Found Outdoors: Outdoor Education & an Environmental Ethic

A Thesis in the Global Studies Department, Eugene Lang College, The New School

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Abstract:

This thesis is a combination of teaching methods and materials found in outdoor and environmental education. It seeks to synthesize an 'environmental ethic' from these approaches that addresses contemporary issues of environmental change and stewardship. In its second section, this thesis exposes how such an ethic can be utilized in two opposing ecological geographies. This section is comprised of two modules, or sample itineraries, for teaching ecology and an 'environmental ethic' on the Colorado River and in New York City respectively. In addition to providing an in-depth examination of the specific environmental issues that effect these places, these modules seek to explain the underlying ecological systems that support them.

Introduction: The Lens

The Issues

Our planet's environment is changing at an escalating rate. The ecological legacy of the twentieth century had been enormously more destructive than any before it, and the twenty-first is on track to maintain this trend. The generation that I was born into is faced with the rapidly accruing consequences of this damage, a reality that our predecessors could not have imagined even forty years ago, but is now recognized by a majority of the population of the United States.[1] Yet today many of our country's economic and governmental leaders seem to be acting in willful ignorance of the ways in which our nation could reverse its role in this increasingly tragic predicament. I say tragic not only in reference to the degradation of natural places and systems in our country, which that are often the last to be considered , and inevitably the last to be protected, but to the damage and setbacks that increased environmental change will inevitably cause to our population as well.

Obviously this is not only an American issue. As of now the world population is projected to round out at ten billion by 2100, and much of this growth will not happen in the United States.[2] Many point to burgeoning industrial nations such as China and India as primary offenders in the most current battles over carbon emission standards and environmental

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[1] Pew Research Center. "Climate Change: Key Points from Pew Research". Last modified January 27, 2014. http://www.pewresearch.org/key-data-points/climate-change-key-data-points-from-pew-research/.

[2] United Nations. "World Population Prospects: The 2012 Revision". 2013. pp. xviii. http://esa.un.org/wpp/Documentation/pdf/WPP2012_Volume-I_Comprehensive-Tables.pdf

pollution. There is a grain of truth in this relativistic argument, but to enter into such reductions is to sidestep the crux of the issue: that environmental change is a global phenomenon and cannot be tackled effectively by petty and piecemeal strategies.

Alongside those skeptics who would seek to maintain the status quo for their benefit are those who simply believe that it is too late already. They may say, there are already too many parts per billion of carbon in the atmosphere, too much pollution in the oceans and rivers, too many species lost already, too many people to ever have a real hope of reversing our path…and at times it is hard to argue against these points. In fact I do and don't agree: in the ecological short term it is too late to reverse much of the damage that has been done. But it is only when you have a conception that this reversal should occur instantaneously, in a tangible and satisfactory way within a lifetime or two, that the outcome seems impossible to attain. The desire for instant, and single-purpose solutions to complex and interconnected problems is what has allowed us to ignore the negative effects of environmental change up to now. A commitment to long terms strategies is one that knowingly accept the toil and endurance that such a task requires, and constitutes a way to look forward with optimism at the future of ecology on earth.

Moving Forward

It will not be fast, and it will not be full of excitement and glory, but I am confident that the same indefatigable characteristics of innovation and progression that have brought us to the very brink of this crisis also equip us with the tools to adapt to the boundaries we have found. By this I do not mean the further innovation of technological solutions to problems of resource deficiency and environmental degradation. And I certainly do not mean progression in terms of the ‘growth cycles’ that characterize our modern economic philosophies. This thesis can be seen

as a discussion of what else these terms can mean; one of its primary goals is to explore how innovation and progression can be expanded to signify more than their current definitions.

