

## Further Thoughts on "Cutting Nature's Leading Strings": A Conversation

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*David Jardine:* This conversation is a follow-up, both to the paper published in this issue of the *Canadian Journal of Environmental Education* and to the *American Educational Research Association* (AERA) session of the same name from April 2005. I want to extend many thanks to all concerned. Having the time and forum for such talks is rare and I'm so thankful to Bob Jickling for the conference invitation and the chance to continue things here. I also want to thank Bruce Johnson and Leesa Fawcett, both for the careful responses they provided at AERA, and for the great questions that follow (italicized) below. Thinking about them has certainly helped lift my head out of the great grey of winter.

*Bruce Johnson:* I preface with three qualifiers that I hope will help readers interpret my questions. First, I am much more concerned with and grounded in practice than I am in philosophy. Second, from a very practical standpoint, namely the desire for humans to be able to continue to live on our planet, I believe that there are rights and wrongs in how we relate to the natural world. Third, in my view, the purpose of education is change.

*If, in the Kantian view, the way we know the world is determined (constrained) by our a priori mental structures, then is our job in education to work on the a priori structures? If the most common a priori structures (or worldviews or perceptions) in western societies are anthropocentric and lead to destructive relationships with the natural world, is what we are doing, or should be doing, really helping people to reconstruct more ecocentric a priori systems within themselves?*

*David Jardine:* I'm not sure if the working out of any a priori system doesn't simply further entrench the narcissism and egocentricity that constructivism feeds upon. Let me worry this for a bit.

Constructivism begins, I think, with the premise of the Cartesian separation of subjectivity from the world. Pursuing a more "ecocentric" set of a priori categories in terms of which I construct the world still leaves us with a world constructed and produced by a category wielding subjectivity. It leaves us with the world produced by humanity (which is why constructivism can be understood to be very urban epistemology).

I think that it is vital to simply step away from this whole line of thought. How do we do this? Well, wouldn't it be nice if there was an easy answer to that! Let me try a beginning in the classroom, because like you, Bruce, I am

interested in how the sort of imaginal shift we are seeking works itself out in the classroom, in practical, lived terms.

When we take an example like Pythagorean Theorem, say, as a particular curriculum topic entrusted to teachers and students in schools, hermeneutics suggests that we do not begin with the belief that this phenomenon is an object over which I wish to have constructive command. Rather, we (students and teachers) can begin by thinking of Pythagorean Theorem as part of the contested, livid human inheritance to which we belong. Rather than it being understood as an object that belongs to me because it is produced by my epistemological productivity or constructivity, it can be just as easily understood as an ancestry, a bloodline, an ancient tale that has been handed to us by one of our kin and into whose inheritance we have been born(e).

Here is another set of, I think, deeply ecological images that come from the hermeneutic tradition. Pythagorean Theorem (to continue this example) can be understood as a topic—that is, a topography, a place, a territory full of life and ways and memories and tales told and ventures, both ancient and still to be had. By beginning like this, we begin with a view of human subjectivity as belonging and living in a multifarious, contested, ancient world. Understanding begins, therefore, not with constructs which are then applied to things, but with belonging, obligation, inheritance, contestation, concern, interdependence, a sense of place, the possibility of love and heartbreak and discovery. Certainly, in entering such a place, I bring with me my presumptions, previous constructs, and experiences, but I realize that I must be quite wary of such matters. This place reads the nature and limits of my experiences and constructs back to me in ways that I cannot do by myself and from within the limits of those constructs. Producing things only in my own image doesn't bode well for education, for becoming experienced in the ways of the places we inhabit.

Starting off this way subverts the Cartesian/constructivist logic and, you know, it just might start to hint at a sort of "ecocentric" a priori. With you, Bruce, I'll declare that I, too, believe that there are rights and wrongs in how we live and in what we ask of our kids. I'll declare this: any topic of the human inheritance that is entrusted to teachers and children in schools is full of abundant relations, full of ancient tales and wisdoms, full of contestation and life and difficulty, and to the extent that we break apart and fragment that living world, and dole it out as lifeless objects over which we are to have nothing but constructivist dominance and command, to that extent, we are pursuing both a pedagogical and ecological disaster. How's that for a priori? The problem remains, however, that the very idea of an a priori has become, post-Kant, something wielded by a subjectivity. I'm concerned, then, about wielding this "ecocentric a priori" as a weapon of dominance or humiliation. Every time in human history that someone has trumpeted having in hand the universal and necessary truth (i.e., the a priori), it has turned out to be very

bad news for anyone or any thing that will not submit to that truth. In the abstract (in the a priori if you will) ecology can sound as imperialist and as shrill as any other clarion call. I don't trust myself at this juncture and I become cautious and worried all over again.

