

OPEN-ENDED EXPERIENCE AND TRANSFORMATION**DANIEL HANSSON**

*Birds make great sky-circles
of their freedom.
How do they learn it?
They fall, and falling,
They're given wings. (Rumi)*



The goal of Cartesian science is to know everything about all parts of all there is; not to acquire knowledge sufficient for proper understanding. This monolithic objective of complete description, idealized and codified by René Descartes, has spawned a widespread “Cartesian anxiety” (Bernstein, 1983, p. 16ff) – a paralysis of analysis stemming from the belief that we need to engage in an infinite regress of increasingly detailed analysis to establish “perfectly objective scientific certainty”. This belief is at the core of the onto-epistemic reductionism promoted by Descartes and Bacon (Hansson 2012). Instead of nurturing deep emotional connection by the awe-struck reverence that can come from facing the immensity of Nature in all its interrelational majesty, this Cartesian Curse keeps haunting us with a lingering sense of paralyzing uncertainty – just made worse the more we dare to face the world as it is. Under this spell, we feel disempowered to the same extent that we embrace the scope of the whole picture!

Therefore, under the weight of the Cartesian Curse, our students are forced to violently reject the world as a unified whole; all to dissect it down in scale and degree of complexity to seemingly manageable portions. For this reason, education true to the Cartesian mind must limit the scope of experience, cut off emotions and intuitive awareness, limit creativity, and reduce problems to bits and pieces removed from their functional context.

Instead of being allowed to be awe-struck in front of the wonder of reality, our students are therefore encouraged to seek the false – indeed, delusional – comforts of Baconian-Cartesian reductionism; all to reduce the discomfort of their cognitive dissonance. Thereby, as I see it, our students are deprived of the opportunity of true, inner transformation – a process that requires a personal experience of meaningful empowerment by interconnection with the subject matter under consideration.

Reverence and responsible action are inextricably bonded. If a student is awe-struck by the profoundly enriching experience of perspective-transformative learning, then that life-changing rite of passage can make all the difference in a world so desperately in need of wise stewardship.

The open-ended experience of being awe-struck before the majestic immensity of the world opens the door to a deep re-cognition of the self, “re-positioned” and “re-connected” within the wide-open field of reality, the actual situation that is also the open field of creative possibilities. Indeed, the place where we observe our problems within their actual context; the place where we also have to go to find their solutions!

In my work as an educator in sustainable-systems design and community transformation, I have found that when learners are brought into a state of heightened awareness “in awe of the mystery of life” and of the complexity of the world, then their education becomes transformative in the direction of sustainability.

Crisis! Confusion! Where are the rules?

As many teachers have observed, especially in environmental- and sustainability-related fields, learners in postsecondary education often end up in despair, denial, and self-absorption when exposed to the totally open-ended real-world complexity of socio-ecological problems. These conditioned Cartesian responses to seek shelter from complexity, “messes” (Ackoff 1974) and “wicked problems” (Rittel and Webber 1984) are of course not sufficient to inspire passionate action. Our students must also be allowed to engage on a personal level and to actively participate in action for change (Kaza).

In order for learners to get in contact with their passionate desire to engage with complex problem situations, I have found that they benefit greatly from first being put in a radically “destabilizing” situation where they are totally immersed in the overwhelming immensity of real-world complexity. This destabilization is a facilitated “crisis”; a disorienting dilemma (Mezirow 1995, p. 50) where “the old rules” of Cartesian education don’t apply

anymore. In such a “crisis” situation, if well facilitated by the educator, learners get the transformative opportunity to see the world with new eyes.

In my transdisciplinary senior/graduate-level course “Designing Sustainable Systems” at a medium-size university in the U.S. Pacific Northwest, I recently gave my students a first take-home assignment where they were asked to model “the catastrophic system failure” that resulted in the March 2011 Fukushima nuclear disaster in Japan. This proved to be a challenge of quite some magnitude. At this very early stage of the course, the students hadn’t been given any systems-related theory or methodology whatsoever, and they were asked to model the “system” within which the disaster occurred in any way they found appropriate, using symbols, drawings, pictures, and text. I also made sure not to give the students any preconditioning by “giving away” how their efforts would be evaluated. Instead, I made clear that there were NO rules whatsoever.

Understandably, my students’ approach to system definitions, elements, and boundaries varied wildly (some wrote text, others made elaborate drawings, diagrams, paintings, and collages). An obvious common theme was the lacking conceptualization of systemic interconnections and dynamism. Some students also (without success) tried to figure out what their teacher was considering to be the “right” approach.

Another interesting observation I made was that some modeling attempts were radically innovative; approaches that would never have been tested if the students had been given clues toward a “right” (expected) answer from the onset.

An example of these radically creative approaches was a model of the “system” built like a structure of cells interconnected by semi-permeable membranes and a circulatory system; a physiologically “organismic” approach so very different from any “cybernetic” analogy borrowed from the sterile labs of electrical engineering!

Some students decided that “the system” that had failed was the technology and infrastructure of the Daiichi nuclear plant itself; especially the protective wall that had not been designed to handle the tsunami. Others concluded that it was the “capitalist system” in itself that was to be blamed. A few saw that it was all a matter of choice – and model utility; in other words: a perspective-dependent attempt to structure the functional context of the situation meaningfully in order to understand it. In completing this assignment, a few of the students began discussing the functional “Russian-doll” type arrangement of systems nested within larger systems.

As a consequence of the assignment, several students went into full crisis mode, anxiously inquiring about their “performance”, feeling that they had no capacity to complete this totally paralyzing assignment “correctly” and get a “good grade”. It was a week when I saw many pale faces in the classroom.

