

# Quaker Higher Education

# QHE

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## *In This Issue of QHE . . .*

Welcome to a special *green edition* kicking off *Quaker Higher Education's* third year. This issue offers a range of perspectives concerning teaching about and promoting sustainability.

**Jay Roberts**, Assistant Professor of Education at Earlham College, leads off with recommendations for teaching sustainability from a distinctly Quaker perspective, offering five considerations for framing such efforts. Next, environmental activist **Jacqueline Rowland**, from Clean Water Action's Connecticut Clean Energy Campus Program describes the promising multi-college effort that she is coordinating. Jacqueline tells us about college students organizing to promote sustainability practices on their campuses and beyond.

**Gary Farlow**, Associate Professor of Physics at Wright State University, follows. Gary reminds us that, even though the universe inevitably degrades, applying rules of physics through judicious engineering can offer humanity additional quality time on earth. Then, **Doug Burks**, Professor of Biology at Wilmington College, takes the focus to the personal level, discussing how calculating one's ecological footprint can yield valuable insights on maintaining a more sustainable lifestyle.

**William Upholt**, Professor of Reconstructive Sciences in the University of Connecticut School of Dental Medicine, provides another example of individual initiative, describing the compelling journey that led him to become an environmental education activist and co-founder of the Connecticut Partnership for Sustainability Education.

Finally, the issue closes with a poem by the late Quaker poet, **Hugh Ogden**. A beloved faculty member at Trinity College and long-time member of Hartford (CT) Monthly Meeting. Hugh had as deep a reverence for nature as anyone that I have ever known.

**Submissions:** *QHE* is published twice a year, in April and October. Articles submitted for possible publication should be sent to me as Word documents at: [weinholtz@hartford.edu](mailto:weinholtz@hartford.edu). Since *QHE* is not wed to any particular referencing format, you may use the professional style of your choice. If you would like to discuss an idea that you have for an article, my telephone number is: 860-768-4186. In the remote chance that you might want to send me something in hardcopy, my snail-mail address is: Donn Weinholtz, Department of Educational Leadership, University of Hartford, 223 Auerbach Hall, 200 Bloomfield Ave., West Hartford, CT 06117.

## *Quakers, Education, and the Question of Sustainability*

*Jay Roberts  
Earlham College*

### *Introduction*

The United Nations has declared the period 2005-2015 as the decade for Education for Sustainable Development. Clearly, within the last five years, we have seen a fast and remarkable turn toward issues of climate change and sustainability within the United States. Seemingly, everyone is thinking about it, discussing ways forward, and (maybe) willing to commit to serious action. Amidst all of this dusty stampeding however, there remains little to no talk about the role of education and schooling in either the problem or imagining potential solutions. This is curious. Surely, the cumulative experiences of sixteen to twenty years of schooling ought to have a profound influence (negatively or positively) on our relationship to the natural world? Indeed, many progressive educators have made the point that schooling is not *neutral*. Educator and critical theorist Henry Giroux is famous for saying that “the political is pedagogical and the pedagogical is political.” The seeming neutrality of the college canon was questioned in earlier decades by the rise of Women’s Studies and African-American Studies to name two of the more notable challenges. David Orr, perhaps our most noted thinker on issues of education and the environment, has noted: “It is a matter of no small consequence that the only people who have lived sustainably on the planet for any length of time could not read, or, like the Amish, do not make a fetish out of reading. My point is simply that education is no guarantee of decency, prudence, or wisdom. More of the same kind of education will only compound our problems. It is not education, but education of a certain kind, that will save us.”

Whether or not one may agree that schools are part of the problem, it is worth asking ourselves as Friends: What does it mean to take a Quaker approach to education for sustainability? We believe that peace, for example, ought to become a central part of both the content and method of teaching. This is played out in many ways within Friends schools- the informality of student-teacher relationships, the unique approach to conflict resolution, the coverage of social justice topics within the curriculum, and the progressive orientation to addressing real, community-based problems. Are we in a time, now, where a similar approach ought to be taken for issues of sustainability in both K-12 and higher education?

I think this query ought to apply to us as individuals aligned in some fashion with the religious Society of Friends. And, importantly, I think it also ought to apply to Quaker *institutions* of learning and, in particular, higher education. Why? While it is vital that we, as individuals, work through our own leadings as it relates to being in integrity with the natural world, it is just as crucial that our public personae-our schools, also do this form of institutional “inner work.” It would seem silly if we asked our students to “act peacefully” if our institutions did not attempt to do likewise in all areas within their responsibility. This explains why, at Earlham for example, we are mindful of our investments and have a committee who is charged with monitoring how our institutional values remain in integrity with the companies that we invest in.

To this end (and with apologies for the somewhat cheesy model), I offer what I

have tentatively described as “The Five C’s of Quaker Education for Sustainability.” What follows below is, I hope, just the beginning of a deeper and more sustained look at both the role of schooling within the issue of sustainability and the voice that the Religious Society of Friends might bring to the table.

### *Five C’s of Education for Sustainability*

I see at least five areas that provide a unique and distinctly Quaker approach to the problem of education for sustainability. Any such attempt ought to be:

1. Comprehensive
2. Contemplative
3. Consensus-oriented
4. Critical
5. Connective

There are likely other areas, and good people will disagree. My point here is to begin to open up space for the conversation to take place. First, our responses to the current environmental challenges before us (importantly, this goes beyond “climate change” to a much more broad intersection of areas of ecological justice including basic needs, quality of life standards, equity issues, etc.) must be comprehensive. That is to say, we cannot adequately address the issue by simply tacking on a required general education course, or by simply signing on to the Talloise agreement (though these actions may well be good ideas to pursue). Friends have long advocated for deeper assessments of causes and effects. Indeed, such an approach forms the cornerstone of our witness for peace and importance of contemplation and thoughtfulness to both our theory and our practice. As John Ralston Saul once said:

stance against acts of war. Thus, we must approach the issue of sustainability broadly and deeply by examining the ways a sustainability stance in education affects the curriculum, the co-curriculum, the mission, and the community (both inside and outside of the school). This moves us beyond education “about” sustainability” to a place where sustainability becomes something that is “lived out” through all the elements of the institution. Thus, it becomes more of an ideal than a checkbox of behaviors that must be constantly re-interpreted and deliberated upon by the community as it wrestles with the tensions of what it means to “live sustainably.” In many ways, this mirrors what many educational theorists have argued about democracy- that, within the realm of schooling, it ought to be viewed as an active “way of life” and not a passive birthright.

