments") also haunt the margins of the work being done in complexity.

Consider, for example, that within a complexivist framing attention is drawn to the 'diversity' of the agents in a system as being the source of potential responses that gives rise to the variability and adaptive potential necessary for self-organization to occur. However, this variety must be balanced by a level of similarity or redundancy that allows meaningful interactions between agents to be able to take place. A basic assumption for complex emergence is the existence of variation that *could matter*. "Valuing-diversity", and "inclusivity" have emerged in classrooms and larger social systems as meta-discursive attractors, celebrations of difference and poly-culturality that values the unique contributions of each individual as potentially enriching to the collective experience and becoming of all. Benjamin (2002) notes however that, in the era of consumer-capitalism, standardized assessment and accountability driven mandates in education and social life, the term, 'diversity', is becoming "increasingly empty" and that the premature shifting of attention away from the unique and specific needs of difference itself to a narrower and more general focus on the spectrum of diversity is often complicit in reinforcing and reinscribing "relations of inequalities" (p. 311).

Benjamin (2002) describes the experiences of Cassandra and Cheryl, two girls with Asperger's Syndrome who were mainstreamed at a UK school, to illustrate how the affordances associated with a "'disabled' discourse of success" (p. 311) while valuing their diversity positively continues to position them as outside of the 'normal' and as other. Additionally, she describes how the different ways that each girl 'does' autism leads to different perceptions and positionings of each. Cassandra evokes positive "maternal feelings" and those of "pity" and "charity" as well as "success" while Cheryl evokes "anger", a sense of "failure" and comes to be seen as "a very, very 'bad' girl" (p. 320). Cheryl's diversity is eventually unable to be accommodated at the school and she is transferred. These stories are indicative of the contradictions and complexities of 'valuing diversity' within normative frameworks, even those that value inclusivity. Some types of difference do not fit easily or at all in some environments.

The quotation by Romantic poet William Blake with which I opened this section is frequently invoked as a descriptive metaphor for complexivist sensibilities and sensitivities that seek to attend to the fractal unfolding and expanding space of possibilities, the potentials of worlds within and without. It is often used in this disembodied, disconnected form to celebrate complexity, the fertile imagination and the generosity of an emergent universe. So satiated, readers perhaps are not encouraged to engage with the rest of *Auguries of Innocence* in which Blake criticizes the injustice and suffering that are socially constructed through violence, oppression, and thoughtlessness. Blake, in couplets such as,

*"A robin redbreast in a cage / Puts all heaven in a rage," and,  
"A skylark wounded in the wing, / A cherubim does cease to sing"*

implicates the pain, suffering, confinement and vulnerability of individual and collective biological bodies with social activities and

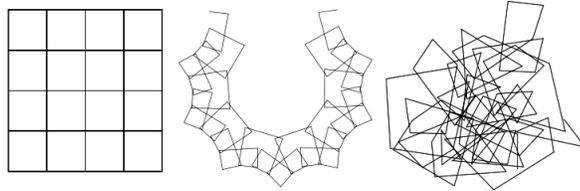
points to the outrage felt/sensed/embodied at the level of the more-than-human world. It is *these* confined and wounded bodies, the spectral presences of the robin and the skylark, that are like the ubiquitous grains of sand to which Blake asks us to attend more carefully and towards which he asks us to orient our consciousness in order that we might recognize the sort of worlds that bodies live within and understand how this comes to be through the complex interplay of the worlds without, in which we are complicit. This *dis*-embodied framing of complexity thinking already anticipates appeals for justice and attention to the vulnerable nature of all biological/embodied beings. By foregrounding our own entanglements in the unfolding of these structures the poem invites us to perform ourselves in particular ways and to respond ethically and mindfully.

The *dis*-embodied also points in another direction, away from the celebration of human transcendence of biological limitations to the recognition that just as limitations on human consciousness are not limitations on human possibilities, variations in human (and other/more-than-human) embodiments *ought* not to limit human possibilities to the degree that they currently do. In addition any embodied learning system that remains open remains open to wounding, impairment, and disability. The concept of '*dis*-embodiment' thus works to resituate disability within biology and ecology, but does so with a recognition that the nested networks within which different biological embodiments interact are what frequently render such differences disabling.

### Disability Studies Meet Complexity Thinking

A pearl is a temple built by pain  
Around a grain of sand.