Markets and technology provide a meaning for these terms, one which may be able to sustain us marginally for a while. But as we have seen, to rely on their abilities alone is to ignore much and to lose more: two outcomes that do not sit well in a discussion of innovation and progression. Without altering the basic patterns of consumption and expansion that now define our civilization we risk sacrificing the things that many humans look to for richness and curiosity in their lives: landscapes unshaped by human design, the unbelievable creativity and inspiration of the natural world, the innumerable sights and sounds, smells and tastes and feelings that can be found only outside the human domain. These things inform the place of humanity within the rest of life on this planet, and are tangibly valuable for an individual's quality of life. But more than this, environmental change is quickly becoming primarily a question of security. The risk for populations along coastlines and in expanding regions subject to desertification, a huge portion of the world's population, is becoming more apparent every day.

There are many who work tirelessly to confront these issues, indeed many who have been working tirelessly for the better part of their lives, and yet the growth of our footprint continues. Environmental law and advocacy has become its own industry, governments have responded with inclusive multilateral frameworks for environmental protection and conservation, higher education across the globe has begun to embrace ecology and sustainability with tremendous speed and enormous breadth.

What More Can Be Done?

This thesis is a response to this question, but it is not presumed to be an answer. It is an exploration of how education can play a role in this global and multi-disciplinary effort. Indeed, it examines how a certain kind of education might become one of the most essential tools in coming to terms with environmental change on a grand level.

The first chapter deals with my own background in working as an outdoor educator, and how my philosophies concerning environmental change have evolved to merge with this discipline. The second and third chapters provide background in the general methods and principles of outdoor education and environmental education explored through the lens of several leading schools and organizations. Chapter Two examines the goals and methods of two international outdoor education programs, Outward Bound and the National Outdoor Leadership School. Chapter Three discusses some influential literature in environmental education, specifically the Earth Education Institute, before providing insight into some of the environmental philosophies that I have identified as the fundamental learning objectives for a sound environmental education.

The second section of this thesis presents two sample itineraries, or lesson modules, for my own outdoor/environmental education curriculum. They are modules for a roughly two week program based on environmental ethics, civic leadership, self-care and responsibility, and outdoor recreation. They will attempt to elucidate key ecological processes and contemporary issues of environmental concern in a variety of geographies. The first module, a journey that examines various aspects of the Colorado River on foot and in boat, is centered on teaching about water ecology and human development. The second takes place in New York City and is

an urban camping excursion that seeks to explain the ecological impact of some of the city's fundamental needs: water, food, shelter, transportation, and green spaces.

These modules primarily serve as a platform for proposing and discussing some experiential teaching techniques, as well as navigating specific contemporary environmental issues. Most of all they seek to extrapolate the 'big picture' significance of every day ecological phenomena in way that students can relate to and apply in their own lives. This 'big picture' is not only a concern for environmental conservation, it is a foundation for understanding the basic systems which sustain our every day life, regardless of who we are, or where we are on earth.

Chapter 1: Inspiration for an Environmental Ethic

My Own Way In

Growing up camping with my parents I developed an intimate relationship with the natural world at a young age. Before I ever dreamed of living in New York City I looked forward to the summer trips of my youth in Forestville, CA. Just a few days after school was out every summer we would pile into the car, my brother and I dividing ourselves with a mighty wall of luggage, our parents would tell us to buckle up, and we were off to the loneliest roads and trails imaginable. We travelled all over, from the Olympic Peninsula in Washington's northern coastal tip, to the preserved pueblos and huge sunsets of the Four Corners in the southwest. My dad always had some fossil to show me, or would run up and shove the binoculars in my face, pointing and saying excitedly, "Look! An American Kestrel!" My mom, on the other hand, was the one who taught me how to trek, and would frequently leave all three of us in the settling dust of the trail far below. I came away from these trips with a fascination for the the many mysterious excitements of the wild natural world, and a love of simply being outside in their presence.

That fascination was a seed destined to grow, and sure enough my ambition for more independent adventure quickly blossomed. At twelve years old, however, I couldn't exactly drive off into the distance and seek a nomadic backpacking dream. My mom, although proud of my excitement about the outdoors, helped me get my friends together and instead sign up for a summer backpacking trip with two guides from an organization called Lifeschool.