In addition to being comprehensive, a Quaker approach to education for sustainability ought to be contemplative. Environmental problems are, by definition, *human* problems. A commonality among many environmental writers and thinkers, from Arne Naes to Rachel Carson, Aldo Leopold to Vandana Shiva, is that environmental problems arise from a failure of contemplation and thoughtfulness. This can range from scientific notions of mindfulness (Leopold’s “pedagogy of place” or Carson’s oft quoted caution that “before we think whether we *can* do something, we ought to think whether we *should*”) to spiritual and aesthetic constructions (Thoreau’s transcendentalism or Buber’s “I:Thou” relationship). A Quaker approach to sustainability would amplify the

*But is the nature of civilization  
“speed”? Or is it ‘consideration’?  
Any animal can rush  
around a corral four times a*

*day. Only a human being can consciously oblige himself to go slowly in order to consider whether or not he is doing the right thing, doing it the right way, or ought to be doing something else... Speed and efficiency are not in themselves signs of intelligence or capability or correctness.*

Parker Palmer also once remarked, during a speech at Earlham College, that modern colleges and universities resemble the hum and whirl of “munitions factories” rather than places of contemplation and scholarship. I once heard a colleague talk of how students these days are subjected to a “brutal pace” and “bombarded with information.” How fast we normalize the logics of the market and the military into the language of school! Quakers have long demonstrated the case that long and sustained focus on a particular issue yields great results, if one is only patient enough and willing to plant a seed without the benefit of witnessing it bear fruit. But, I think we can do better here, as Friends. To what extent are we (either as individuals or institutions) a shining example of simplicity, contemplation, and the virtue of slowness to the rest of the world? Thomas Merton once chided the stressed and overworked advocates for peace in the world by saying “busyness itself is a form of violence.” I wonder if we have done enough to demonstrate to the world how “peace begins with me” when we seem to be as focused on production, efficiency, and speed as everyone else seems to be. It may require us to reconsider *how* we, as Friends, are orchestrating educational environments for the students in our care. When we are busy we cannot nurture our spirits, we have a harder time being contemplative and, as a consequence, I believe our students simply “model our

model.” In the end, this may contribute to the objectification of the natural world. There is a difference between data, information, knowledge, and wisdom. What do we wish to promote and practice? Changing *inward* institutional culture at this level would be difficult and challenging work. While we all may agree on the surface that “less is more,” how many of us, when pressed, would agree to eliminate assignments, class-time, courses, or even departments in the name of “inner-sustainability”? I believe this is, perhaps, our most important task as Quaker educators. Can we find the resolve to alter the unconscious and consumptive wheels of “progress”?

Another aspect of a Quaker approach to education for sustainability would utilize a perceived weakness to strategic advantage. As climate change becomes increasingly apparent, many talk of the need for quick and resolute action. However, fast and determined leadership is not necessarily appropriate leadership. I am reminded here of a political cartoon I recently saw that included a group of lemmings lined up to jump off a cliff. As one of the lemmings was preparing to jump, he turns around and says to the lemming behind him, “don’t you just love resolute and determined leadership?” The Quaker process of consensus may not yield efficient results, but in a crisis-oriented climate, as we seem to be in now, it has distinct advantages. First, by taking the time to deliberate and examine a problem from many perspectives and listening to all voices, we may be better able to get at root causes and issues as opposed to simply dealing with the symptoms. This is what Peter Senge calls “second loop” thinking. In single loop analysis, we move from doing to observing to reflecting and finally deciding. This is technical or action-oriented thinking and it

is the predominant way most organizations operate, at least in the West. Second loop thinking involves pausing at the reflection stage and sinking deeper through the process of re-considering, re-connecting, and re-framing which leads you back to reflecting and then on to deciding and doing. The problem with single loop thinking is that it has the tendency to focus on technical solutions without more carefully examining the assumptions and ideologies that generated the problem in the first place. Quaker process, done well, brings the community down to the second loop, and ensures that possible ways forward have adequately considered both root causes and possible consequences. Second, it has the potential to bring the community together in purposeful and agreed upon action that itself is far more “sustainable” than committee recommendations, presidential declarations, and the like. This “bottom-up” approach is the hallmark of much of community activism and is well suited for the kind of culture change necessary for sustainability to become more than a label or shallow and technically driven enterprise on campuses.

Fourth, a Quaker approach to education for sustainability should have a decidedly critical orientation. I am choosing to use the term “critical” here to denote the importance of social justice related work both within the Quaker faith and as a growing area within the sustainability and environmental movements. In a well-read parable of the New Testament, Jesus tells the story of the shepherd who, when just one of his flock goes astray, leaves the rest to go and tend to his one wayward animal. Friends have often interpreted this passage as a metaphor for being attentive to those at the margins of society - the poor, the excluded, the discriminated upon, and even the perceived “villains.” The current

“environmental movement” (whatever that is) has often been critiqued for its elitist and privileged status, and perhaps, rightly so. Any casual observer would point out that activists tend to be white, middle to upper-class, well-educated, and located in the northern hemisphere. These folks, with their “full stomachs” and comfortable standard of living are quick, so the argument goes, to tell everyone else to stop consuming so much. Indeed, a recent highly publicized essay (now a book) by Earlham College graduate Michael Shellenberger and Ted Norhaus provocatively titled “The Death of Environmentalism” takes the movement to task for its anti-capitalistic, anti-progress, foundations. But I think we need not throw the proverbial baby out with the bathwater. The rise of “eco-justice” and the synergies between ecological concerns and social justice concerns creates new terrain for re-articulating environmental concerns as the concerns of those from the margins. In many ways Hurricane Katrina was as much about ecology as it was about race and class. The world over, it is the destitute and the unseen who live at the ecological margins- in the floodplains, near industrial waste sites, on dry and infertile land. Quakers, with our longstanding work on behalf of those society has chosen to ignore, are well-positioned to work toward re-articulating sustainability as a social justice concern. In the words of Vandana Shiva:

*On the streets of Seattle and Cancun, in homes and farms across the world, another human future is born, a future based on inclusion, not exclusion; on nonviolence, not violence; on reclaiming the commons, not their enclosure; on freely sharing the earth's*

*resources, not monopolizing and privatizing them.*

We build this road by traveling it. Friends know this work, it only will take focus, commitment, and a willingness to re-think what education and schooling is for.

A final aspect of a Quaker approach to education for sustainability, would involve connectivity - the conscious and deliberate interplay between “faith and works.” Here I am reminded of the old Quaker saw about a new attender to Quaker meeting who, after several uncomfortable minutes of silence turns to an elder to his right and says, “excuse me sir, but when does the service begin?” The elder replies, “we are worshipping now, the service comes after.” The connection between faith and works is certainly part of all Christian denominations as well as many, if not all, world religions. But, Friends do place an unusually strong emphasis on “letting your life speak.” George Fox himself once said that he wished “to know God experimentally.” If he had the word available to him at the time, I wonder if he might have said that he wished to know God “experientially”? Experiential education, at its root, is about the connectivity between theory and practice or, in religion, between faith and works. As Friends, we learn to place great weight on our actions in the world. This is particularly true within schooling as we adhere to value statements such as “knowledge has moral consequence.” This form of praxis is geared toward both personal and societal transformation. Thus, education toward sustainability from a Quaker standpoint would emphasize an experiential understanding of our current and future environmental challenges. For example, to what degree are our students active participants in both problem generation and

problem solution in regards to education for sustainability? Are we expecting them to merely learn about it in the classroom? What opportunities exist for student-faculty connectivity beyond the usual classroom-based research projects? In the words of German educator and founder of Outward Bound Kurt Hahn, “we must give students the freedom and the power to wreck the State. Only then will they understand the responsibilities of citizenship.” Experiential connection also goes beyond education “about sustainability,” enabling students to “ground truth” content against what they see, hear, and experience either on their own or in a group. It taps into the affective domain, with the understanding that true learning is not merely a cognitive exercise. When students and their teachers connect emotionally, viscerally, with nature, the marginalized, the community, each other, it becomes much more difficult to objectify and to remain aloof, cynical, and indifferent to the plights of others and our natural world. In 1976, the educational anthropologist Dorothy Lee gave a speech where she worried aloud about an overemphasis on literacy, on words (or, for our purposes on the word “sustainability” at the expense of the experience of it). She said:

