Ursula August
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Environmental Literacy in Massachusetts
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Abstract

Nationwide research indicates that environment in an integrating context for learning improves engagement, behavior, and standardized test scores in children and adolescents.[1] Environmental literacy is also considered a critical component in meeting environmental challenges worldwide.[2]

The *Massachusetts Environmental Education Plan,* see Fig 1, was was passed by Governor Cellucci in 1999 but hasn't gotten off the ground since 2000 when federal funding was cut and leadership changed. Its goals were to establish a statewide support and communications framework for environmental educators. The plan seems to have struggled with maintaining visionary leadership and has become a hot potato for state department administrators. The Department of Education, the Environmental Affairs Office, and Science, Technology, Engineering and Math (STEM) seem interested in integrating elements of the plan into their existing programs but not interested implementing the entire plan. Subsequently, the plan seems to have little voice in political circles and a bleak future.

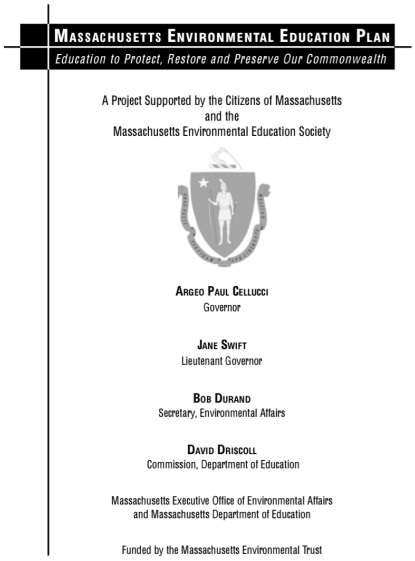

Fig 1: *Massachusetts Environmental Education Plan*[3]

The second case investigates *Alternatives for Community and Environment* (ACE), a nonprofit organization that was founded in 1993. Its goal is to educate young people, mostly of color who live in a poor urban neighborhood of Boston, on the social justice definition of environment and

[1] Lieberman, G. *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning.* Poway, CA: Science Wizards. 1998.

[2] Stevenson, K., Peterson, M., Bondell, H., Mertig, A., & Moore, S. *Environmental, Institutional, and Demographic Predictors of Environmental Literacy Among Middle School Children.* PLOS One, Vol. 8, Issue 3. 2013.

[3] *Massachusetts Environmental Education Plan* front page cover.

environmental education. Its location is critical, see fig 2. The community center is at the heart of a bustling neighborhood, its borders are main arteries and highway connectors, and it is very close to public housing and the respected O'Bryant High School. The neighborhood has a long history of white flight, redlining, and industry interests. This neighborhood also has very little contact with nature (in its traditional definition of ecological living systems). The organization was born out of the social justice and environmental justice movements of the 1980s, it's philosophy is based on Julian Agyeman's theory of "just sustainabilities" which claims that an equitable society is inherently environmentally conscious. Thus the mission of ACE is to produce a nondiscriminatory and just society. The nonprofit has won a number of high profile cases against the state thanks to its leadership who are politically connected and nimble when navigating the political landscape to ensure its mission remains relevant. After twenty plus years, one of the organization's major challenges is whether its social justice initiatives are relevant to climate change and conserving and preserving ecological living systems.