A Student of the Wilderness

My first Lifeschool trip was a seven day loop through the Desolation Wilderness in the Sierra Nevada Mountains of northern California. Our guides, two scraggly young men who introduced themselves as Casey and Dan, made sure my friends and I had all the things we would need: socks, pocket knife, sun glasses, sleeping bags etc. and then like the trips of my youth, we were off. On this seven day adventure I climbed my first snow-capped peak, learned how to fend off raccoons, and silently, stilly wait out a bear sighting. I forded a roaring river with my shoes on! And one of my friends built a fire with a bow using just friction! For a twelve year old it was a pretty big deal.

Between the beginning of high school and when we finally got our drivers licenses my friends and I went on two more Lifeschool trips. These took us across a number of California's wildest areas; places like the Sierra Nevada mountains and the remote Siskiyou wilderness, better known as the 'Lost Coast' on the foggy northern coastline.

These Lifeschool trips were more rigorous than my family adventures. I was exposed to topics like ecology, basic self-care and self-reliance, first aid, and the principles of *leave no trace:* things that I had never covered in regular school, where environmental science wasn't even on the curriculum. There is no question that I was able to engage with the lessons of Lifeschool more than I ever could in my high school classes. I liked the active aspect of it, and I appreciated my instructors' encouragement of exploration and curiosity, even in the context of un-extraordinary every day things. Another one of the major reasons my experience with Lifeschool was so influential was because of one those instructors, one who went with us on all

three of those early trips. His name was Casey and aside from my parents he must have been the most influential role model of my teenage years.

While in high school classes I was motivated mostly by my mother's continuous haranguing, Casey's lack of the narrowly-applied expectation that school inspired allowed me to check things out for myself. I actually invested myself in the lessons he had to teach (I still methodically make arm-slings following the steps he taught me).

I was more receptive to this 'outdoor guide' than I ever had been or would be to my high school teachers, and it wasn't just because we covered unconventional subject matter. I was generally interested in talking to Casey about anything he might have to say, from travel to our mutual neighborhood supermarket. Casey was a relatively subdued instructor, he didn't ask for the kids attention, and yet he got it in leaps and bounds. He barely asked for questions, and yet inspired curiosity in a way I've seen in few others, teachers or not.

Attending Lifeschool allowed me to build the tools I would need to set out adventuring on my own. It instilled me with the ethical guidelines of backcountry expedition. I developed a respect, not only for the natural world, but for myself and my companions; a sense of being able to decide when to trust completely and when not.

The Wilderness Medicine Institute

As I broadened the scope of my wilderness travels I quickly began hearing about the National Outdoor Leadership School. I was especially drawn to this school's Wilderness Medicine Institute by a practical need for knowledge of wilderness medical training. I felt a sense of responsibility for knowing how to take care of myself and my companions if we had

some kind of accident out in the snow, or far into the backcountry. I also felt an acute desire, and pride even, in learning more about how to deal with every-day medical emergencies and issues.

I signed up for an intensive ten day course. Over eighty long hours I learned what do in all kinds of emergency scenarios ranging from venomous animal bites to severe dehydration, to heart failure, building splints, assembling thermal wraps and more. Our lectures were interspersed with at times grotesquely realistic scenarios and practical tests. Our final test was administered on the trail, at night, in small groups. We were hiking along when all of the sudden one of the students in the back fell down abruptly. He skidded down a steep ledge for a few feet and was then unmoving. As the rest of the group approached we realized he had what looked like a very realistic compound (when the bone sticks out) fracture in his knee. We rushed to him out of real trepidation, the test itself having flown from our minds. Thankfully our training had not, and we handled this scary mock scenario well enough to pass.

Emphasis on this kind of realistic scenario, one that tests not only a person's knowledge but their basic ability to respond under pressure, was what really allowed me to absorb the practical applications of this training. It is not an over exaggeration to say that these ten days were, from my own educational perspective, the most well spent of my life. I was given access to tools that help maintain my every day health, as well as those that could keep me and my companions safe in the most extreme wilderness circumstance, or medical emergencies. As I was leaving the last day of the seminar I couldn't believe that this kind of instruction didn't figure more strongly into high school and college curriculums, it should be available, even necessary, for everyone.