*Are we paying a heavy price for literacy? Are we giving up our heritage of wonder, of curiosity, of questing, of plunging into chaos and creating life out of it? Are we giving up our sense of mystery, the excitement of being lost in ambiguity and building a world out of it? Have we given up this heritage for the sake of literacy, which gives us a label instead of experience?*

A Quaker approach to education for sustainability would be constantly vigilant so we do not replace experiences with

labels and that our students, together with our faculty, connect theory and practice, faith and works, that we come to know sustainability “experimentally.”

### **Conclusion**

In the end, learning about our environmental problems and their causes can be a depressing and energy-sapping process. With all the apparent “sickness” that is around, it can be easy to develop a cynical or weary attitude (which fish am I allowed to order at a restaurant again?). George Fox famously reminds us all to “walk cheerfully over the earth answering that of God in everyone.” Perhaps the “cheerfully” part might be a sixth “C” of Quaker education for sustainability. This can be a struggle even in good times. But the power of a faith, to me, lies in its ability to, in the words of Maxine Greene, “imagine how things might be otherwise.” Even if the end-goal of sustainability is not a fixed destination (which I do not think it is) but rather a constantly receding horizon that gives us a direction to travel, a sense that there is good work to be done. It is faith that allows me to go forth on that path joyfully, even in the face of so much sorrow and worry. As Friends, we seem more comfortable with the idea of holding things in “tension” and working with ambiguity. It is another one of our perceived weaknesses that is, to me, a great strength. Education for sustainability must, in the end, be about holding things in tension, dealing with conflicting values, ambiguous goals, and multiple contexts. Rather than lamenting this state of affairs, we Friends can celebrate it and, in turn, find a certain strength in our distinctiveness that may shine a light to the rest of the world. May we always strive to live out the

questions. Wendell Berry perhaps says it best:

*It may be that when we no longer know what to do.*

*We have come to our real work*

*And that when we no longer know which way to go.*

*We have come to our real journey.*

*The mind that is not baffled is not employed.*

*The impeded stream is the one that sings.*

### **Resources for those wishing to read further in issues of sustainability, environment, and education**

Bowers, C.A. (1997). *The Culture of Denial: Why the Environmental Movement Needs A Strategy for Reforming Universities and Public Schools*

One of the more cited, sustained, criticisms of the role of education in our current environmental crisis.

Bonnett, Michael (2004). *Retrieving Nature: Education for a Post-Humanist Age*

A nice treatment of the philosophy of environmental education with a particular argument toward pulling back from post-modern and post-structural critiques of environmentalism.

Heiffetz, Ronald (1994). *Leadership Without Easy Answers*

One of the best texts (in my opinion) dealing with the topic of leadership and leadership theory. While Heiffetz does not deal with issues of sustainability directly

(though he does refer to them), his notion of “Adaptive Leadership” is very “Quakeresque” and I see it as an excellent model for environmental problem solving.

Noddings, Nel, ed. (2005) *Educating for Global Citizenship*

Noddings is a well-known philosopher of education. While this edited volume is not her best work, she deals specifically with issues of globalization and sustainability in the chapter, “Place-Based Education to Preserve the Earth and Its People.”

Orion Magazine.

If you haven’t heard of it and you like (progressive) intersections between nature, culture, and society it is worth checking out (no ads!). Many prominent environmental writers are featured including Barbara Kingsolver, Wendell Berry, Terry Tempest Williams, Gary Nabhan, etc.

Orr, David (1994). *Earth in Mind: On Education, Environment, and the Human Prospect*

An environmental education classic, particularly the first chapter, “What Is Education For?” which can also be found on-line with a simple Google search.

Orr, David (2002). *The Nature of Design: Ecology, Culture, and Human Intention*

One of Orr’s best works, in my opinion, in terms of its trans-disciplinary focus and the creativity of the ideas presented.

Capra, Fitjof (2002). *The Hidden Connections: A Science for Sustainable Living*. (see also his website: Center for Ecoliteracy)

An interesting read from a world-renowned physicist as he makes the argument that in order to sustain life the principles underlying our social institutions must be consistent with the broader organization of nature.

Shiva, Vandana (2005). *Earth Democracy: Justice, Sustainability, and Peace*

Another well-known environmental writer from India. While perhaps not as rigorous as some might prefer, it is a nice treatment of the topic from a developing world perspective.

Sobel, David (2004). *Place Based Education: Connecting Classrooms and Communities*

A bit more K-12 in emphasis but, nonetheless, the best resource on this growing pedagogy which pushes beyond more traditional “environmental education” to incorporate service learning and curriculum integration into a holistic model for schooling. Nice on practice and specifics.

Wayne W. Au and Michael W. Apple. “Reviewing Policy: Freire, Critical Education, and the Environmental Crisis.” *Educational Policy* 2007; 21 457-470.

I haven’t read it yet, but Apple is well-known for his neo-Marxist and critical takes on the state of education and schooling in the U.S.

## *The Promise of This Generation's College Students*

*Jacqueline Roland*

*Clean Water Action*

'I apologize. My generation let you down, and now your generation will have to pay for it.' It is a familiar, yet heartening introduction, often used by experienced activists when speaking with up and coming environmentalists to first dispel any potential resentment the younger generation may have felt for inheriting a literal mess of catastrophic proportions and then inspire them to make substantive changes for a cause they feel they truly own. I have been on the receiving end of this apology—paraphrased, but always more or less the same theme of 'now this is in your hands'—at human rights conventions before. Most recently I sat as one of 12,000 fledgling stewards of this planet and heard the words 'I apologize' from one of the speakers at Powershift 2009, a youth energy conference, held in Washington D.C.

Though not untouched by the sentiment, regardless of the number of times I have heard it, the difference for me this time was looking around at those thousands of faces and thinking about how they represent a generation which won't have the option of borrowing such an apology for any future speeches. When it comes to global environmental change the world has run out of retakes. We are being told we have about 10 years to change our institutions, our patterns of consumption, our societies, our very way of life lest the window of opportunity now open to avoid the worst effects of climate change shut permanently. The other global ills with which we might be concerned - poverty, conflict and war, environmental injustice, the global water and energy crises, forced refugee status and food shortages - all have a relationship to climate change. On a global level, the time

for the US to be the leader it positions itself as is overdue when it comes to climate policy. In order to foster an open space for progressive international cooperation on global environmental change, the U.S. needs a strong, substantive climate bill ahead of December talks in Copenhagen.