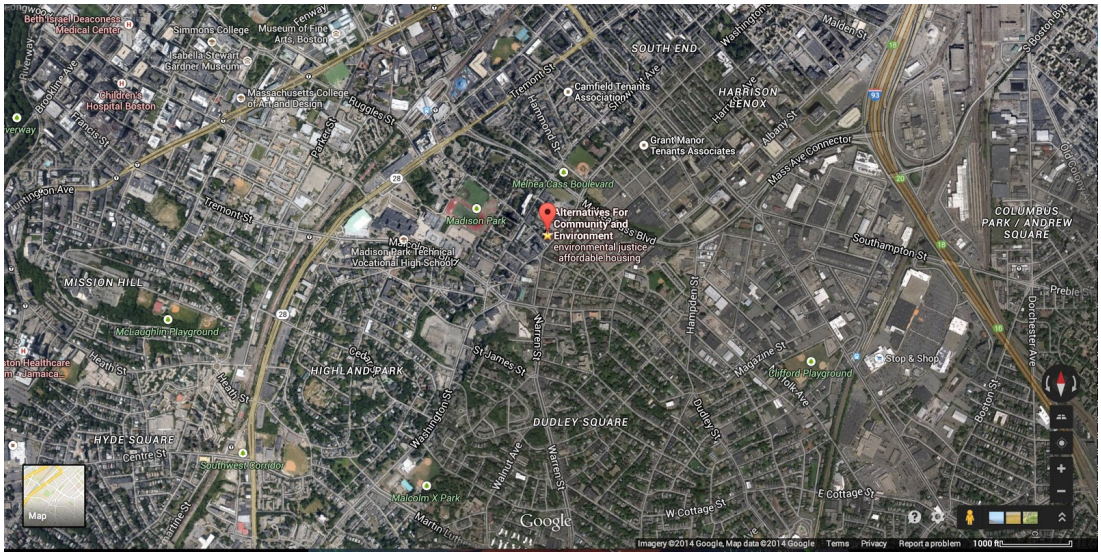

Fig 2: Google Maps, December 18, 2014. Represents the location of *Alternatives for Community and Environment*, Boston MA. Street Map.[4]

Environmental literacy is currently being implemented across the country by government and nonprofits alike, yet it remains unclear whether ecological education includes human justice and vice versa. *How does the Massachusetts Environmental Education Plan and ACE conceptualize environmental literacy; to what extent does each plan successfully implement environmental literacy to it constituents; and what are major challenges facing centralized and decentralized environmental literacy approaches?* Comments on the document are welcome and encouraged, it remains a work in progress.

[4] Google Maps. *Alternatives for Community and Environment, Boston MA*. Street Map. December 18, 2014. Web. URL https://www.google.com/maps/place/Alternatives+For+Community+and+Environment/@42.331473,-71.082773,17z/data=!3m1!4b1!4m2!3m1!1s0x89e37a3b0bd28e23:0x59e58f868f6f6672. December 18, 2014.

The Notion of Environmental Literacy

The wide array of definitions of environmental literacy, as we will come to see, can become problematic. It is therefore important, for the purposes of this paper and the investigations into the two case studies, to understand the context at which the concept and the conversation grew. It is for this purpose that I will attempt to plot some milestones of the movement.

In the 1940s and 1950s, the United States, along with other western countries, experienced an energy and technological boom, with agriculture methods advancing dramatically. In 1962, Rachel Carson released, *Silent Spring,* which put a face and a human experience to the agriculture practices and kicked off, what has become known as, the toxics movement.[5] In response to *Silent Spring,* the United States Environmental Defense Fund in 1967 brought multiple lawsuits against the US government and mandated, for the first time in the country's history, "a citizen's right to a clean environment."[6]

In 1972, *The Limits to Growth: A Report for the Club of Rome on the Predicament of Mankind* was published and presented by a group of MIT scholars at the Club of Rome. The book argued that it was "vitally important to gain some understanding of the causes of growth in human society, the limits to growth, and the behavior of our socio-economic systems [consumption, pollution, and overpopulation] when the limits are reached."[7] The book painted a depressing future of hunger, war, and pollution should there be no sustainability of the status quo and asked:

> *"As the world system grows toward its ultimate limits, what will be its most likely behavior mode? What relationships now existent will change as the exponential growth curves level off? What will the world be like when growth comes to an end?[8]... How will human society respond to problems arising from the various limits to growth?"[9]*

At this point in plotting environmental literacy's history, it is already evident that two strains of thought emerged around the notion of environment: one being the preservation and conservation of natural resources; and the other being a human and social problem whereby people were at risk of their built environment caused by social systems and infrastructure. At the 1972 UN Conference on the Human Environment in Stockholm, educating citizens about the ecological systems around them, became official. In Recommendation 96, environmental education was

[5] Dr Neenah Estrella-Luna, ACE Board Chair and Treasurer, Professor Northeastern University

[6] Environmental Defense Fund, http://www.edf.org/

[7] Meadows, D. H., Meadows, D.L., Randers, J., & Behrens III, W. *The Limits to Growth: A Report for the Club of Rome on the Predicament of Mankind*. New York, NY: Signet Books. 1972. Pg 95

