

EARTHOLOGY: HOLISTIC PEDAGOGY**ADAM EATON CROFT**

Holistic science reveals the meaningful wholeness of the living. Aided by hermeneutic philosophy, holistic scientists practice the coming-into-being of understanding through the mutual co-arising of subject and object in wholeness. Contemporary pedagogical systems generated and sustained by the reductionist science that separates subject and object into time- and space-independent abstractions cannot be expected to foster holistic understandings of the living. We deserve, instead, educational models in dynamic relation with the living world. By recognizing their participation with the subjects they study, holistic scientists stress the modes of thinking

necessary for the coming-into-being of understanding. The understandings gained from holistic science spring from and inform the methods of study in reciprocal relation. It is in this reciprocal spirit that I offer for consideration Earthology, a pedagogy born of holistic science and hermeneutic philosophy.

The holistic pedagogy discussed below is meant to inform and complement but not supplant other holistic pedagogies, including those of Steiner (Waldorf, Montessori, Freire (critical pedagogy), Gruenewald (critical pedagogy of place), Orr (ecological literacy), Khan (eco-pedagogy) and Gallegos). Though they differ in technique and emphasis, all holistic pedagogies recognize the need to foster the whole person, usually in healthy relation to the living world, often in recognition of the gross violence and inequity that characterizes mechanistic society and its educational institutions. The holistic pedagogy of Earthology offered here shares these goals but differs in its self-conscious participation within the understandings and practices of holistic science and hermeneutic philosophy.

We learn as participants

It is perhaps holistic science's key insight that the whole is expressed within each part. Within the living world, each of us participates as places where the wholeness of Gaia and other hermeneutic holons express themselves. This participation must necessarily extend to the process of learning. Hans-Georg Gadamer put it this way: "Someone who understands is always already drawn into an event through which meaning asserts itself." (Gadamer). Henri Bortoft, exploring the way of knowing practiced by Goethe and other holistic thinkers, describes the knower as "not an onlooker but a participant in nature's processes, which now act in consciousness to produce the phenomenon consciously as they act externally to produce it materially." (Bortoft)

Traditional pedagogy tends to promote passivity in students in reflection of the reductionism of the subjects studied. Such pedagogy reflects and perpetuates mechanistic thinking in its separation of teacher and student into an abstract linear relationship wherein the teacher is expected to transfer information and skills to students. This transfer occurs over the gulf separating teacher and student, a separation that reflects the conceived gulf between reductionist scientist and object of study. In both reductionist science and education, this manufactured separation invites the scientist/teacher to reduce objects/students to abstract quantities to be manipulated for desired ends. (Markos) Furthermore, this reductive process scales outward so that scientists and teachers – and Gaia herself – are themselves objectified within mechanistic institutions of study and the market economy.

The holistic pedagogy of Earthology seeks another path. Learning for understanding must come through participation. Active inquiry is already regarded by many educators as centrally important to teaching and learning, but holistic participation goes farther. (Dow) To participate in wholeness is to recognize the meaningful expression of the whole within one's self and one's group. Students and teachers are challenged to understand themselves as participants within the hermeneutic holons of study as active, embodied expressions of that which they study. Students in a course of Earthology would encounter Gaia's meaningful feedback loops of biotic and abiotic systems through recognizing both their own participation within these feedback loops as well as the manifestations of biotic and abiotic feedbacks within their own selves.

Participation within our holistic pedagogy includes the ways we practice learning in the world. Too often in schooling, application is thought to be something that follows learning. Understood as the hermeneutic holon of learning/application, learning can be seen as application, and application as learning; as Gadamer says, “application is neither a subsequent nor merely an occasional part of the phenomenon of understanding, but co-determines it as a whole from the beginning”. (Gadamer, p.324)

This proposed participation within teaching and learning cannot be boxed within a classroom. The holographic relation of part and whole that requires participation for understanding infuses all teaching and learning relations, including classroom learning, field learning, curriculum development, school-wide decision-making, family participation, and so on. In this way, holistic pedagogy departs radically from most notions of education in its embrace of holarchical processes of participatory decision-making rather than hierarchical structures of power.

We learn in place and time as selves

Holistic science is grounded in phenomenology, a practice Bortoft defines as “letting things become manifest as they show themselves without forcing our own categories on them.” (Bortoft p.25) As this process takes place as an act of interpretation akin to reading, it is fair to consider holistic science a practice of hermeneutic phenomenology. (Bortoft, p.348) Such a hermeneutic phenomenology requires what Goethe described as a “delicate empiricism”, a two-fold attention to the phenomenon and our participatory awareness of the phenomenon. (Holdrege, p.30) Through hermeneutic phenomenology, we move beyond abstraction to encounter the living world in place and time as co-participants in meaning.