*Bruce Johnson: If, in the Piagetian view, the a priori structures are the logical result of a maturation process (development or "becoming better and better adapted to the inevitable"), then we end up with an anthropocentric worldview because it is inevitable. But is it really inevitable or simply most likely because of the ways in which our societies are structured?*

*David Jardine: I believe it is the latter and that you've hit upon something really important in these questions. In a very early work Piaget explicit says that he is not interested in the child's developmental construction of reality, but in the child's developmental construction of reality as reality is understood and constructed by the objective sciences. Piaget is only interested in how children come to "master science" and he believed quite adamantly that the mastery of science is the a priori mastery of the world, since logic and mathematics (the undergirding of science) construct the world into an object for science.*

When Piaget's talks about this as a sort of psycho-biological inevitability, I believe that this is nothing more (and nothing less, indeed) than a voicing of a deeply seated, Eurocentric belief in the inevitable progress and ever-widening dominance of objective science (a dominance we are now surrounded by, especially given its technological consorts). This is an old Enlightenment ideal of human reason as the crown jewel of creation itself and an even older Greek belief in mathematics as the crowning jewel of human endeavour—and therefore a tale about how we are bound to fall under its (presumed) inevitability if we want to be understood as reasonable and civilized. Piaget's work is therefore part of the very Enlightenment project that the hermeneutic tradition (and some traditions that more directly inform our understanding of ecological awareness) wish to critique.

The sort of fragmentation and logics of domination that are essential to the objective sciences and their logico-mathematical research methodologies hold a powerful sway, and these methodologies have transformed education profoundly. The topics entrusted to teachers and students in schools have been transformed from living inheritances, living places, into fragmented and inert objects that can be easily managed and assess and whose dispensation in schools can be measured and monitored. But there is nothing either natural nor inevitable about this. I've seen and written about classrooms that proceed quite differently, with an eye to a much more ecological understanding, even, say, of Pythagorean Theorem.

*Bruce Johnson: We are left with a rather sad moral, "That I construct the world in light of my own experiences names my terrible loneliness. It names how my*

*own life is not adequate to my living in this world." Rather, that I construct the world in light of my own experiences fills me with hope. If education is about providing experiences, then maybe those experiences can help people construct a world in which we live with rather than on top of the earth's systems of life.*

*David Jardine: Perhaps I should have said that my constructing the world in light of my own experiences names my finitude and limits and humiliation. It names what I must transcend if I am to come to know anything other than my own image reflected in the constructs I wield. This is where I find that the hope lies, that in the classroom, students and teachers can learn to come out and play in fields of work, bodies of work, places that are abundant and that will take good care of them. My hope is that I won't live my life stuck with myself, but can, quite literally, live out my life. I always think of Wendell Berry (1989) at such a juncture:*

Where is our comfort but in the free, uninvolved and finally mysterious beauty and grace of this world that we did not make, that has no price, that is not our work? Where is our sanity but here? Where is our pleasure but in working and resting kindly in the presence of this world? (p. 21)

*Leesa Fawcett: I found this paper generative in many ways. Here are snippets of my thoughts to help give shape to the questions that follow. Katherine Hayles (1996) in "Simulated Nature and Natural Simulations" differentiates between strong and weak constructivism and the role of the body. The most difficult and she believes the most productive place to locate, is neither contracted inside the body nor unproblematically projected outside it, but at "the cusp between the beholder and the world" (p. 412). I'm also thinking here about the idea that we are "sets of relationships or processes in time" (Evernden, 1985, p. 40). If we are in fields of care then Carol Gilligan's narrative approach to moral development makes much more sense than Kohlberg's stage theory, which followed from Kant and Piaget's work. There is also the revolutionary work of the late Paul Shepard who took a completely opposite approach to Kant and argued that intimate knowledge and bonding with place and nature was a critical part of human maturity, a stage that is often missed these days.*