Lifeschool: An Instructor's Perspective

In the first two year cycle of my WFR certification I had little occasion to use the more crucial skills of first aid that I had learned. I was busy attending multiple universities and moving around a lot; my adventures were largely recreational, and whether alone or with my friends I had never yet witnessed a serious injury. But I was anxious to see what these new skills might allow me to do.

Most of all I dreamed of finding a position guiding backpacking trips abroad, maybe with a summer program of some kind. My search was not as fruitful as I would have hoped: most guides seemed to have a lot more experience than my zilch. As I began to move farther down the list of major outdoor ed outfits I was applying to, I had a sudden realization. I decided to approach the same Lifeschool I had attended in my youth with a proposition: I could start as an intern, with the hope of moving into a full instructor position with time. Jim Neville, Lifeschool's founder and director, cordially welcomed me to join his staff training trip later that spring to see how I might be able to fit in. This year they were hiring on an almost completely new staff and some fresh faces, even completely inexperienced ones, were welcome.

When I attended the informal but ambitious training run by Jim that May, I was astounded by the eclectic and energetic people that I met. Each had their own story of amazingly rich adventure, as well as their own approach to the profession they shared. In a way what ensued was more of a three day group-huddle than a job training, with each instructor sharing their own stories, lessons, ideas and feedback. Many of these people had been working in the field for years: in a profession where so much trust is imparted on only a few individuals it is always easier to hire veterans than first-timers. The training addressed sensitive topics such as

student behavior expectations and group problem solving strategies, liability guidelines and codes, instructor standards and rules, and other more specific protocol (first aid and evacuation criteria, medication responsibility, student-instructor relationships etc).

As it happened, one of the trips that summer was understaffed. Jim asked if would be available to co-lead a ten day camping/backpacking expedition in the Point Reyes National Seashore with a young woman named Heather and fourteen students. This trip was to be my trial by fire. Before its end I would evacuate my own co-leader with a deep knife wound and cope with a student's unexpected seizure in the passenger seat of our eight person van. These incidents were stressful, but they allowed me to test myself in the kind of situations that I had been trained for. I also learned quickly about the variety of problems one can encounter in an outdoor education trip. I returned the next summer with an open mind and more experience under my belt.

The summer of 2013 I led three trips. Two of these were short, one week-or-less camping and rafting excursions for graduating middle school classes. This trip engaged with the interpersonal reflection that accompanies such a transition, and students were able to accrue some hard outdoor skills along the way. Although these were solid trips that added to my experience, I found the short time span difficult to work with: as soon as I began to establish a credible rapport with my students I found myself dropping them back at home. I longed for the opportunity to lead a trip like those of my mentor Casey, a longer backpacking expedition into a mountain wilderness with an educational agenda that could extend past the basics and engage with students' specific interests.

Summer Search

The third trip of the season I got what I wanted, and more. In this case Lifeschool had partnered with a high school/college mentorship program called Summer Search. This inspiring organization selects particularly bright students from high schools throughout the country who, for a variety of reasons, do not have the resources at home to fulfill their academic potential. The organization's main focus is preparing students for and getting each into college, but in my eyes its main asset is student participation in the series of summer trips that inspire it's name. These trips are designed to balance the academic focus of a mentorship program with extracurricular opportunities like backpacking or travel abroad, seeking to expand the breadth of the student's experience and knowledge.

In July a co-leader named Alaina and I led ten Summer Search students on a three week expedition spanning a vast array of California's ecological systems. We divided our time between a backpacking trip in Yosemite, camping on Angel Island (an undeveloped island-park in the San Francisco Bay), a three day sea kayaking journey in Point Reyes, and a week of service work with the State Park Service and Habitat for Humanity in both Oakland and San Francisco. As instructors, Alaina and I had a great deal of flexibility in terms of our day-to-day activities.We read from books by John Muir and Gary Snyder, and discussed perspectives on conservation and the importance of nature and wilderness.