[8] Meadows, D. H., Meadows, D.L., Randers, J., & Behrens III, W. *The Limits to Growth: A Report for the Club of Rome on the Predicament of Mankind*. New York, NY: Signet Books. 1972. Pg 112

[9] Meadows, D. H., Meadows, D.L., Randers, J., & Behrens III, W. *The Limits to Growth: A Report for the Club of Rome on the Predicament of Mankind*. New York, NY: Signet Books. 1972. Pg 123

called upon as a means to address the earth's natural resources, worldwide. In 1975, this recommendation was again addressed at the International Environmental Workshop in Belgrade. Participants at the United Nations Educational, Scientific, and Cultural Organization workshop proposed a global framework for environmental education that has generally been accepted by professionals in the field today and is referred to as the "*Belgrade Charter"*:

> *"Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values. The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones."*

In 1970, the North American Association for Environmental Education was formed as a membership organization aimed at promoting environmental education in the United States, Canada, and Mexico. This continental initiative has been fraught with inconsistencies in its structure and goals but it is worth acknowledging in this study because it illustrates the desire for folks to have a single forum of environmental literacy. In the 1980s, due to major cuts to ecological conservation and social justice programs by the Reagan administration,[10] the definition of environment was opened up to include the lived domain that had an impact on a person's "health, wellbeing and ability to make a living."[11] By asking "who benefits and who is left out of environmental protection" became a natural extension of social justice. Environment became politicized.[12]

In 1996, Chuck Roth published *Benchmarks for Environmental Literacy K-12.* The report was produced for school-based educators and leaders of youth organizations, and is a comprehensive framework of where a young person's ecological education should be during various point in their academic development. "Benchmarks are points of reference from which measurements may be made; standards by which progress toward a larger goal may be assessed. In this case, benchmarks are standards established for knowledge, skills and attitudes that indicate progress toward a mature environmental literacy."[13] The publication looked at the role elementary,

[10] Spirn, A. *The Granite Garden: Urban Nature and City Design.* New York, NY: Basic Books. 1983.
[11] Dr Neenah Estrella-Luna, ACE Board Chair and Treasurer, Professor Northeastern University
[12] ibid.
[13] Roth, C. *Benchmarks On the Way to Environmental Literacy K-12.* Massachusetts Secretary's Advisory Group on Environmental Education. 1998.

middle and secondary schools can play in developing environmental literacy and was to be followed by a secondary document for college and university graduates. It was a guide book for educators, indicating the need for a centralized framework when teaching environmental literacy.

In 1998, Gerald Lieberman published, *Closing the Achievement Gap,* which was a nationwide report that argued that environment in an integrating context improves student engagement and enthusiasm (98% of teachers reporting), behavior (70% of teachers reporting), grade point averages (73% of teachers reporting), and standardized test scores (77% of teachers reporting) for children and adolescents.[14] The report was prepared by the *State Education and Environment Roundtable* where Lieberman still works. The book describes the concept; explores a range of successful programs across the United States; identifies the major characteristics of those programs; and, analyzes the implications for student learning and instruction. The book is not only focussed on social sciences or Science, Technology, Engineering and Math subjects, but is interdisciplinary, and therefore has the ability to be implemented across schools and curricula. As with *Benchmarks*, this publication is illustrative of a larger movement towards a centralized frame for educators.

After many years of growing momentum, the environmental justice movement had a huge win in March 2012 where the *United Nations Human Rights Council* established a mandate on human rights and the environment. It stated that "a safe, clean, healthy and sustainable environment" was a human right"[15] and that it was in government's best interests to "promote best practices relating to environmental policymaking."[16] At this point it's important to note that the two tracks of defining environment and the role of literate citizens was the following:

1. Traditional programming in environmental literacy involves ecology in its broadest sense, combining biology and science for the conservation and preservation of living systems. In this context, young people are taken out of urban spaces and into "nature" where they explore and learn about living sciences. Ecological literacy tends to downplay or erase the role of humans and the impacts of the built environment on the human.
2. In urban circumstances, an environmentally literate person knows about pollution, toxic materials, equity, human rights, poverty, and human security.[17] Environmental justice

[14] Lieberman, G. *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning.* Poway, CA: Science Wizards. 1998.