*How would you envision a "maturity-developmental plan"/dream for children that gives them the space (and diverse places) to resist the notion that "mature human understanding is free from nature's leading strings"?*

*What is the role of the body for you in environmental education, given your critique of reason and constructivism?*

*David Jardine: The cases I've seen where this resistance is cultivated are ones where the curriculum topics entrusted to schools are taken up with students as substantive, bodily, image-filled, ancient wisdoms and ways. That sounds a little high-handed, but I really think that many schools have lost a*

good, fertile and intellectually sound and vibrant understanding of the topics sketched so meagrely in most curriculum guides. Most topics have been stripped down to easily manageable and assessable and monitorable surface features. All the old wisdoms and secret cults and flooded Niles that surround, say, Pythagorean Theorem, have been erased. In school (but not in the living world of mathematics) Pythagorean Theorem has been objectified into a memorizable formula the possession of which (there's that constructivism again) can be tested.

I've been in classrooms where these hidden worlds and wisdoms that surround, say, Pythagorean Theorem, have been allowed to open up and flourish, and where children have been invited into the deep mysteries and relations and diversity and kinship lines that define the world of Pythagorean Theorem as a living place, a living thing, a living inheritance. Kids are transformed, and so, too, are teachers. The work becomes real, the difficulties become bearable, the questions that both students and teachers have become vital, and sometimes heartbreakingly intelligent and wise and unbelievable—all this when they are allowed to go to these vivid places, these vivid topics.

There isn't a whiff, in such cases, of any desire to cut any leading strings but to do precisely the opposite—weave, relate, tether, follow leads, tug and pull, explore, play, suffer, commiserate, and so on. Getting back to your question about maturity, and what you said regarding Paul Shepard's vision in these matters, I suggest that forms of thinking and knowledge that are oriented to and by regimes of constructive dominance (remember, constructivism tells us that we give order[s]) are actually rather petulant and immature, rather frightened and, following Susan Bordo (1988), actually a bit psychotic.

There is great bodiliness suggested here. It is as if Pythagorean Theorem (just to harp on that example further) has, in schools, been stripped to the bone, lost its flesh, lost its eyes and ears, its heat, its desire. It has been effaced—it is no longer a topos, it is no longer Greek, no longer part of a European intellectual ancestry, no longer related to the harmony of the spheres or to the shortening of shadows as the summer solstice nears. Putting Pythagorean Theorem back into the body of the world of mathematics at once puts the body back into the act of understanding, the act of learning, the act of ecological sound schooling. All of this is deeply “cusp work,” to use Hayles term, neither interior to a subjectivity nor exterior like some indifferent object. A living person in a living world.

*Leesa Fawcett: What does this mean for the praxis of environmental education?*

*David Jardine:* I believe that “environmental education” should not be a subdivision of schooling, but should describe the way we educate altogether. There has got to be a way to make the learning of, for example, long division, into

an environmental pursuit into the ways of a place, a topic, an ancestry, housed in communities of knowing and writing and reading, in texts and images, and in learned practice. All of the topics entrusted to teachers and students in school can be understood as living fields, living inheritances, living places with ways and relations and interdependencies, including (but not restricted to) those topics that usually fall under “environmental education” currently in schools.

If we forget this and turn the topics of education into lifeless, fragmented, indifferent objects, we abandon most of the learning that our children undergo to a degraded, ecologically and spiritually unsound and fragmented view of the life of the world. Just as a bio-system may become degraded by being stripped of its sustaining relations, so, too, the living place of commas in the English language becomes degraded by being stripped of the sustaining relations that make this a living topic in the life of language. I always have my student-teachers do meditations on curriculum topics along this line. “How is this a living topic in the world?” has to be asked before “How do I teach this to students?”

Hiving off environmental education into some sort of separate domain, usually under the umbrella of the natural sciences (and, don't forget, their inevitable constructivist logic [this is where I think Kant and Piaget were right, by the way]) abandons most of the human inheritance to anti-ecological thinking and imaging, and equally abandons environmental education to recycling in the classroom and having a compose heap. Meanwhile, most of what kids learn is abandoned to the dominate egologic of fragmentation and constructivistic command.