The very scary notion that we are running out of time to bring forth the best technologies, political ideas, environmental solutions and the best of our selves is the reason why I am so happy to be working as the organizer for Clean Water Action's developing CTCleanEnergyCampus program. Having chosen three initial institutions, I am able to work at the University of Hartford (UHA), Fairfield University and Wesleyan University.

Mindful of the potential power of collective action, Clean Water Action launched the pilot CTCleanEnergyCampus program last fall to support Connecticut campuses in modeling leadership on global warming and clean energy. Working together with committed students, faculty, staff and administrators, we are trying to secure commitments to reduce global warming pollutions and create climate action implementation plans. This includes purchasing 20% of campus energy from renewable sources by 2010, as with Clean Water Action and the Clean Energy Fund's incredibly successful 20% by 2010 municipal campaign, which has now secured commitments from 88 towns in CT.

Two of the three pilot institutions have signed the American College & University Presidents Climate Commitment (UPCC),

which challenges signatory institutions to go carbon neutral by 2050. Now signed by over 600 institutions of higher education nationwide, the UPCC requires signatories to conduct a GHG inventory within one year and then produce a university-wide Climate Action Plan (CAP) that outlines its strategies for being on track to eventually achieve the enormous accomplishment of becoming 'carbon neutral.'

The wonderful aspect of such a declaration is that it creates a helpful framework and precedent for bold institutional reform and cultural change. It gives activists on campus an opportunity to say 'we committed to this as a university and are now obligated to make this a priority when we consider our annual budget, strategic plan, curriculum, extracurricular opportunities and recreational events.'

Even at universities which have not committed to the UPCC, enthusiasm is demonstrating itself in a real desire to address the crucial issues of resource consumption, emissions reductions and energy sources. With the help of dedicated individuals across the university community we have, thus far, collected and delivered hundreds of postcards demonstrating grassroots support for clean energy; shared the results of greenhouse gas (GHG) inventories; spoken on student activism; made plans for a holistically focused student environmental group on one of the campuses and restructured an existing environmental student group on another campus. Most recently we had 100+ students attend a panel focused on Campus Climate Action held at UHA for National Teach-In. The university administration and student government association also generously agreed to support three students to attend Powershift 2009. Through the generosity of strangers and the flexibility of

students who agreed to sleep on floors and travel lightly, we were able to save money and are in the process of asking UHA to allow us to use the money saved for starting a green fund on campus; such reserves, even if small are smart ideas for movers on campus to have as an alternative to solely relying upon the administration to provide funds for supporting conservation, efficiency or clean energy projects.

CTCleanEnergyCampus has been working to organize a CAP workshop for CT universities; developing a leadership training workshop for developing student activists; collecting pledges to conserve energy in exchange for compact-fluorescent light bulbs in preparation for Earth Hour on the 28<sup>th</sup> of March and planning 'Blackouts' for Earth Week, an idea borrowed from Connecticut College during which lights are voluntarily shut off and the students organize outdoor activities which require little or no electricity. This event, highlighting the importance of conservation, is an alternative to the very popular and motivating energy and water saving competitions that students across the country are running, but which require metering capacity for measuring results, a capacity which some schools still do not have. Once we do gain metering capacity to measure the savings of individual dorms, we can offer donated prizes and incentives in order to motivate student participation. Some of the most interesting models include Duke's EcoOlympics and Connecticut College's Concert for Conservation, a huge concert supported by 25% of the efficiency savings from their competitions. Such incentives really motivate students to participate, are a great deal more fun than didactic rhetoric and open up opportunities for contributions even by groups on campus without an environmental agenda.

In addition to helping members of the college campus communities develop grassroots support for ambitious on-campus green building, clean energy and climate efforts, CTCleanEnergyCampus aims to establish relationships between CT universities. An idea that came out of Powershift was to form a state-wide coalition of students, similar to a former one that had come out of Yale. On March 28, 2009 students from every university in CT were invited to the University of Hartford for the first meeting of this state-wide coalition, which will focus on federal climate policy. Focusing on federal policy will mean that we can act as a crucial constituency for passing a climate bill and that our efforts can amount to something beyond our campuses, regardless of where our individual colleges presently are environmentally.

Climate bill? Young people can do this. Equipped with much more than idealism, they have been integral in civil rights, anti-war and now environmental movements. Young people have votes, voices, skills, creativity and an ability to 'show up'-all these things truly matter. Those enrolled in universities certainly do not have a monopoly on the tools necessary to participate as effective advocates and activists, but they do benefit from having access to a concentrated pool of resources, the ability to call the institution on its moral responsibility and a consolidated community which can serve as a lab. By learning to work *with* and not against others on campus they are gaining transferable skills and welcoming in a new era of activism—one in which we realize we are all in this together.

Working within a culture of arguable excess and relative privilege to try to convey the urgency of climate action can

be challenging, but as evidenced by those thousands of Powershift participants who braved a snow-laden D.C. wind-chill to tell the administration that we want clean, renewable solutions now and the student-led initiatives that are completely overhauling the way that colleges think about energy, food, water and waste; it is clear that many university-aged students are really starting to internalize that climate change is a defining, if not *the* defining issue of our generation. The fact that all three universities where we are launching the CTCleanEnergyCampus program are at very different stages environmentally and student engagement-wise makes my work more exciting and forces me to be creative and thoughtful about how I am strategizing and framing issues. The choice to use 'global environmental change,' versus 'climate change' versus 'global warming' and the choice to say we are threatened by our dependence on 'foreign oil' versus our dependence on 'fossil fuels' speak differently to and convey different messages to different audiences. My job, like that of an educator seems part social psychologist, strategist, part improv actor, part facilitator, part salesperson, part learner. I am trying to work on changing the world and in the process, I am changed. When the students I work with text to say that they have collected 5-100 clean energy postcards and want to know where to drop them off, I feel like I am working with them to discover their own sense of agency, and the world needs people unafraid to let their own lights shine. At the end of a stressful day full of roadblocks and emails, I, like an educator, still feel that I am doing crucial work at a crucial time. Being a community organizer seems not so bad after all.

Please feel free to contact Jacqueline Rowland to learn more about

CTCleanEnergyCampus, a collaboration between the Connecticut Clean Energy Fund and Clean Water Action in Hartford, CT. She can be reached at:

860.232.6232  
[jrowland@cleanwater.org](mailto:jrowland@cleanwater.org)

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## *Teaching the Physics of Energy and the Sustainability Zeitgeist*

*Gary C. Farlow*

*Wright State University*

One might think that physics would be the natural place to discuss questions of energy use and sustainability in the context of modern life. This almost never happens. One wonders why.

Let's start by considering energy. Physics invented the concept of energy. It has to do with motion, or more properly with work which causes a change in the energy of motion that we call kinetic energy. We can store that kinetic energy. Lift a bucket of water and put it in a bowl with a hole in it. Let the water run out and turn a paddle wheel. The work of lifting is ultimately what turns the paddlewheel, after having been stored in the lifted water. Such observations have led us to believe that energy comes from some source: the lifting results from the work of stretching muscles, which comes from metabolism of sugars, which results from plant synthesis, which is driven by light energy, which is released by thermonuclear fusion, which comes from... You get the idea.