[15] The Office of the United Nations High Commissioner for Human Rights, www.ohchr.org/EN/Issues/Environment/IEEnvironment/Pages/IEenvironmentIndex.aspx

[16] ibid.

[17] Agyeman, J. *Where Justice and Sustainability Meet.* Environment: Science and Policy for Sustainable Development, Vol. 47, Issue 6. 2005.

> tends to downplay or erase the role of living and biological systems, preservation and conservation of rural lands, and the impacts humans have on the living environment.

In the following case studies, I will attempt to address each of these tracks - whether environmental literacy should be a human health-centered education based in human backdrops, or whether environmental literacy should be an planetary education of living non-human systems set in nature. I will attempt to identify challenges and successes in each of their applications.

The Massachusetts Environmental Education Plan

It was shortly after the 1972 *Conference on the Human Environment* in Stockholm that *The Massachusetts Environmental Education Plan* was initiated with funds from the *Federal Environmental Education Act.* At the time, Massachusetts was the first state in the country to begin work on such a document but it would be twenty five years before it would be completed. One of the many reasons for the delay were cuts in federal support, change in leadership in the committee overseeing the development of the plan, and no real impetus to put a plan into effect. Since 1972, environmental initiatives have been introduced and implemented around the country but by 1997 these decentralized and uncoordinated efforts - most often led by schools, nonprofits, aquariums, museums, state employers, teachers, and professors - were problematic. According a contributor to the plan and then Director of Education MDC Watershed Management, Jim Lafley, since its formation in 1986, the Massachusetts *Secretary's Advisory Group on Environmental Education*, held quarterly meetings in an effort to start centralizing efforts.

In 1997, the goal of the Massachusetts plan was to develop a central education literacy plan of action; assess the effectiveness of programs; provide adequate tools for the development and distribution of literature, training and curricula; and provide funding and support to programming.[18] With the support of an invested federal government and the passing of a number of historical environmental justice bills such as *Clinton's Executive Order to 1964 Civil Rights Act Title VI*, the Massachusetts government was heavily invested in ecological programming. At the time, Massachusetts was the third most densely populated state in the country and the fifth smallest in the nation. Bob Durand, then Secretary of Environmental Affairs, wrote that 44 acres of rural land was developed on average per day around the Commonwealth.[19] The protection of biodiversity, watershed management, and water quality were top considerations. At the time, the state had already protected over 100,000 acres and Governor Cellucci committed to saving an additional 200,000 acres by 2010. *The Massachusetts Environmental Education Plan* was brought in to address these concerns.

In 1997, the *Secretary's Advisory Group on Environmental Education* won a grant from the Massachusetts Environmental Trust and hired academic, Alan Henkin, as the full time coordinator. Henkin conducted workshops and meetings across the state and compiled a draft that proposed a centralized mechanism of distribution, coordination, and communication to educators. The plan was reviewed and finalized over the course of two years and in 1999 it was sent to the Secretary of Environmental Affairs, the Commission of Department of Education, and

[18] *Massachusetts Environmental Education Plan*
[19] *ibid,*

the Governor where it became the official document for environmental education in Massachusetts.

According to the committee, the definition for an environmentally literate person was someone who could apply "critical thinking skills, problem solving strategies related to pollution, habitat protection, and other natural and resource management issues."[20] By extension, environmental education considered ecological and non-human ecosystems as "natural" and conceptualized this as "the environment". Henkin and the committee were influenced by Chuck Roth's *Benchmarks for Environmental Literacy K-12*. At this point, Roths' publication was a couple years old and provided a tried and tested framework for educators to evaluate their student's environmental literacy development. Henkin and the *Secretary's Advisory Group on Environmental Education* were also heavily influenced by Lieberman's *Closing the Achievement Gap* and included it (unbeknownst to Lieberman) as the foundation and main argument for the plan.