So, I think environmental education needs to be how we think of education itself, all of it, in its deepest and most loving and most sustainable sense.

*Leesa Fawcett: If humans and the more-than-human world meet one another, and come into being in relation to each other, how does one represent, in the richest ways possible, the more-than-human world, and what are the implications of this for education?*

*David Jardine:* Maybe by keeping visible in that representation the limitedness of that representation and potential violence that can ensue if we believe that the representation eats up the thing into its own constructions?

To tell you the truth, I find the term “representation” really creepy, because it keeps in place the idea of knowledge and language and experience as being a “stand in” (representative) for the real thing, a stand in “constructed” by me and therefore a construct that is my property, my product. To push this one step further, if we have in hand (à la Kant and Piaget) the a priori categories of representation, we have in hand the conditions of any possible representation. We have in hand, therefore, the ways in which things in the world are allowed to show themselves, under our command and sway.

Representationalism and constructivism thus go together somehow and they devolve into that awful murk that Arthur Schopenhauer (1963) pronounced in the 1850s:

“The world is my representation”: This is a truth valid with reference to every living and knowing being, although man alone can bring it into reflective, abstract consciousness. If he really does so, philosophical discernment has dawned on him. It then becomes clear and certain to him that he does not know a sun and an earth, but only an eye that sees a sun, a hand that feels an earth; that the world around him is there only as representation, in other words, only in reference to another thing, namely, that which represents, and this is himself. (p. 63)

Part of the hermeneutic and phenomenological critiques of Cartesianism are critiques of representationalism—“stand-in-ism”—and the sort of psychological loneliness that it portends, where each of us becomes a Cartesian subjectivity caught in the bubble of its own making.

Again, the hermeneutic critique wants to invert this Cartesian logic. When a child pipe’s up about, say, the way that colours are mixed around the edges of a Renoir painting, their claims and queries and findings are not constructed “stand-ins” for (i.e., representations of) the entangled topic of 19th century painting and its troubled, often contradictory ways. Instead, they are moments in which the topic is present. Now it isn’t fully present, of course, but what is present is no stand-in. It is Renoir that is present, that is appearing, not a stand-in. How he is appearing is, of necessity, limited and finite, because Renoir, as a living part of the human inheritance, doesn’t just appear here and now and thus. Of course not. No presentation is absolute, but that doesn’t mean we’ve got only stand-ins. Therefore, instead of saying that a topic is represented differently in each child’s constructs, we can just as easily say that a topic presents itself differently to each child. Each child will find in that place something irreplaceably different than I might have found if I was there by myself. That child’s explorations don’t simply help me understand him or her. They also help me understand that this place can be thought of and experienced and articulated differently than I might have thought of, experienced and articulated all by myself. This place can embrace us both. If we articulate these rich topics well enough as teachers, all of our students can go there and find that that place can take care of them all and can hold their differences together. This is why we gather teachers and students together in a place in order to learn about its ways, because the topics at hand present themselves differently to each of us (and to our ancestors who have taken up this topic before us), and each of these presentations complements, corrects, expands, and limits the others. The problem with “representationalism” is that I’ve got mine and you’ve got yours and that is the end of it. Representationalism that becomes timid of the belief that its constructs have any sway becomes opinionism—this is what I think, but who is to say

really? Again, this entrenchment into constructs is an ecological disaster, because we lose any sense of any places where we might meet our limit.

Leesa Fawcett: *Given that Gadamer imagines “human understanding as vulnerable, dependent, immersed in the world” can you say more about vulnerability and moral development with respect to environmental education?*

David Jardine: When I talk to student teachers about imagining Pythagorean Theorem as a rich and interesting world of relations instead of as simply an inert and indifferent formula to be memorized and soon forgotten, their first response is simple. Memorization would be easier to get across, easier to assess, simpler, more uniform, easier to measure the success of, and so on. Nobody said that opening up these ecologically profound matters would be a cinch. It is hard work, but there is a certain profit in work’s pleasure.