At play in the open field of reality

Despite their initial stress of “not knowing the right answer” to satisfy the “requirements”, my students soon realized that many different paths could have been taken in responding to their totally open-ended assignment. A common exclamation was, “this is just like the real world!” To many, this was a surprising and remarkably empowering realization. Thereby, the field of creative possibilities in the course was opened up as the unrestricted scope of the world as it is. And the focus was shifted from “learning” to exploration (which, in turn, tends to make learning irresistible). Here it must also be mentioned that the assignment was graded only for completion and honest effort.

This first assignment started a profound dialogue and inquiry that engaged my students on a highly personal level throughout the rest of the semester and their comprehensive teamwork project designing a strategy for sustainability in a complex setting. Instead of building the course in a traditional, gradual fashion, progressing from teaching increasingly “difficult” concepts to requesting some practical application of these concepts, this course dispensed with this tiptoeing around complexity altogether, taking it for granted as the actual situation, making it the very starting point and the realm of creative opportunity. Uncharted terrain indeed invites exploration! Through this play in the open field of creative possibilities the students became the visionaries, creators and innovators – instead of being the Cartesian “non-experts” that have all reasons to fear engaging with reality as it is; learning from an “expert” who knows!

Through the comparison of the students’ various strategies, the course introduced the “soft” (constructivist) systems approach (Checkland 1993) – first expressed in the Western world by Spinoza (Hansson 2012) – through experiential learning before it was being conceptualized in lectures or locked in behind the consciousness-bounding walls of any technical terminology.

The final student evaluations of the course clearly showed that this facilitated “crisis” in their education had given rise to a sense of wonderment and gratitude in the vast majority of students in the class; an emotional engagement that had grown throughout the semester into a deeply experienced sense of new empowerment,

combined with a strong desire to actually work for constructive change in highly complex problem situations. The initial trembling had given way to fearless fascination beyond the terrors of the Cartesian Curse. Nevertheless, to be effective, the process to inspire confidence following a facilitated crisis also requires consistent, unambiguous validation and support grounded in empathy from the instructor.

Spinoza's philosophy of systems and wholeness

After some necessary "unpacking", the philosophy of Spinoza – the foremost (but probably also least understood) critic of Cartesianism – is also highly applicable to systemically integrated sustainability pedagogy (Hansson 2012). Just like Leonardo da Vinci's non-reductionist science (Capra 2010), Spinoza's understanding of the seamless unification of Man and Nature holds an untapped potential for truly and profoundly transformative and transdisciplinary pedagogy.

After the sudden shock and awe facing a cascading complex-system failure, my students were immediately able to recognize the utility of Spinoza's explanation of the organization of the world as a nested structure of 'parts' and 'wholes' on an infinite scale of complex organization contained within the totality of Nature as a whole – the actual situation of the world as it is. A relational universe where correct acts of cognition must follow "the order and connection of things" in order to avoid the "confused and mutilated" knowledge that is derived by reduction (Spinoza 1677, Ethics, Part II, Proposition 7, and Scholium to Proposition 29). Like all organisms, humans are part of this system and not superior to Nature. Instead, according to Spinoza, all organisms are ecologically dependent on their total, functional environment (Spinoza, 1665, Letter 32; Ethics, Part IV, Propositions 2-4).

To be able to understand Nature as an integrated system, Spinoza claims that we need a perspective that accounts for our own less-than-perfect ability to comprehend complexity. Our limited cognitive faculties simply make it impossible for us to embrace anything beyond a partial scope of reality in its totality. This recognition is the starting point for Spinoza's non-reductionist theory of knowledge (Hansson 2012). I have found that it can also be used to help inspire a sense of transformatively re-orienting awe in learners facing the acute need to make sense of their place and role inside this totality.

Predating ecology, General Systems Theory, and complexity science by almost three hundred years, Spinoza developed a practically useful non-reductionist philosophy of systems and wholeness that offers a realistic perspective on the functional relation between parts and wholes. As I have discussed elsewhere (Hansson 2012), this is a view that can function as a powerful conceptual meta-disciplinary language and pedagogic tool applicable to both the descriptive and prescriptive (moral) dimensions of a sound sustainability education.

Outside the Cartesian nest

In concluding, I return to the poem of Rumi at the beginning of this paper: "How do they learn it? / They fall, and falling, / They're given wings." Our students can unfold their wings as soon as we give them the gentle push they need over the illusory edge of Cartesian security; the fantasy world supported by mainstream academia where order is maintained by reductionistic violence, simplifying real-world problems into well-defined artificial units, together with their equally simplistic and well-defined potential "solutions". Outside this nest, built from conventionally accepted knowledge accumulated for centuries according to the Cartesian rulebook, our students can grow up to become the revolutionaries, inventors, artists and visionaries that the world so desperately needs.

How can wings unfold in the false safety of the old nesting ground? As educators, we deceive our students when we keep telling them they have wings, and then condition them into a life in imprisonment; engendering in them the fears that have kept so many of us paralyzed – willingly or unwillingly subservient to unsustainable systems of rigidity, injustice, ignorance, and oppression.

True and lasting transformation is a state transition; the butterfly emerging from the confines of its former self. Transformation is not growth or accumulation. Often these are necessary conditions, laying the foundation for the leap, but the transformation itself is a radical change of cognition and capacity where a previously innate potential suddenly unfolds. This, as I see it, is at the core of the Socratic vision of education where the teacher self-identifies as midwife (facilitator rather than expert), helping deliver the learner's own potential.

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