The Commonwealth of Massachusetts had two prominent resource management programs, The Watershed Initiative and The Biodiversity Initiative[21] which were to be the focus of Durand's conservation efforts. The Massachusetts' plan to teach environmental literacy was in these areas, with Watershed and Biodiversity management as the core of the curriculum. Various hubs, known as Regional Environmental Education Alliances, were developed around the state. These centers would make up a constellation and would act as distribution centers where folks would receive materials, training, and support. The hubs were established into the following regions: Western (Berkshires), Central Valley (Amherst Region and Connecticut Valley) , Worcester Region (Central Massachusetts), Greater Boston (within Route 128), North Shore, South Shore (Plymouth to Quincy and contiguous inland towns), Cape Cod, Nantucket and Martha's Vineyard, North Central, and Southeastern Massachusetts (Wareham to Sekonk and contiguous inland towns). Colleges and university faculty and graduate students would contribute to the implementation and evaluation on the various programs. According to various sources, these nerve centers were dependent on funding from other community centers, and the state and federal government. A financing plan and timeline for the first five years was put together and is still being investigated at the time of writing. The secretary's advisory group was going to be the coordinating body and would communicate with the Commissioner of the Department of Education; the Secretary of Environmental Affairs; the Coordinating Council; and The Executive Office of Environmental Affairs education staff.

The philosophy driving plan was that knowledge would change behaviour. It is based on the idea that an "informed citizenry"[22] would be compelled to make wise decisions around natural

[20] *Massachusetts Environmental Education Plan*
[21] ibid.
[22] ibid.

resources and would be "motivated and capable of taking effective action on environmental issues."[23]

> *"Environmental education is that process of learning whose goal is to develop knowledge and understanding of global systems, ecosystems, interrelationships and human influences, based on accepted scientific knowledge. Its goal is to develop a lifelong appreciation of the world in which we live and a sense of stewardship for that world. Environmental education uses the natural and built worlds as instructional settings and incorporates problem solving and critical thinking skills to address issues of human and natural world interaction."*

There are polarized views of Massachusetts' plan success and failure. This fact alone means there is little cohesion amongst contributors and indicates flaws in its structure. After the 1999 plan, the committee planned to check in every five years to reevaluate its goals. In 2001, state funding was cut and by 2004, many of the folks, especially its leadership, moved on and there was no formal 2004 check in. Changes in leadership meant changes in priorities and direction. Over the last ten years, there have been five leaders coordinating the plan's development. Robin Organ, the Executive President of *Green Schools*, now holds the leadership position. According to Jim Lafley, the energy of the group goes up and down depending on the leader and "it is a flaw in their approach." There is a unanimous view amongst my interviewees that there is little-to-no new activity on the plan. Every few months, an email is sent to forty to fifty folks, notifying and inviting them to an upcoming meeting. Around 25% of the folks on the email attend the meetings and it is during these few hours that issues are discussed. A volunteer at the meetings writes the minutes and forwards the items discussed on to folks once the meeting is finished. There is no board, no formal structure, contributors to meetings agree that there is even limited recording of the plan's progression. Folks who I spoke with said there was no formal plan to bring the plan to fruition. The *No Child Left Inside* bill is suppose to be on the horizon and the idea is that a state with an environmental literacy plan will receive funding from the federal government. A number of states have drafted a plan in the event that *No Child Left Inside* is realized. Unfortunately I was not able to ascertain if this is a goal for Massachusetts since Robin Organ did not reply to my emails or even to folks I interviewed who reached out to her on my behalf. Every interviewee cited a lack funding as the reason for the lack of progress and implementation of the plan and, as an informal volunteer group whose members work on the plan in addition to their personal jobs, this argument can be understood. The idea that it is because no one is getting paid to do the job, the job doesn't get done. In short, there seems to be no visionary leadership or board to move the plan forward. There is no strong financial or managerial support and I was not able to get access to a business plan at this time. There doesn't seem to be a long term strategy for the plan of how partnerships with local, state or federal

[23] *Massachusetts Environmental Education Plan*

government or academic institutions could be coordinated. Adrian Ayson, a former plan contributor and current Management and Program Consultant for Environmental Education at the New England Environmental Education Alliance said in an interview, "the state of the Massachusetts Environmental Education Plan is sad."