Looking back on the Summer Search curriculum, at its holistic approach to imparting ethics and knowledge through experience, I realize that this was the first time on any trip that I thought of myself as a real *educator*. Whether it was the demeanor and receptivity of these incredible students, the variety of places and activities we covered, the inspired and energetic

ideas of my co-leader, or a special combination of all of these elements, I knew I had found, and indeed created for myself, a version of the Lifeschool that I had experienced with Casey.

Until that time I had been working with the idea that Lifeschool allowed me to make money and do what I loved; be in the backcountry. Now I found an even higher purpose that allowed me to see more substantial value in what I was teaching. From my own experience I could see the impact that such experiences had on students, especially on those that might have a hard time in more conventional educational scenarios. I thought of the largely unrecognized value to be found in organizations such as Summer Search and Lifeschool. I also couldn't help but think of the potential of such programs to address environmental issues that were taking an increasingly large part in the educational climate.

The New School

I returned to the New School in the fall of 2013 having changed my vision of the future in a fundamental way. I was excited to explore how this new tool of outdoor education could be used to apply the values of environmental stewardship and social justice that I was learning about in my undergraduate degree. I enrolled in a class through the New School's Milano School in International Affairs called *The Resource Curse.* It dealt with an intricate environmental topic: how resource extraction projects in countries that had large mineral and fossil fuel reserves could create a multitude of governmental, economic and even military problems. This class exposed the complexity that underpins every contemporary environmental issue: the convoluted legal world, the grey areas where no solution is adequate for every stakeholder, and the asymmetries in wealth, information, influence, and education that persistently maintain "developing-developed" style relationships. It exposed the double standard that while resource wealth was continuously

touted by international development institutions as the sure path to economic and industrial development, it simultaneously contributed to the asymmetrical power relationships that kept those organization's host countries in a dependent relationship with manufacturing and value-added economies. Ultimately, it exposed the ways in which seemingly straight forward environmental issues could be made so incredibly convoluted that most people would say, "Enough! This is going nowhere!".

My exposure to this economic/legalistic approach to fighting for environmental justice was important because it allowed me to glimpse into the elite, but nonetheless hardworking world of lawyers attempting to set a top down responsibility standard for environmental stewardship. I glimpsed the snails pace that such heavy administration demanded. I saw the minor steps, the negotiating and compromising which ultimately took a great toll on these program's effectivity: One could stop a single drilling project in Pakistan that would displace four hundred local people, but in the time that these negotiations were settled two more would have already been approved. One could almost feel the energy and funding that supported these legal battles snapping as it was stretched as far as it could go. Slowly I realized that, in light of the current pace of environmental change, it was necessary to explore every possible angle of dealing with it. This meant carrying on the uphill legal struggle, but it also meant that I could get more creative than that. I longed to find an outlet for learning and teaching about environmental change that could reach out to a much larger group of people; most of all in a more approachable way than the complex legal framework surrounding environmental change.

I found my response in education. In Lifeschool I had identified a system that did not seek to train students for an ivory tower profession or esoteric academic discipline; I found a

practical and intellectual platform that required almost no background at all, and actively avoided the stifling classrooms that I had found so counterproductive in my own education. I began to think about how the greater background I now had in environmental change could be incorporated into outdoor education in a much more substantial way. I realized that Lifeschool was only a start, and the possibility for a more academic environmental education program was one that warranted as much attention as I could muster.

Chapter 2: Evolution in Outdoor Education

Dewey and the Need for an Experiential Model

To understand the place of outdoor education (OE) in the wide spectrum of pedagogical approaches it is necessary to start with a more fundamental concept: experiential education. The term 'experiential education' was introduced in the early twentieth century by the educational theorist John Dewey. Dewey was concerned with many of the static and wasteful practices he saw in the schools around him, and his ideas shook the educational climate of his time. Together with the works of several other notable educators Dewey's ideas began to congeal into what is now known as the 'progressive education' movement. This movement would lay the groundwork for much of the liberal arts oriented higher education of today, and help bring attention to the emerging fields of outdoor and environmental education in the twentieth century.