Pursuing these ancestral threads puts us in a vulnerable position of realizing how, in understanding the deeply human, deeply Earthly life of a topic, we have to realize at the very same time that our pursuit is destined to be outrun. The abundance of the topic outruns our mastery and dominance of it. Such abundance, such outrunning, defines its life as one lived “beyond our wanting and doing.” Differently put, the more I learn about Pythagorean Theorem, the more students queries I get to explore, the better it gets, and the less my own knowledge feels equal to its measure. It gets better and my knowing seems increasingly vulnerable and helpless in the face of it.

However, there is another turn here that Gadamer suggests regarding “becoming experienced,” say, in the world of Pythagoras. He suggests—I really like this and I am still meditating upon it—that the more experienced we become, the more and more sensitive we become to the subtleties and differences that new experiences bring. This really inverts a whole logic of knowledge as command and mastery and dominion. Gadamer’s suggesting that becoming more and more experienced in the ways of a place entails that I’m more likely to be knocked off my feet by a child’s unexpected comment or question or the like.

This is a simple idea, in a way. I’ve got over 200 Duke Ellington CDs—I know my way around this guy’s music and recordings. Because of this experience, when I first heard “Blood Count” I nearly passed out! My being experienced opened me up to its newness and the irreplaceable difference it made in how I heretofore understood this man’s music. The whole topic “wavered and trembled” (Caputo, 1987, p. 6). My being experienced, in this weird way, gave me more command over this place by giving me less command.

I find this now with doing practicum supervision in elementary schools. It is very often almost overwhelmingly abundant in its significance and depth, its beauty and body. Conversely, when I go into classrooms where writing has become rote, where adding has become mechanical, where even memorization is no longer an ancient art, well, it breaks my heart, and the

more experienced I become, the worse I feel. The pleasures to be had that are being lost. The idea of caring for the places we inhabit or traverse, asking after their ways and being tactful and thoughtful and hard working and sensitive and participatory. Our kids are being sacrificed to a image of the topics entrusted to schools as being objects of production and consumption. Let's not forget George Grant's warning, that constructivism has wedded knowledge and production. Schools that have attempted to avoid knowledge as blind and obedient consumption have, in many cases, left this consumptive logic in place. Instead of consumers, children are imagined as constructive producers.

There certainly is some moral sense and sensibility here. What would happen if we imagined children, not as consumers and producers of constructed products of our own making, but as inhabitants in a world that is more abundant than I make of it?

### A Final Thought

One question that came up during the conversation at the American Educational Research Association conference in Montreal, Quebec, was, in paraphrase, this: *Of all the ways that you could have talked about constructivism, why did you construct it this way?*

This question is profound in its display of precisely the dangers of constructivism. What occurs in this question is that attention is moved away from what was being claimed (again, the topic) and toward the constructing habits of the one making the claims. One of the dangers of constructivism is that it allows us to feel warranted in avoiding the issues at hand (in this paper, colonialism, imperialism, the demanding character of human thinking, the ways in which environmental science is premised on a form of thinking that just might be an ecological disaster). Rather than taking up any of these issues, those issues are devolved back upon the issuer. My original affront with this question is simple to state: I'm not making this up! Our world is in potential danger from this form of thinking and its ancestries, and believing that we can avoid the topics of cautionary tales simply by "subjectivizing" them into the constructs of the author telling the tale is precisely the danger of constructivism.

### Notes on Contributors

**David Jardine** is a professor of education at the University of Calgary. His main work is teaching elementary school curriculum and supervising student teachers in elementary school settings. His forthcoming book, *Jean Piaget: A Primer*, is to be published by Peter Lang, and it expands on many of the themes in this paper.

**Bruce Johnson** is an environmental learning and science education professor at the University of Arizona. As Director of the Earth Education Research and Evaluation Team, he and his students investigate ecological understandings, perceptions and actions of children and adults. For many years, Dr. Johnson was an elementary and middle school teacher, outdoor school director and wilderness trip leader. He also serves as International Program Coordinator of The Institute for Earth Education and is co-author with Steve van Matre of several earth education books, including *SUNSHIP III: Perception and Choice for the Journey Ahead* and *Earthkeepers: Four Keys for Helping Young People Live in Harmony with the Earth*.

**Leesa Fawcett** is Professor in the Faculty of Environmental Studies, York University, Ontario, Canada.

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