But, you say, I do work all that time and nothing moves. BZZZT!!!! Effort is not work. That is the other thing we observe about energy: Most times, all the work does not come back in a useful form. Some of it usually gets wasted as random motion at the molecular level that we call heat. Straining against a door that does not move does no work, but the energy

released in trying to stretch the muscles to move the door shows up as motion in the cellular structure of the muscles and registers as heat. So what! It gets stored as something, right? BZZZT!!!! Energy stored as random motion will never do work again. It will just spread out and, over time, uniformly warm the universe.

Well, we will just have to find some new energy and so we don't have to worry about it, right? BZZZT!!! "There is no new thing under the Sun." intones Ecclesiastes. In this case at least, Solomon was right. Things are energy, energy are things - courtesy of Einstein. (Pardon the grammar.) There is no new stuff, neither energy nor mass (Anwar notwithstanding). There are only places where energy has been stored over time. When the source of storage is gone, the usable energy is also gone. The universe will eventually die of thermodynamic equilibrium.

So let's summarize the physics view of energy: 1) You can't win. 2) You can't break even. 3) You can't even get out of the chain that is the game. This is not a way to motivate interest in a zeitgeist of sustainable, meaning repeatable, world processes; nor in the hard work of studying physics. It's more of a "Eat, drink and be merry for tomorrow you may die" conclusion. Thus, at a fundamental level, physics has little to say about the

zeitgeist of sustainability and what it does have to say does not encourage engaging the discipline. Naturally, we don't make much of it.

By late in the junior year of a major in physics, however, we address less and less the cosmic questions and focus much more on the practical problems of how to fool mother nature. We discover that timescale can make a profound difference in the relevance of the zeitgeist of sustainability. This has little to do with physics and everything to do with engineering, which is applied physics. Let's consider some examples

One of the real sustainability problems with nuclear power is not its waste products, but its heat load. Nuclear reactors are inefficient thermodynamically because they run at low temperature compared with coal or gas fired plants. It turns out that the higher the temperature a heat producing plant runs compared to its surroundings, the smaller the fraction of heat relative to work is produced from the released energy. Coal and gas fired plants run typically at 1000 C, nuclear plants are closer to 400 C. This is the origin of the big cooling towers at nuclear plants. The heat dumped into those towers is all waste. It makes no great sense to use the electricity to produce more heat in homes or offices. Rather, take that hot water and pipe it into schools, hospitals, office buildings etc., to heat them, and provide hot water. (This cooling water is not radioactive.) Some of the "planned" cities in the old Soviet Union used just such a system to heat major buildings. The electricity can now be used more profitably (in ecological terms) to run refrigerators, lights, and motors. This does not make a lot of economic sense because of the miles of

pipe that would be needed, but it does make energetic sense.

One of the ways nature avoids waste heat energy is through quantum electronic processes. In these processes light is absorbed and an electron changes its energy with no heat loss. That electron can then move around and do work under the influence of electric fields, or pressure, or chemical gradients. Solar cells are an example. Photosynthesis is another (sort of). But this process can also work in reverse. About 60% of the electricity used in the US is for lighting. Light bulbs generate light by generating heat in a wire. Less than 1 % of the power consumed shows up as visible light. Fluorescent lights send a small lightning bolt through a gas which changes the energy of some of the electrons in the gas. These then emit ultraviolet light, no heat, which is then absorbed by the glass shell which changes the energy of the electrons in the glass shell. These electrons then give off visible light with very little heat: You can take hold of a fluorescent bulb while it is on and not get burned. There are now LED devices that give off bright light directly if supplied a small voltage. There are two materials GaN and ZnO from which almost no waste heat is produced. A company called Lumileds is now making very bright GaN lighting that runs on milli-watts instead of 100's of watts of power. The GaN and ZnO devices are however very expensive to produce so you may not see these in the hardware store next Christmas.

The moral of the story is that sustainability means fooling mother nature. If you want to fool mother nature then you must know nature intimately. That means you must study physics and

chemistry, and the complex systems of biology and geology, at a level beyond that freshman survey course you hated. It means you must get over the despair of knowing that world is going to end.

Then your fooling around (engineering) is likely to be sufficiently intelligent that mother nature won't mind and the inevitable can be put off a little while longer.

\* \* \* \* \*

### **A QUAKER PERSPECTIVE TO TEACHING COLLEGE BIOLOGY IN THE CONTEXT OF THE GLOBAL SUSTAINABILITY CRISIS**

**Douglas J. Burks.**  
**Wilmington College**

When asked to write this article on the teaching of Biology in light of the global sustainability crisis, my first thought was, "How does a molecular biologist, rather than an ecologist, address this question?" In my classes, I am addressing topics such as glycolysis and the metabolism of glucose, how lysosomes work, how acetylation of histones change the expression of genes and other topics that likely would make your eyes glaze over with resulting snoring within a few minutes into my class. I usually don't discuss ecosystems, food chains, pollution, animal behavior, and the other topics in biology that typically deal more directly with environmental and human sustainability issues. However, because of my personal concern for humankind and the sustainability of our planet coming from my religious experience as a Friend, I do address the issue. I find the space to introduce this pressing matter.

As I think about my approach to teaching biology in light of our sustainability crisis, I think of the famous cartoon where Pogo states, "*We have met the enemy and they is us.*" In the Gospel of John, Chapter 8, we find: "*They say unto him, Master, this woman was taken in adultery, in the very act. Now Moses in*

*the law commanded us, that such should be stoned: but what sayest thou? This they said, tempting him, that they might have to accuse him. But Jesus stooped down, and with his finger wrote on the ground, as though he heard them not. So when they continued asking him, he lifted up himself, and said unto them, He that is without sin among you, let him first cast a stone at her. And again he stooped down, and wrote on the ground. And they which heard it, being convicted by their own conscience, went out one by one, beginning at the eldest, even unto the last: and Jesus was left alone, and the woman standing in the midst.*"<sup>1</sup> These ideas color every thought and action in my teaching when trying to address our sustainability crisis. I tread softly, for all of us in Western society, as illustrated in Figure 1<sup>ii</sup>, like it or not, carry a heavy burden of responsibility for creating what some are calling the sustainability crisis. Notice I say all of us. Even those who are highly aware and working hard to do little harm to the environment. It will take all of us making hard choices about our lifestyles and ways of living to solve this problem. I am always worried that when I raise the discussion of sustainability with students that I am the one with greatest

number of sins and should not be casting the first stone.