Among Dewey's most important critiques of his so-called 'old education' was its rigid divisions and hierarchy in instructors students relationships. In his 1938 work Experience & Education Dewey establishes a dialectic describing how this relationship 'imposes' knowledge, rather than creating a genuine learning environment. Below is a chart that describes the opposing methods between Dewey's progressive approach and the static education that he sought to replace.[3]

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[3] John Dewey. *Experience & Education* (Collier: New York, 1938), 19.

Opposing Ideals

Static Education	Dewey's Progressive Ideals
Imposition from above	Expression and cultivation of individuality
Learning from texts and teachers	Learning through experience
Acquisition of isolated skills and techniques by drill	Acquisition of them as means of attaining ends which make direct vital appeal
Preparation for a more or less remote future	Making the most of the opportunities of present life;
External discipline	Free activity
Static aims and materials	Acquaintance with a changing world

At the core of Dewey's beliefs is a commitment to maintaining dynamism in a *changing world*. This means questioning everything (especially your teachers), and focusing students' attention on the actual event to be examined, rather than a second or third hand account of it. Another central element of Dewey's progressive education is a multi-disciplinary approach to problem solving and critical thinking. He saw the division of subject matter unnecessary and even problematic in that it did not allow students to bridge the gaps between interests and academic pursuits. Dewey also denounced the importance placed upon classroom settings and materials, finding these traditional trappings both stifling and ineffective. The interconnectivity of educational material was to be found nearly everywhere, Dewey argued, a good educator "should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worthwhile."[4] In many cases this holistic approach to educational material is increasingly important to educators in general, both indoors and out.

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4 Dewey, *Experience & Education*, 40.

John Dewey brought the values of 'progressive education' into the mainstream conversation on educational theory. The concepts of integrating multiple disciplines, using the ambient world as a classroom, and embracing the inevitably changing nature of knowledge are cornerstones for many outdoor education schools and programs. The rest of this chapter will explore several of these later programs in the hopes of showing how the fundamental values proposed by Dewey have been incorporated into many of today's outdoor education curricula.

From Experiential to Outdoor Education: Kurt Hahn & The Salem School

Only a few decades after Dewey came another great innovator in experiential education, one who would create a set of methods that have come to characterize much of contemporary outdoor education. Envisioning a similar restructuring of institutional education as John Dewey, but coming from a completely different background, was the German tradesman and educator Kurt Hahn. As the founder of Outward Bound, one of the most widely established and successful outdoor education companies in the world, Hahn seized on the notion of experiential education and fused it with his own athletic, adventurous, but highly disciplined outlook on nature and life's purpose. His philosophies regarding education were both strictly practical and deeply moral.

Hahn began his career as a school teacher in an early twentieth century Germany school uneasily perched at the brink of continental war. His service in World War I left him with little faith in the status quo, a distinct commitment to public service and social progress, and a manifesto of self-reliance, military discipline and intellectual rigor.[5] In 1920 Hahn established his

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[5] Nick Veevers and Pete Allison. *Kurt Hahn: Inspirational, Visionary, Outdoor and Experiential Educator. (*Rotterdam: Sense Publishers, 2011), 67.

own school in Salem, Germany with the new progressive education movement of Dewey and others in mind.

The Salem School was characterized by a curriculum that combined the practical skills and athleticism which dominated the educational climate of interwar Germany of the time with a rigorous academic standard. This standard held to the fundamental lessons in math, writing and reading etc but expanded on this with lessons on personal responsibility, civic responsibility, and morality. Like Dewey, Hahn saw a serious danger in the early byproducts of industrialized society on education.[6] In his statement on the "Six Declines of Modern Youth" he highlights these dangers succinctly and with a bluntness that underscores their key importance to his pedagogical approach. This critique seem oddly ahead of its time, and rings perhaps even more clearly today than when it was written.