What longing built our bodies  
and around what grains?  
-- Kahlil Gibran, *Sand and Foam*



I believe that disability studies, an emergent interdisciplinary field around which has coalesced a responsibility to critically interrogate the representations, performance, perceptions, and lived experiences of normalizing discourses associated with modernist assumptions regarding ability, offers a potential for creating and sustaining “a productive tension between complexity’s framework(s) for *explaining the physicality of being* [embodiment] and critical theory’s framework(s) for *interrogating meaning*” (Osberg, 2008, p.xiii, italics in original).

While I acknowledge my responsibility to the readers of this journal to attempt to situate the field of ‘disability studies’, I find it difficult, if not impossible, to fairly, accurately, and comprehensively represent the complexity of this field within a paper of this length AND to make the argument(s) that I am seeking to make. However, a certain degree of such exposition is necessary and, in the service of providing sufficient grounding in order to sustain the argument, I give a brief overview of disability studies.

As an academic discipline, disability studies identifies and names as oppressive and discriminatory, social systems, practices and policies that seek to enforce exclusion, isolation or eugenic elimination and enact injustices upon the lives of those who are rendered disabled by reason of their perceived inability to successfully negotiate, participate or

contribute in the same way as an imagined normative able-bodied individual. Through their scholarship, activism and performance, practitioners have demonstrated the social dimension of the construction of disability and have advocated for policies and practices aimed towards more inclusive societies. It has been especially critical of the tropes in which disability has been rendered, 'the exoticized freak, sideshow, or monster', 'Itiny-Tim and other lovable invalids' as well as 'the triumphalist narrative' of an individual who overcomes his impediment to rise to great accomplishment.

Disability, according to scholars in the field, is something one *does*, not something one *is*, i.e. it is situated, enacted, and performative. These scholars typically reject individual, moral and medical models of disability in favor of social models of disability. Individual models locate the source of disability *in* individuals as a deficit. Moral models associate disability with sin, punishment, and shame, leading to exclusion, isolation, confinement, fear, and internalized self-deprecation. Medical models regard disability as a pathology which must be 'cured' through medical intervention. Society's role is not to make place for this difference, but to find ways to fix, fit, and orient this deviance and otherness back towards and within a perceived normative standard of what it means to be human. Rehabilitative models are closely aligned with the philosophy of medical models in which disability is envisioned as an individual deficit which, rather than being cured, must be 'fixed' through rehabilitative intervention aimed at compensation, coping, and reintegration into society on society's terms.

Disability Rights Movements, while recognizing the role and importance of medicine and rehabilitation, critiques these as the sole frameworks through which policies regarding the disabled are formulated. Social models of disability that have emerged from this community regard disability as a normal part of life and inevitable

consequence of living. These models locate the phenomenon and experience of disability as a function of an inability to perform ‘the same as everyone else’ in environments and systems in which the difference of *dis-embodied* designs were never considered or could not be accommodated.

Snyder & Mitchell (2001) argue that “disability studies has strategically neglected the question of the experience of disabled embodiment *in order to* dissociate disability from its moorings in medical cultures and institutions” (p. 368, italics added). As some of the more recent scholarship (eg. Siebers, 2008) demonstrates, having done so it is necessary to return to the *reality* of these disabled embodiments.

Disability studies, which begins by taking the ecologies of *dis-embodiments* (disabled embodiments) seriously, (i.e. the way in which individuals’ differences are rendered as disabling within formal and informal networks of normalizing ideologies and associated environments,) however, orients consciousness to an awareness of the multiplicity of painful and challenging realities within individual and collective, visible and invisible, disabled embodiments and points to our complicity in unjust and ableist ideologies that signify the discursive and performative limits of critical theories and current complexity thinking and (perhaps) holds within it grains of generative possibility for enacting more just forms of social organization. Disability disrupts complexities’ complacencies.

*Dis-embodiments*, I believe, prompt the complexivist oriented practitioner towards a mindfulness of perhaps previously taken-for-granted redundancies in the system and among agents, i.e. an awareness of the way(s) in which we all experience, have experienced and will experience *dis-embodiment* if not disability in some form at some time, that needs to be factored into any and all considerations involving forms of social interaction. This awareness of vulnerability as the “human universal”, is the “shareable knowledge” albeit “absolutely singular,

unique, unrepeatable, and...unshareable" (p.166) experience of embodiment as a learning self that Ellsworth (2005) addresses and attempts to draw attention to in education and which philosopher Dorothea Olkowski (2007) calls our "vulnerable sensibilities" (p.27).