I begin my discussion of sustainability with students by saying, “There is so

much more I need to change in my life and habits to become a good global citizen.” I then explore how that responsibility lies at two levels. Each of us has an individual responsibility to take action

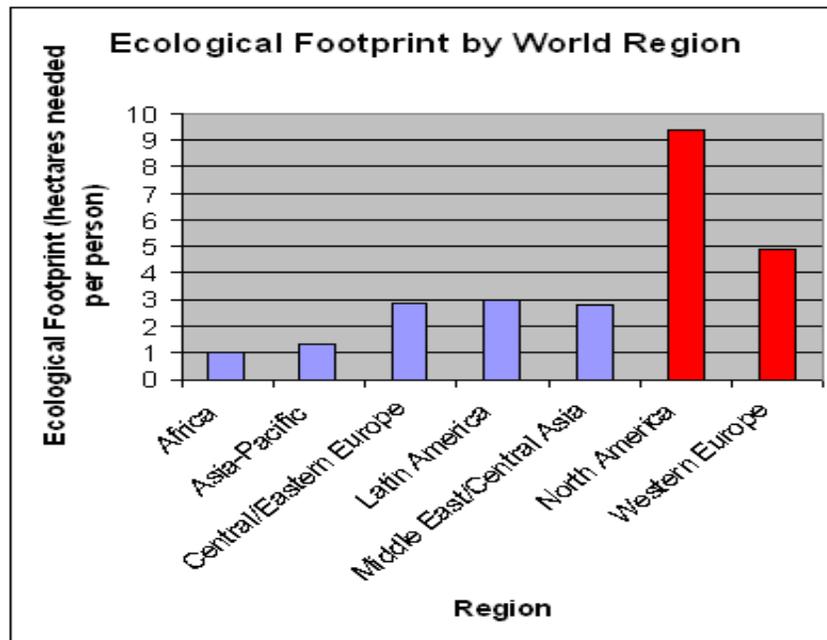


Figure 1 Ecological Footprint by World Region. Data from ii. footprint is represented by the number of hectares needed to sustain one person at that regions standard of living.<sup>ii</sup>

and society has an obligation to take action. With biology students, I don't need to go into the science and evidence for the sustainability crisis. I also don't have to discuss the evidence that new and improved technology is sufficient to solve our problems. To solve the sustainability crisis will require a change in consumption patterns and likely a decrease in population level. Their interest in science brings them to college with that knowledge. It is the idea of moral obligation and appropriate response to a moral obligation that they need

to explore. This is an area that biologists are not trained to do. This makes dealing with the issue difficult.

I begin the discussion with students by introducing them to the idea of the Ecological Footprint (some students know about this but most don't). The concept of an ecological footprint was developed by Mathis Wackernagel and William Rees in 1996.<sup>iii</sup> The ecological footprint “accounts for the flows of energy and matter to and from any defined economy and converts these into the corresponding land/water required

*from nature to support these flows.*"<sup>iv</sup>

One can calculate how much of the earth's resources one uses. In 2002, the total world population of humans used the equivalent of 1.2 planet earths, a rate greater than was renewable for future generations. It is estimated that with no change in our consumption patterns that by 2050 humans will need 1.9 equivalents of planet earths to maintain the human population.<sup>v</sup> Not only can one calculate the ecological footprint for the human species as a whole, but ecological footprint models enable individuals to calculate how much they use of the earth's resources.<sup>vi</sup> From that data one can determine what to do to lower the impact one has on the environment. It also enables someone to determine how changes in one's behavior will change one's impact. What is good about thinking about ecological footprints is that instead of focusing on what is bad (and there is plenty that is bad) it focuses on helping one to find ways to take positive actions. There are many sites on the internet that one can go to calculate an ecological footprint and then to find steps to reduce one's footprint. One that I use with students is <http://www.myfootprint.org/en/>. You should take a minute and calculate your own footprint. When I calculate mine, you see why I have trepidation in getting on a soap box and saying to students that they need to change their lifestyles. I consider myself fairly green, but it would take 6.09 planet earths for everyone on our planet to live my lifestyle. I need to decrease my use of resources by 84% to reach a sustainable average, assuming no population increase. When you further break down my footprint you see that, while my overall footprint is slightly lower than the U.S. ecological footprint, my food print is significantly higher than

the national average in the area of food consumption (Figure 2). As I found out in the past year, this is due to my love of beef. Current estimates are that the production of meat leads to about 5 – 7 billion tons of greenhouse gases a year, which is about 15%-20% of greenhouse gas production.<sup>vii</sup> Beef is the worst of all meats contributing 13 times the greenhouse gases as chicken and about 6 times the amount of pork.<sup>viii</sup> A single quarter pound hamburger for lunch leads to about 3.7 pound of CO<sub>2</sub> equivalents released into the atmosphere.<sup>ix</sup> By eliminating beef from my diet I can significantly decrease my impact on the environment. I have been decreasing my consumption of beef, but I doubt if I have the strength to cut it completely out.

In my discussion with students, I do discuss how I have decreased meat consumption and where I have made changes in other areas of my life. I also talk about the need to be thoughtful and that to become sustainable, it does mean making changes and sometimes making sacrifice. I encourage them to look at ways they too can make thoughtful changes. In the end, though, I also face that hard truth that sustainability is achievable only if all of us take action, for there is no easy (or even hard) technological fix that will make the problem go away. Sustainability is only possible if everyone changes their consumption patterns. We have no guarantee that this will happen. Finally, I argue that it is one of the most important moral issues facing each and everyone one of us in the world today. We need to reach out and become activists who are committed to convincing others to also take action.

I do encourage everyone to look at their ecological footprints. It is a starting point for rational personal change. Personal change is the one thing each of us has control over and what each of us can do.

We need to reach out and get others and other nations to also act. In asking students to consider personal action, I in humility say that I also am working hard to change and that change is not easy.

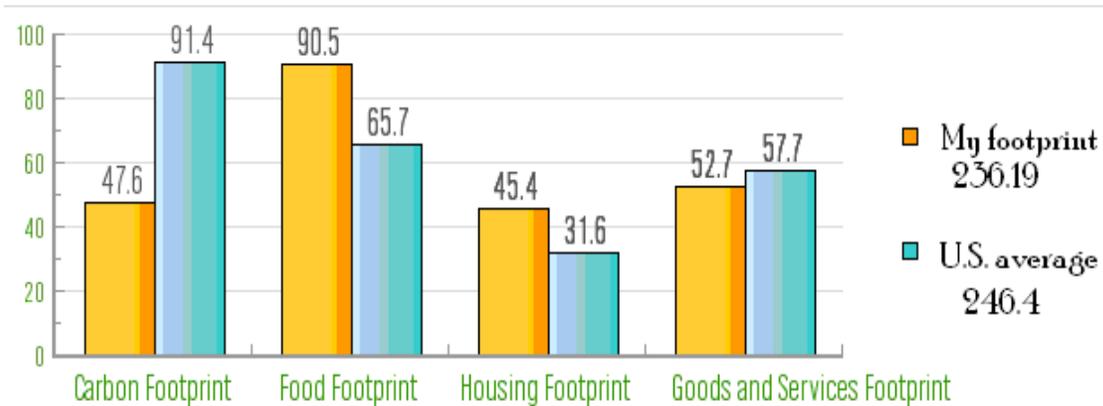


Figure 2. My footprint in global acres by consumption category. <http://www.myfootprint.org/en/>

In this short essay, I have asked you to consider three things. First, I asked you to consider and accept that our sustainability crisis will only be solved by dramatic changes in lifestyle of those who live in the Western world. Technology will play a part, but there is no magical “technological fix.” Fixing our environment can only come from consuming less and looking at population control. Second, I analyzed my own impact on the environment by measuring my ecological footprint. In looking at my footprint, I see that I need to decrease my consumption of resources 6-fold to live sustainably. This is why I approach the topic with trepidation in teaching my

students. It is difficult to make the argument to others that they need to sacrifice and dramatically change their lifestyles when you know that it is a message that you need to act on. Third, I gave you, the reader, some tools to analyze the impact that you have on the environment, so that you can make better decisions and more effectively take action. I also gave you some information on how food choices can make a real difference. I hope that this essay has given you some food for thought. Creating a sustainable world is a challenge that is not going away. We are at an historical crossroads for our species.