The holographic relationship between part and whole reveals our place and time as manifestations of the living, dynamic wholeness of Gaia. Similarly, we can come to understand ourselves as places where the meaning of our communities, our history, and our living Earth find expression. Goethe described this relation as follows: “Man knows himself only to the extent that he knows the world; he becomes aware of himself only within the world, and aware of the world only within himself.” (Scharmer) In this way, our Earthology is also self-ology.

Holistic pedagogy facilitates learning through such delicate empiricism of phenomena. The teacher, to paraphrase Bortoft’s description of phenomenology, must let students become manifest as they show themselves without forcing the teacher’s own categories on them. Similarly, students can learn to read themselves, their communities, texts, and the living Earth through the tools of hermeneutic phenomenology. (Frodeman) In each case, both teachers and students situate themselves in the place and time that they live, understanding themselves as participants in the meaning that is the wholeness of their time and place. Decisions about what is relevant to teach and learn follow from attention to the time and place of teaching and learning. Active exploration of a learning community’s time and place, including the people, ecology, and history of this place become vital for holistic education, no matter the course of study.

Students and teachers are themselves places of teaching and learning. Holistic pedagogy invites us to learn from each other and ourselves as places expressing the meaning of our living world. Self and group reflection can facilitate this attention to ourselves and each other as living places, as can Bortoft’s “moving upstream into awareness... to the happening of what happens” (Bortoft, 2006), the hermeneutic circle, use of the imagination as an organ of perception, and Goethe’s delicate empiricism. In each strategy of holistic pedagogy we shift our attention from the prescribed, universal abstractions of traditional curricula toward learning based upon an awareness of ourselves as active participants in the coming-into-being of the present place and time.

We are forever ignorant; we do not know where our learning will take us

In describing Goethean science, Craig Holdrege asserts that “the phenomena we confront are always richer than the abstractions we use to explain them.” (Holdrege, p.29) This richness demands our delicate attention to the phenomena of study, an attention requiring all of our faculties, including our imagination. Similarly, in hermeneutic philosophy, Gadamer emphasizes the “horizon” of understanding, the historically-situated limit of our understanding. (Malpas) Recognizing this persistent distance, Gadamer calls for a “fusion of horizons” in which the interpreter and the interpreted alter each other to bring meaning into understanding. (Gadamer, p205) And yet the gap between knower and known remains; we are forever ignorant.

Recognizing our personal and collective ignorance is vital to our holistic pedagogy. The horizon of understanding situates teaching and learning as a living process of growth wherein both teacher and student continually change in relation to their understanding of themselves, each other, and the living subject. Prescribed curricula can only be skeletal in such a holistic pedagogy. The process of learning within holistic pedagogy becomes a continual opening-up to the living world, an opening made possible by our ever-incomplete understanding.

Accepting the teacher's ignorance is especially important and challenging because of the professional expectation for expertise in the subject of study. Ralph Waldo Emerson once noted that "every teacher acquires a continually increasing stationary force, a cumulative inertia in proportion to the eloquence of his innovating doctrines." (Richardson) A teacher moves beyond the inertia of expertise by way of ignorance, through recognition of the continual movement toward understanding present in the fusion of horizons that teacher, student, and subject together engage. Radical ignorance can foster greater respect for and humility toward the living world. The reductionist program of mastery of the world, a driving force behind contemporary institutional education, is revealed as dangerously blind to its deadening objectification of the Earth. In its place, holistic pedagogical practices attending to the wholeness of phenomena have been demonstrated to foster responsible concern for the living world. This is consistent with what has been long understood about hermeneutic modes of learning, as for example Martin Heidegger's hermeneutics: "The perceiving of what is known is not a process of returning with one's bounty to the cabinet of consciousness.' ... It is, on the contrary, a form of being-with, a concern ... with and inside the world."(Steiner)

Teacher and student create one another

In his discussion of the ways that holistic thinking can dissolve paradox, Bortoft cites Simon Glendinning's hermeneutic method: "...you have to let the text you are reading teach you how to read it."(Bortoft, 2010) Isomorphic to Glendinning's method, we can state that you have to let the students you are teaching teach you how to teach them. Holistic pedagogy must allow for this tightly-coupled co-creative and co-interpretive cycling of teacher and student.