*Dis*-embodiment then might be seen as moving away from the margins of a normalizing discourse which positions it as extreme deviance – anomalies represented by the tails of a normal distribution – to a phenomenon that occurs at much higher frequency than is often acknowledged. Some forms of the latter, though occurring at much lower frequency in the population, have high impact on individual lives and the lives of social collectives<sup>2</sup> that might be valuable sources of learning. *Dis*-embodiments orient and elaborate a complex system towards learning more about itself, its relations among its different selves and its responsibilities to itself and others, by affording the *common* vulnerable reality of its members a high priority in its discursive, performative and recursive elaborations.

As an academic discipline, disability studies has emerged at the points of contact and overlap among scholars, performers and activists across the arts, humanities, sciences and social sciences where it identifies and names those oppressive social systems that seek to enforce exclusion, isolation or elimination and enact injustices upon the lives of those who are rendered disabled by reason of their perceived inability to successfully participate or contribute in the same way as an imagined normative able-bodied individuals.

Siebers (2008) however, in a break from the earlier work in the field which sought to disrupt the idea of 'disability as identity', controversially claims disability as a minority identity, one which is not biological but an "elastic social category" (p. 4). This minority identity for Siebers is less stable than categories of gender, race, sexuality, nation and class, and is one which "all other identities will eventually come into

contact with” (p. 5). This category marks “the last frontier of unquestioned inferiority” (p. 6) and functions

according to a symbolic mode different from other representation of minority difference. It is as if disability operates symbolically as an *othering other*. It represents a diacritical marker of difference that secures inferior, marginal, or minority status, while not having its presence as a marker acknowledged in the process. Rather the minority identities that disability accents are thought *pathological in their essence* (p. 6, italics added).

However, by claiming disability as an identity, a reality that is more than mere social construction, he seeks to expose the workings of a pathologizing ideology of ability, one from which fear of human vulnerability, social discrimination, violence, injustice and intolerance are derived. He proposes that, “[d]isability creates theories of embodiment more complex than the ideology of ability allows, and these many embodiments are each crucial to the understanding of humanity and its variations...” (p. 8). By situating disability as a “social location complexly embodied” (p. 14), human pain and suffering – irrationally overlooked due to fear – become available as “resources for the epistemological insights of minority identity” (p. 20) and provide positions from which to offer social critique and construct different, more inclusive, bodies politic.

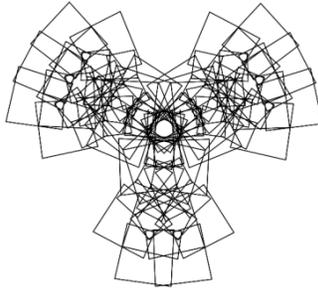
Disability, the “othering other” across all normalizing and ableist ideologies, when welcomed, might reveal its potential in teaching and learning of “otherness itself” or as Siebers (2008) claims, “[d]isability is the other other that helps makes otherness imaginable” (p.48).

Achilles’ Heel

...the size of the avalanche is unrelated to the grain of sand that triggers it. The same tiny grain of sand may unleash a tiny avalanche or the largest avalanche of the century. Big and little events can be triggered by the same kind of tiny cause. Poised systems need no massive mover to move massively (Kaufman, 1995, p.236).

Where is design, there is waste...When it comes to designing the forms of human togetherness, the waste is human beings. Some human beings who do not fit into the designed form nor can be fitted into it...Kafka's monsters and mutants...oddities, miscreants, hybrids who call the bluff of ostensibly inclusive/exclusive categories. Blots on the otherwise elegant or serene landscape. Flawed beings from whose absence or obliteration the designed form could only gain, becoming more uniform, more harmonious, more secure and altogether more at peace with itself (Bauman, 2004, p.30).

The world is messy, and nature is unwieldy, unpredictable and vastly more imaginative than we can ever truly capture...Left to its own devices, nature always takes exception to the rule, undermines the archetype, and reminds us that our ideas about what is natural and what we should do to correct nature's "imperfections" are as sound as a sandcastle battered by a rising tide. And nothing batters those ideas with more gusto, more shock and awe, than the creature in nature that is malformed or otherwise anomalous... (Blumberg, 2009, pp. 4-5).