Investigations into other state plans shows that there are other ways of getting a program implemented. Some states have hired people, similar to Alan Henkin in 1999, for a coordinating position while other states have divided the plan among different state departments and allocated action items to salaried personnel. In Washington State, the department of education has taken on the plan; Maryland and North Carolina have hired coordinators to run the plan. During my interview with Lieberman, he stated that the 1999 Massachusetts Environmental Education Plan document was roughly only 10% of the state's complete strategy. According to Lieberman, nobody has found or committed to funding the other 90% of the full plan. I am investigating whether a complete environmental education strategy exists. According to Lafley, a Governor can do much in terms of support for an environmental education plan but Meg Colclough, a contributor to the 1999 plan from the Executive Office of Energy and Environmental Affairs, says that it remains to be seen which direction the new administration takes when it is sworn in January, 2015. Colclough is hopeful that environmental education and a revised Massachusetts plan could be slipped into the state's STEM plan, which other states have done. However, Lieberman is suspicious of lumping an environmental program into a STEM system because he, along with Ayson, argues that STEM will not be able to solve what is inherently an environmental problem caused by economic and behavioural issues. Lieberman and Ayson argue that a solution can only come from adjusting people's behaviours. As Michael Shellenberger and Ted Nordhaus argue in *Where Justice and Sustainability Meet* that, "We will never be able to turn things around as long as we understand our failures as essentially tactical, and make proposals that are essentially technical."[24] And perhaps this is the place to ask whether it is the job of a state agency to centralize environmental education. It is clear that centralizing efforts can be limiting because they run the risk of being too heavily dependent on federal government providing funding, which when it is cut, the so-called wheels of the plan fall off and it comes to a halt. An alternative approach for the revised plan could be a healthy division of funding and implementation, perhaps even an informality to an organization's structure which would allow for flexibility when there are shocks to the system.

Since 1972, there have been some significant accomplishments for the The Massachusetts Environmental Plan, most notably the creation of Massachusetts Environmental Education Society, Project Wet, Project WILD, Project Learning Tree, the Watershed Education Program,

[24]Agyeman, J. *Where Justice and Sustainability Meet.* Environment: Science and Policy for Sustainable Development, Vol. 47, Issue 6. 2005.

and the Energy and Environmental Affairs Environmental Education Awards program.[25] Massachusetts was a success because, according to Lafley, it started to bring people together. The environmental education hubs around the state had not been fully implemented but there are a few in operation in Southeastern Massachusetts and along the Connecticut River Valley that were born out of the 1999 plan. Local nonprofits, summer camps, boy and girl scout groups, state and federal employees are still involved and get together to sponsor events during the summers. There are also some formal and informal teacher workshops around the state and that was part of the networking plan and continue to be very successful in the state. In addition, there are some science standards that reflect environmental literacy and, according to Ayson, this is because environmental advocates in the education department have implemented it. Massachusetts was the first state to begin a progressive environmental education plan and it has been a role model nationwide which is a success and proves that the plan itself is replicable. The plan is not a victim of funding or lack of vision, but rather lacks leadership and a road map.

[25] *Massachusetts Environmental Education Plan*

Alternatives for Community and Environment

Alternatives for Community and Environment (ACE) is located in Dudley Square, a poorly invested neighborhood in Boston with a history of redlining and white flight. Founded in 1993, ACE's goal is to educate young people from the neighborhood about health and housing issues, politics and leadership, food and transit access. As mentioned earlier, environmental literacy (in its traditional notion) focusses on the biological and nonhuman environment and tends to downplay the social and human-built environment.[26] As illustrated earlier, over the last forty years, there has been some tension between the two definitions. According to ACE's Board Chair and Treasurer, Dr Estrella-Luna, contemporary environmental education theory isn't consistent and doesn't teach people how to understand their immediate, real-world physical environment, and so ACE and the environmental justice movement aims to address this problem.