From a reductionist, linear perspective, teaching is practiced as a largely uni-directional act toward students. Seen holistically, however, teaching and learning are recognized as arcs of the same whole: student and teacher can be recognized, holistically, as places where the wholeness of a learning environment is expressed. Glendinning's hermeneutic method allows the teacher to shift from "transmitter of information" to facilitator-participant of the learning whole.

Such a shift grants agency to both teacher and student within the act of learning, recognizing and respecting a group of students' particular knowledge and needs while enlivening the teacher's role in the coming-into-being of learning and understanding. Students and teachers co-create holistic learning environments. Far from Locke's blank slates, students are here understood as active participant-shapers of learning who encounter subjects always already in relation to them. The teacher must study these relations so as to facilitate greater coherence of understanding. The teacher, as described above, encounters this act of learning by participating with the student in the wholeness of the learning environment. Expertise in the particular subject is not enough preparation for such a teacher. Instead, teachers must come to understand the coming-into-being of the learning whole, an understanding again only made possible through participation.

Coherence facilitates learning

The teacher's facilitator-participant responsibility can be understood as tending to the wholeness of the learning space. Holistic science has revealed that wholeness is only possible in a state of coherence.

Discussing "organic wholes", physicist Mae Wan Ho describes coherence as a process of "mutual intercommunication" in which "every part of [an organic whole] is as sensitive as it is responsive."(Ho 2007) She calls such organic coherence the "wisdom of the body".(Ho 2007)

Describing Gaia, Anton Markos notes that "the entire global community of organisms can be seen as a coherent, dynamic, highly structured, interconnected network of signalling molecules, genes, and structures." (Markos, 2002) Ho likens such coherence to playing jazz: "Think of a gathering of consummate musicians

playing jazz together ('quantum jazz') where every single player is freely improvising from moment to moment and yet keeping in tune and in rhythm with the spontaneity of the whole. It is a special kind of wholeness that maximizes both local freedom and global cohesion". (Ho, 2004)

Within the holistic pedagogy of Earthology, the teacher can learn to foster similar coherence, and thereby wholeness, by strengthening the interconnections between students and supporting constructive communication among all learners, students and teacher(s) alike. These interconnections take place in a condition Bortoft calls "receptivity", a "paradoxical state" in which we are simultaneously "'actively passive'" and "'passively active'". (Bortoft, 2010, p.32)

Developing such wisdom within the body of learners is no simple task. True receptivity requires a level of trust and safety often absent from the lives of our students. Ideally, holistic education would take place within a society in which healthful wholeness and coherence were valued as paramount, but we know this is not the case. Instead, the teacher must recognize the challenges our students face and work to make the learning environment as safe and trustworthy as possible.

Additionally, the incoherence of our civilization reminds us that participation in the living world beyond our mechanistic systems remains vital to holistic pedagogy. Learning coherence as a participant invites us to bring our learning into the living world. How better to learn coherence than by experiencing the coherent beauty of a healthy forest, meadow, or marsh?

Over time, students can themselves learn how to facilitate coherence. In a highly-developed holistic learning space, we would expect all participants to facilitate wholeness; yet another way that students and teachers create one another. The teacher supports this transition by modelling the facilitator-participant role and also by leaving space for students to take a lead in facilitation. Following Ho's jazz musician metaphor, it may be useful to think of the teacher stepping away from a conductor role into that of fellow improvisational musician.

Holistic pedagogy in practice

As an ecology and gender studies teacher in an experimental, publically-funded high school in Seattle, WA, USA, I have had the opportunity to put Earthology into practice. Ever a work in progress, facilitating wholeness remains a wonderful challenge that my students and colleagues and I continue to learn how to enact. The demands of teaching high school students are extraordinary, encompassing everything from basic instruction in writing to counseling students through suicidal ideation to reporting endless streams of data to the State. Somewhere in this mix of responsibilities, I have the great pleasure to work with my students in a holistic approach to understanding ourselves and the dynamic, living world. Whether in courses on Earth science, environmental justice, local history, or gender studies, the deepest and most relevant learning that my students and colleagues and I have engaged in has occurred within the wisdom of wholeness.

But the challenges remain. Wholeness, by definition, cannot be isolated, and yet, too often, our school's holistic education remains a small island within a hostile sea of state-mandated testing, students' previous abuse under mechanistic teaching practices, the contradictions of privilege and oppression, and the dull quantification and incoherence of contemporary society. For Earthology to match the coherent vitality of the living world, it will need to spread from several centers until the practices of holistic thinking and pedagogy become familiar to all learners, students and teachers alike.

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