Earlier in this paper I claimed that concerns about the potentials of complexity thinking to adequately speak to and transform unjust, unequal, corrupt, and oppressive relationships among social, economic, and political *'forms'*, raised by some critically-minded scholars, is described as complexity's "Achilles heel" (Best & Keller, 1999, p.155, cited in Osberg, 2008, p. iii). A disability studies perspective, as I hope I have demonstrated, would simultaneously celebrate and critique, interrogating and interrupting, the metaphor of Achilles' heel and other metaphors of (dis)ability as well as representations of the complex lived realities of various *dis*-embodiments opening a space for transforming our understandings of complex social phenomena and allowing for a productive recoding of that unshareable knowledge and experiences in/of (our) bodies.

Consider that Achilles' heel, the one place where he is (physically) vulnerable, represents the physical locus of his mortality. This unique difference acts simultaneously to isolate him from his fellowmen, for his is a singular vulnerability, yet, precisely because he remains mortal he is also able to stand within the plurality of them and for what it means to be human – viz. to be vulnerable and to know belonging to a community. It is not however his youthful, masculine Greek able-bodiedness that makes him a 'fair' representation of the diversity of human realities. Rather it is his unique frailty, the singularly experienced *dis*-embodiment of his vulnerable heel.

The phenomenon to which we typically refer as 'disability' resists any easy and stable categorization. It pushes discussions beyond *simple* identity politics (politics based on one's identity) towards the more complex position of recognizing, constructing and performing dynamic identities based on one's politics (Mignolo, 2007). It therefore compels a recognition of the individual in a particular society as the locus of oppression and injustice and simultaneously then the locus of responsibility as a being-*for-the-Other* or ethics in a Levinasian sense, prior to any attempt at a normative identifying genus such as race, gender, etc. and its associated semiotic markers. Two individuals sharing the same category of disability, because of different positionings *experience* and respond to their disability differently. This makes any policy initiatives and prescriptions based on a normative standard and even 'basic' characteristics extremely difficult if not impossible. There are no – nor can there be – normative or unitary solutions. This is the challenge posed by disability studies.

What might it mean to respond ethically to this challenge? By way of opening up and inviting further response and reflection on this question consider Emerson's (1883) argument that, "[o]ur modes of education aim to expedite, to save labor; to do for masses what cannot be done for masses, what must be done reverently, one by one...". Envisioning a disability studies informed complexity thinking (and vice-versa), one is constantly reminded that if we dare to take the experience of dis-embodiments seriously, then as teachers and educators, we commit ourselves to finding out what it is that must be done to be present to the dis-embodied presence in the one who presents him/her self to us. It commits us to learning from and in dialogue with each other.

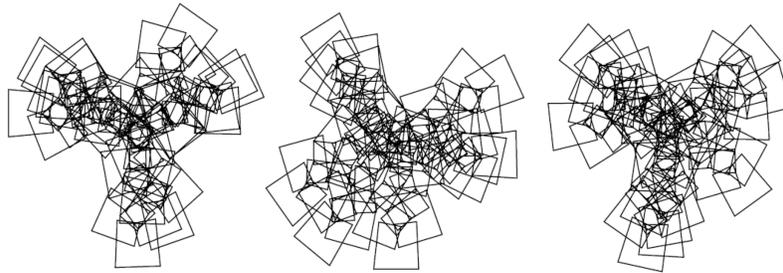
A central idea in complexity thinking is that the size or impact of an event is not necessarily proportionate to the size, frequency or energy expenditure of the perceptible or identifiable 'causes' as alluded to in Kaufman's description of the avalanche alluded to in the epigraph to this

section. Thus seemingly minor or unrelated (though perhaps correlated) events can trigger massive changes and revolutionary reorganization at the level of the entire system. However, the iatrogenic intransigence of injustice, inequality and iniquity despite Herculean (and oft expensive) efforts at change suggest that ideological hegemonies like other living/learning systems work to protect themselves from death and are capable of healing from injury. Davis and Sumara (2008) suggest that complex and critical frameworks orient the individual to the continuous recognition of his complicities in and responsibilities for the well-being of the complex systems(s) he shares in creating and that he creates in sharing with others and so enlarges the space of possibility for imagining and enacting different forms of ethical and political relationships. However, consciousness of complicities, whether critical/complex or not, have done little to unsettle individual and collective complacencies or oppressive bureaucracies.