In traditional environmental literacy curricula, young people are often taken to parks or reservations to learn about living systems. It can be argued that such an approach can perpetuate the idea of "nature" as "the other" and separate the notion of "environment" from one's everyday world. By removing young people from their neighborhoods, it also has the potential to miss the opportunity for young people to see and articulate their built habitats as a system of inputs, flows, and life and their role in this system. The inclusion of urban into the idea of environment is a progressive notion that, I would argue, goes back to Olmsted and his ideas around nature and the city. But it is obvious that when considering social systems as a living system, the conversation quickly becomes a political. And this is what ACE encourages. Environmental justice can be considered a component of social justice and, according to Estrella-Luna, has connections to other issues like immigration, economic security, police brutality, racism, and classism. Environmental justice aims to address these problems and focus on building human security and equity. ACE has taken up this position in Massachusetts and it's mission is:

> *"ACE builds the power of communities of color and low-income communities in Massachusetts to eradicate environmental racism and classism, create healthy, sustainable communities, and achieve environmental justice. Systemic change means moving beyond solving problems one by one to eliminating the root causes of environmental injustice. ACE is anchoring a movement of people who have been excluded from decision-making to confront power directly and demand fundamental changes in the rules of the game, so together we can achieve our right to a healthy environment."*

[26] Agyeman, J. *Action, Experience, Behaviour and Technology: Why it's Just Not The Same?* Environmental Education Research, Vol. 12, Nos. 3–4. 2006. Routledge Taylor and Francis Group. 2006.

ACE's theory of change is not strictly education. According to Estrella-Luna, education is the first step. ACE looks at the "frame behind environmental experiences" and in doing so, develops a political approach. This is the main departure from the traditional environmental perspective where education and consciousness is the primary tool - often where it stops. ACE and environmental justice do not start or stop with consciousness and education, rather they begin with trying to develop a political consciousness, politicising the environment and the role of students in society, and aim to end with systemic change. The definition of environment, and by extension environmental literacy, is critical in this context. According to ACE, environment is broad and external to the self yet impacts health and wellbeing and ability to make a living.

ACE is a statewide organization that offers its services (where applicable) to the whole Commonwealth. It stretches from Boston to Westfield and down to New Bedford, operating and relying on a larger network of smaller community centers. ACE's Transit Justice program, under the banner of the *T Rider's Union*, advocates for better public transportation in the Boston metro. As an organizing program, it aims to "build a unified voice" for vulnerable folks who depend on public transportation. The *T Rider's Union* has been running for a number of years and in December 2014, Richard Davey, the general manager of the MBTA, will announce whether their campaign to subsidize young, low-income people using the MBTA. ACE also provides legal services to low-income folks by coordinating with the *Massachusetts Environmental Justice Assistance Network*, a system of 200 attorneys, law firms, public health professionals, and consultants, who provide pro bono assistance to folks throughout the state.

The Roxbury Environmental Education Program is one of ACE's youth education programs that operates in the summer in the Roxbury neighborhood of Boston. The program's theory of change is political education and the method of educating students involves theory, investigating data, peer mentoring, and experiential learning. Every summer hundreds of students are taught environmental justice by student leaders and volunteers and student are given the opportunity to pick a topic they care about and create a campaign around it. These campaigns are handled much like political campaigns because they organize support on the ground and ally with folks are are able to advocate for the students. However, the strategy has changed over the years. According to Estrella-Luna, litigation was a successful strategy in the 70s and 80s due to appointments of sympathetic judges. She says that the environmental justice movement has had to let go of litigation and mobilize from the ground up because of, what she describes as, a "greater amount of conservatism of judges" in today's courts. Arguments that were used years ago are no longer effective. *Roxbury Environmental Education Program's* new strategy of organizing influence and moving away from the courts appears to be working for the organization as it has managed to win a number of significant cases, for example: in 2007, ACE helped members of the Chelsea community successfully oppose a diesel power plant in their community; in 2002, ACE pushed for Massachusetts to enact its first Environmental Justice

Policy; and in 2002, ACE forced 100 clean fuel buses to be incorporated into the regional transportation plan.[27]