## ENDNOTES

<sup>1</sup> Bible, King James. John, from The holy Bible, King James version. Electronic Text Center, University of Virginia Library. <http://etext.virginia.edu/toc/modeng/public/KjvJohn.html>.

<sup>1</sup> Data from: Kitzes, J., Wackernagel, M., Loh, J., Peller, A., Goldfinger, S., Cheng, D. and tea, K. 2008. Shrink and share: humanity's present and future Ecological Footprint. PHIL. TRANS. SOC. B. 363:467-475

<sup>1</sup> Wackernagel, M. and Rees, W. 1996. OUR ECOLOGICAL FOOTPRINT: REDUCING HUMAN IMPACT ON EARTH. New Society Publishers. Gabriola Island, BC. 160 pages.

<sup>1</sup> Ibid. page 3.

<sup>1</sup> Kitzes, J., Wackernagel, M., Loh, J., Peller, A., Goldfinger, S., Cheng, D. and tea, K. 2008. Shrink and share: humanity's present and future Ecological Footprint. PHIL. TRANS. SOC. B. 363:467-475.

<sup>1</sup> Chambers, N., simmons, C. and Wackernagel, M.2002. SHARING NATURES INTEREST: ECOLOGICAL FOOTPRINTS AS AN

INDICATOR OF SUSTAINABILITY. Earth Scan Publications. London, England. 185 pages.

<sup>1</sup> Fiala, N. 2007. Meeting the demand: An estimation of potential future greenhouse emissions from meat production. ECOLOGICAL ECONOMICS. 65:412-419.

<sup>1</sup> Fiala, N. 2008. How Meat contributes to global warming. SCIENTIFIC AMERICAN. 300(February):72-75.

<sup>1</sup> Fiala, N. 2007. Meeting the demand: An estimation of potential future greenhouse emissions from meat production. ECOLOGICAL ECONOMICS. 65:412-419.

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## My Journey to Advocating For Education for Sustainable Development

*William Upholt*  
*University of Connecticut*

Before beginning to describe my journey I would like to introduce the ideas of sustainable development and education for sustainable development as understood by the UN and the academic community working in this area. Concerns about “Sustainable Development” arose in the 1980s when it became clearly recognized that there was a contradiction between the aspirations of developing countries to a standard of living similar to that of developed countries, on the one hand, and the increasing population and dwindling available natural resources of the planet. In its 1987 report *Our Common Future*

the [Brundtland Commission](#) defined sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own need" (*Our Common Future*, Oxford: Oxford University Press, for the World Commission on Environment and Development, 1987). The Earth Charter has also been an important document in further delineating of the concept of sustainable development. Out of this world-wide consultation and other discussions has come the idea that sustainability is not just about the environment but is intimately inter-

connected with economic and social justice issues. Several visual aids are frequently used to present these ideas. One is an image of three overlapping circles representing environmental integrity, economic viability, and a just society. Only when the three concerns are balanced and fully interconnected can there be sustainability. Another model uses three concentric circles: 1) the Earth or our environment without which there would be no people or life; 2) human societies that have evolved with time as the population on Earth has grown; and 3) the global economic systems by which trade and business are conducted, systems that been formulated, in part, by human thought.

Education for sustainable development is defined by the UN as “learning to: respect, value and preserve the achievements of the past; appreciate the wonders and the peoples of the Earth; live in a world where all people have sufficient food for a healthy and productive life; assess, care for and restore the state of our Planet; create and enjoy a better, safer, more just world; and be caring citizens who exercise their rights and responsibilities locally, nationally and globally.”

([http://portal.unesco.org/education/en/ev.php-URL\\_ID=27279&URL\\_DO=DO\\_TOPI C&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=27279&URL_DO=DO_TOPI C&URL_SECTION=201.html))

My parents have been an important influence in the development of my concerns for sustainability. They always emphasized our responsibility to share our well being with others less fortunate, appreciation of the Earth (through hiking and camping) and relationships between community and the earth through experiences such as picking apples and then going to a cooperative cannery to make applesauce for our family’s use.

My first recollection of actively thinking about environmental issues occurred while my wife and I were living in Chicago in Hyde Park in the early 1980s. Ken Dunn, a graduate student in philosophy at the University of Chicago decided that he couldn’t neglect the environmental, social, and economic concerns surrounding him and he founded a community-based nonprofit recycling program employing local youth to go through the neighborhood with an old VW bus picking up newspapers and other recyclable materials left out by the residents. The program is still directed by Dunn nearly 30 years later, and is devoted to the economic and educational revitalization of Chicago neighborhoods through recycling, urban gardening, composting, and other programs that reclaim and reuse resources (<http://www.resourcecenterchicago.org/index.html>).

Following our move from Chicago to West Hartford, CT in 1985 we became Quakers and, through New England Yearly Meeting, I became aware of the national Friends Committee in Unity with Nature (currently named Quaker Earthcare Witness and whose website is: <http://www.quakerearthcare.org/>) and the corresponding committee of New England Yearly Meeting. My wife, Mary Lee Morrison, and I were fortunate to be able to attend a very thought-provoking workshop sponsored by the New England Yearly Meeting Committee at Farm and Wilderness Camp in Vermont with Marshall Massey as featured speaker. Around the same time I organized my first formal sustainability education work (although I was not yet aware of the term “education for sustainable development”), a spring session of Hartford Monthly Meeting’s First Day School using the original

Friends in Unity with Nature “Earthcare for Children” curriculum.

Subsequently, through New England Yearly Meeting I learned of the Earth Charter and became involved in some local Earth Charter events. I led programs about the Earth Charter at a local interfaith group called Earth Prayers and led a workshop at New England Yearly Meeting on aligning the Earth Charter with Quaker queries and about using it as a guide to teach about sustainability.

In the summer of 2006 I accompanied Mary Lee to the 2006 International Institute on Peace Education (IIPE) on the subject “Towards a Planetary Ethic: Shared and Individual Responsibility” at the UN University for Peace (UPEACE) in Costa Rica. During our stay in Costa Rica, I became aware of the concept of “education for sustainable development” or ESD. While Mary Lee participated in the Institute, I volunteered at the Earth Charter Center for Education for Sustainable Development. There I learned about the UN Decade for Education for Sustainable Development (2005-2014) and I was also able to attend some of the IIPE workshops about the Earth Charter and its use in education. Miriam Vilela, Director of the Center, graciously accepted my offer of assistance and set me to work in the UPEACE library doing a web search to collect information about degree programs in EDS for a database. This web searching provided me with an ideal opportunity to begin to learn about the Decade and the importance of ESD.