Disability too is situated yet transphenomenal, and the intractable problems it poses for individuals, society and their co-constituted institutions like education requires a disposition like that of complexity thinking that brings into dialogue disparate discourses in attempting to understand what is similar among different and unique situations. Just as each complex system studied is unique yet provides lessons about other such systems, so too each experience of disability is unique, though there are lessons to be learned from these many *dis*-embodiments and many more questions than answers are raised. However, we would also do well to heed and extend Battro's (2010) caution to neurocognitive scientists not to "privilege the research of the disabled brain and learning disabilities over other common situations in education that also need urgent consideration" (p.32) to other *dis*-embodiments. We must be ever careful, vigilant, and more mindful, lest we unwittingly reproduce and reinstitute those dignity denying elements of the 'freak' show and acts of charity based on pity. Disability studies does not offer peace, security, or

harmony for complexity thinkers. Indeed a serious consideration of this scholarship ought to make us less at peace with the designs we are a part of as educators and the 'waste' (human and otherwise) that we produce in the name of our disciplines, our research and our wider practices.

*dis-embodied futures yet in the making*



In the final section of *Gardening in the Tropics*, "African Gods in the New World", Olive Senior in an ode, *Osanyin: God of Herbalism*, ends the poem with a question worth pondering for complexivist educators concerned with issues of ethics and justice for seeding a New World. She declares,

Who says  
one hand cannot balance  
one leg cannot dance  
one eye cannot witness  
one ear cannot divine  
the permutation of the leaves?

It is worth noting that Osanyin is typically represented as standing on one leg and having one 'normal' looking ear and a smaller, 'withered', ear. However, it is the latter, the withered ear, that enables the deity to hear what he chooses to focus on. Because his hearing is so intense and because he rarely speaks, he is considered to be full of knowledge.

Osanyin is not a disabled god. He is perhaps another incarnation or embodiment of the teacher as 'elder' consciousness of the collective whose mindful practice emerges from silence, observation, reflection and hermeneutic listening when invited, invoked and welcomed.

The questions that *dis*-embodiments provoke remain always open providing a perpetual source of epistemological and ontological insight into learning what *more* it might mean *to be* human. The embodied presence of disability in a social network works to keep the edges of our universal woundedness apart, open, engaged in conversation and action about individual needs, accommodation and welcoming, which serve to bridge the chasm across which all can be seen as precariously whole, singular but not insular. Disability points to the rough, vulnerable, necessarily unruly texture of *dis*-embodied realities that generously offer complexity and other welcoming approaches grains of generative possibilities for individual and collective transformation and action, grains in which the infinite, eternal worlds of a wounded humanity can be seen, around which our Desires – a longing to belong – might build dwelling places for ourselves and others and whose avalanches, large and small, might endlessly ennoble all our different *dis*-embodiments. But this is a conversation that requires more of us.

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## Notes

<sup>1</sup> The figures represent three incarnations of the first iteration of an L-system governed by the same axiom and replacement 'rule'. Between the leftmost and middle figure the 'starting' angle deviates a few degrees only from a 'right' angle resulting in a disruption of the 'neatness' and 'regularity' of the polygon but preserving bilateral symmetry. The rightmost figure results from adding a small randomized increment to the angle which disrupts even this symmetry but allows the relation with the other figures to be (conceptually) maintained. I use these and similar images as visual metaphors for the ideas discussed in this paper, most notably the ways in which that which initially might appear 'different' is part of a continuity of relations. In addition, the images act as ethical reminders in terms of visual and textual practices of representing difference and disability. For example, in this footnote I have been careful NOT to use the language of complexity in terms of symmetry 'breaking', mindful of the traditions in which disability is constructed as a 'brokenness' in need of 'fixing' in conradistinction to the normality of wholeness. In the tradition of *currere* the figures act as markers that trace my growth and thinking as a complexivist-minded educator (see Khan (2010) for an earlier usage).

<sup>2</sup> This is perhaps better represented by a power law distribution.

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