ACE's organization and leadership is an anomaly. Nonprofits that focus on organizing around political change are notorious for having staff-burnout due to working in a trying environment as well as limited staff often requires members to work longer than regular work weeks. There is also often a lack of resources like time off, benefits and competitive salaries. ACE's organization seems to have a structure that prioritizes a work/life balance, one that seems to value an environment of open conversations especially when having to deal with difficulties. There are vacations, competitive pay, and benefits (even for part-time staff). Even during the financial crisis, these priorities were kept. Folks were reluctant to reveal the nonprofit's entire financial model but it seems that ACE has been operating at a deficit because of the principles mentioned above that they are not willing to let go. There have been no cuts to salaries, staff, health insurance or staff member's 401K. ACE is funded by private donations, state and federal grants. It seems to have also found a balance between a decentralized and centralized structure. It terms of financing, it relies on both the public and private; and in terms of coordination, it operates within a network but still has autonomy. In addition, much of its assistance comes in the form of from volunteer staff with academic practices which allows for meaningful contributions. For example, some of its current academic partnerships include Dr Estrella-Luna who is a professor at Northeastern University; Penn Loh who is a professor at Tufts University and serves various roles throughout the organization; and Dr Julian Agyeman who is ACE's moderator and a professor at Tufts University. Academics also have the ability to bring in extra labor, research, and basic assistance in the form of graduate students. Northeastern University's School of Public Policy and Urban Affairs have been working with ACE for years, as has Tufts University's Urban and Environmental Policy and Planning Department. There seems to be a visionary board that offers strong financial and managerial support in the forms described above. Since ACE has been operating for 21 years, there is a long history and there appears to be a long term strategy for the organization.

With this all being said, there is criticism of ACE in terms of its dependency on the "just sustainabilities" model of environmental justice. This notion relies on the idea that a healthy environment is the result of a healthy society. Agyeman, who coined the term, argues that societies that are inherently more socially just in terms of income equality are naturally more inclined to be environmentally sensitive.[28] Agyeman's research is respected and there are certainly many instances in this model where that has been the case. However, there needs to be

[27] Loh, P. *Environmental Justice Organizing for Environmental Health: Case Study on Asthma and Diesel Exhaust in Roxbury, Massachusetts*. American Academy of Political and Social Science: The Annals of The American Academy of Political and Social Science. 2002.

[28] Agyeman, J. *Action, Experience, Behaviour and Technology: Why it's Just Not The Same?* Environmental Education Research, Vol. 12, Nos. 3–4. 2006. Routledge Taylor and Francis Group. 2006.

an improved element of natural living systems incorporated into the programming. Most of the literature and programming has little-to-no mention of animals, plants, or natural biological systems. As discussed in the *Massachusetts Environmental Education Plan* case study, Lieberman and the *State Education and Environment Roundtable* has long documented the value in educating young people about living and biological systems.[29] Since educating young people is a foundation of ACE, it seems natural that the beneficial spillover from learning about ecology could be incorporated better into their model. In addition, climate change and the conservation and preservation of earth's fauna and flora does not seem to be a concern for ACE which is worrying since, to quote Agyeman, "environmental health is human health."[30]

[29] Lieberman, G. *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning.* Poway, CA: Science Wizards. 1998.

[30] Agyeman, J. *Where Justice and Sustainability Meet.* Environment: Science and Policy for Sustainable Development, Vol. 47, Issue 6. 2005.

Conclusion

According to Jim Elder, the Director Campaign for Environmental Literacy who has worked on environment literacy state plans nationwide and the *No Child Left Inside* bill, there seems to be a problem with the operating theory of why plans like the *Massachusetts Environmental Education Plan* go wrong. The initial problem, he states, is that there isn't a common definition for environment or environmental literacy, as we have seen earlier. In addition, environmental education is an unstable field compared with math or science, and at only thirty years old, its knowledge is changing so rapidly it is difficult for educators to keep up. Elder says the old rule in education of taking 10 years for a new idea to be included into textbooks applies to environmental education.

In terms of the application of a state plan, funding, political incentive, solid organizational structure and strong leadership are critical to a plan's success. Since 1970, there have been countless programs and organizations have been interested in developing environmental literacy across the country yet only one successful plan is in effect in Maryland. A broader investigation into what is preventing nationwide environmental education plans from getting off the ground is necessary. Preliminary research indicates that there is no ownership in state and federal departments. According to Meg Colclough, education departments don't want it or can't implement it; environmental agencies don't have the authority to enforce it; and the conception of it in its basic form, is contested. Environmental education hasn't found it's identity or a home.

But according to Elder, the fact that environmental education plans don't have a home available in politics shouldn't stop it from becoming a reality. He argues that the first step is for a politically savvy leader to navigate the political landscape and assess political assets and allies: who is supportive and who could be supportive. Once there is a basic idea laid out, there can be a strategy to build support within government.

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