Upon my return to home in Connecticut, I became interested in finding out more about ESD and the response to the Decade around the world, in the US and locally in Connecticut. I found that although the UN and governments of

many other countries have introduced ESD programs, there has been almost no participation on the part of the US government in this movement. I did learn about the US Partnership for Education for Sustainable Development, a loosely organized NGO composed of individuals and organizations in the US concerned about ESD and working in a variety of focus areas including K-12 education, higher education, business, religion, and other sectors. In my searching for further information about education for sustainability I discovered the PhD thesis of Dr Stephen Sterling from the University of Bath, “Whole Systems Thinking as a Basis for Paradigm Change in Education: Explorations in the Context of Sustainability”, and subsequently his book *Sustainable Education* (Green Books 2001). After reading parts of Dr. Sterling’s thesis I arranged a meeting with Donn Weinholtz, a member of my Monthly Meeting and previously dean of the College of Education, Nursing and Health Professions of the University of Hartford (and editor of QHE) and explained to him my understanding of Dr. Sterling’s writings and the importance of a systematic approach to educating for sustainability. Donn was quite interested in the idea and promised to look for allies with whom I might align my efforts.

Through my study of sustainability education, I became convinced that working for legislative changes, although very important, was probably insufficient to effect the changes needed to move toward a more sustainable world, which include a new consciousness and changes in values on the part of all. I also became convinced that education, particularly K-12 education, was likely the most effective way to move toward these changes. Although all types of educational

approaches are important and should be pursued, K-12 education has the advantage that it has the potential to reach all of our future citizens, irrespective of their economic, cultural status or the level of education they complete. It also reaches broader aspects of our society through their parents and teachers. To follow up on this approach I began trying to identify other individuals and groups in Connecticut that might be interested in or involved in some aspect of sustainability education. While I found that there were many people concerned about global climate change and educating specifically for behavioral change around energy use and carbon emissions, there were few who were very knowledgeable about concerns about education for sustainable development. The most developed sector was higher education as several universities in Connecticut had well developed sustainability or environmental policy offices.

Later, Donn contacted me and said that the Connecticut Alliance of Concerned Educators (CACE) that had been formed in response to the No Child Left Behind Act was interested in organizing their next annual conference around the topic of sustainability education. We learned of a source of funds for planning “Community Conversations” around educational issues and Jim Malley, a professor at Central Connecticut State University and one of CACE’s co-founders, took the lead in putting together a successful application for a community conversation on the topic “Education for Global Sustainability: How do we prepare our children for their roles in creating a future with a *healthy* environment, a *strong* economy, and a *just* society?”. The community conversation brought together a diverse group of stakeholders and was very successful in engaging the participants to

identify their perceptions of the limitations of the present educational system and to come up with alternative approaches that they felt would benefit the students. Following the conversation, we consolidated the resulting ideas and concerns into four areas: 1) concerns of urban and low income areas, 2) advocacy, 3) educational or curricular approaches, and 4) community approach-es. We invited participants from the original conversation back to a follow-up meeting to design specific plans or projects for the four areas.

Several members of the board of the Connecticut Outdoor and Environmental Educators Association (COEEA) attended the community conversation and follow-up meetings. They noted that there was substantial overlap between their concerns and ours and became actively involved in our efforts. Subsequently, combining areas 2 and 3, we formed the [Connecticut Partnership for Sustainability Education \(CTPSE\)](#). Our first effort at implementing our combined interests was the presentation of a panel/workshop discussion at the annual COEEA conference in March 2008. Although the workshop/panel was well attended by an enthusiastic audience, members of the audience noted that our discussion appeared to repeat many years of similar discussions but that there had been little progress in implementing sustainability education.

In late 2008 our group received official status from the state of CT as an organization and formed a board of about 12 individuals including individuals retired from the corporate world, teachers in K-12 and higher education, and state employees from the Department of Education and the Treasurer’s Office.

Following the 2008 conference, COEEA invited CTPSE to work with them in planning COEEA's 2009 conference on the theme "sustainability education for the 21<sup>st</sup> century". A subset of CTPSE members began actively working with COEEA on the planning committee for the conference and played a major role in identifying and inviting the keynote speaker, Debra Rowe, President of the US Partnership for Sustainability Education as well as designing a set of five "mini-panels" on various subjects and inviting individuals as panelists, many from outside of COEEA with particularly relevant experiences pertinent to sustainability education, but not necessarily identified as "sustainability education". We also made a particular effort to advertise the conference widely among individuals involved in education. but not necessarily with a clear previous involvement in sustainability education. We planned a "VIP" session following the keynote and invited a number of individuals with policy making responsibilities to meet with Debra Rowe following her keynote. These included a number of individuals from Central Connecticut State University, the institution hosting our conference. We were quite successful in attracting a diverse group of participants from five Northeastern states that, in addition to K-12 teachers and environmental

educations, included principals, heads of boards of education, heads of private schools, faculty, students and staff from higher education, particularly those in teacher education.

Now that our "big event" is past we are working to develop our organization (web site, membership, conference follow up and year goals). Directions we are considering include: working with a "green academy" in a local urban high school to help them expand their present teaching of green technology by introducing sustainability into their curriculum; working to increase awareness of sustainability education among policymakers, including members of the Education Committee of the State Legislature and individuals working for the State Department of Education; and working with COEEA as they develop a statewide environmental literacy plan. We hope that our recent conference will increase the number of individuals interested in actively working toward our vision of "a future Connecticut where everyone has the skills, perspectives, and values that guide and motivate them to seek sustainable livelihoods, participate in a just and democratic society, and live in an environmentally sustainable manner".

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### **Before Our Extinction**

So what happened to the sequential  
taking to flight of the loons  
this autumn, this late November  
when brown berries of mountain

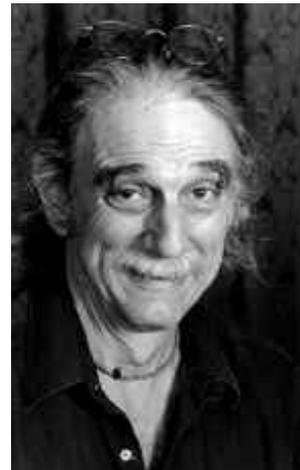
ash turn red, turn outward in  
migration to new life and loons  
inward in the long straight take-  
off of their lifting over winter

to Penobscot islands and the sea?  
Not a sound on the lake where  
before on still water they would  
congregate in song preparing to fly.

They are not here and my fear they  
will never return won't go away,  
even when a sudden flock of geese  
recall the angled run-off flight

of bones heavier than air long  
since evolved, not from some hollow-  
boned ancestor of the late Mesozoic,  
but from a blood-drummed and solid-

boned lizard whose wind-whistle  
of flight haunts the air: they are  
not here, are not, and who will  
remember them when we are gone?



**Hugh Ogden (1938 -2007)**

Editor's Note: This poem and the photos are from  
Hugh's website, which you can access at :

<http://www.hughogden.com/newpoems.htm>

Please click below to listen to Hugh read his  
remarkable anti-war poem, "TheLesson."

<http://www.hughogden.com/audio.htm>