> The Six Declines of Modern Youth
>
> 1. Decline of Fitness due to modern methods of locomotion;
> 2. Decline of Initiative and Enterprise due to the widespread disease of spectatoritis;
> 3. Decline of Memory and Imagination due to the confused restlessness of modern life;
> 4. Decline of Skill and Care due to the weakened tradition of craftsmanship;
> 5. Decline of Self-discipline due to the ever-present availability of stimulants and tranquilizers;
> 6. Decline of Compassion due to the unseemly haste with which modern life is conducted.[7]

Hahn argued that these six qualities were at the core of the human experience, and represented core elements of human happiness and satisfaction. These six points represent the

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6 Thomas E. Smith and Clifford E Knapp. *Sourcebook of Experiential Education: Key Thinkers and their Contributions*. (Routledge: New York, 2011), 9.

7 Smith and Knapp, *Sourcebook,* 9-10.

elements that Hahn wished to address in his educational approach. The Salem School's attempts to remedy these 'shortcomings of the modern youth' were successful in Hahn's eyes, but the classroom was not Hahn's ideal platform for the instruction of such experiential and hands-on learning objectives.[8] Ultimately, the Salem School proved to be only a prototype for the kind of educational curriculum that Hahn would had had in mind for some time.

Outward Bound

Outward Bound was first formulated in Aberdovey, Scotland as a fully expeditionary, short term version of Hahn's Salem school curriculum in approximately 1941. As the school progressed, Hahn streamlined his educational vision by identifying what are still the four definitive cornerstones of an Outward Bound Trip: Rescue Service (firefighting, first aid, lifeguarding), Expeditions (mountaineering, sailing), Projects (manual crafts & skills) and Fitness ('to compete with oneself and attain a higher level of discipline').[9] For many these four skill categories have come to define not only Outward Bound programming, but outdoor education programs in general. Hahn's categorical breakdown of lessons and activities above is a common model for what is I will refer to in this thesis as a 'skill based model'.

Hahn sought to use this model in order to ask the most possible of is students, and thus to show them their full potential. Perhaps most illustrative of Hahn's approach to both student potential and instructor relationships was his self-prescribed imperative to show students that

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8 Veevers and Allison, *Kurt Hahn*, 68.

9 Outward Bound. "About: Experiential Learning, Expedition School, and Outdoor Leadership Program". 2014. http://www.outwardbound.org/about-outward-bound/

"they were capable of much more than they believed, and that often the goals laid before them did not require of them, or best direct, their full potential."[10] Hahn aimed to show his students that potential as clearly and early as possible in their lives, thus empowering the student to shape and pursue their goals most effectively.

The growth of Outward Bound's activities and appeal over the latter part of the 20th century, matched with the organization's widening international breadth, continued to consolidate outdoor education as a growing discipline. Outward Bound came to define the standards and public expectation for outdoor education programming. However, as the twentieth century progressed, more and more programs began to diverge from this model in a variety of ways. The rest of this chapter, as well as the next, are examples of this evolution.

The National Outdoor Leadership School

In terms of geographic scope and organizational size, The National Outdoor Leadership School (NOLS) stands side by side with Outward Bound as one of the most well-respected expeditionary training school in the world. After working for many years to establish the presence of Outward Bound in the United States, educator and mountaineer Paul Petzoldt envisioned a school that could synthesize the skill-based programming of a traditional outdoor education trip like Outward Bound, with activities that emphasized community-building, civic engagement and leadership that students could 'bring back from the wild'.[11] In 1965 Petzoldt made that vision a reality and began the first NOLS program: Mountaineering in the Wind River

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10 Smith and Knapp, *Sourcebook*, 12.

11 Henry Wood. "NOLS History". Last modified 2014. http://www.nols.edu/about/history/nols_history.shtml.

Mountain Range of Wyoming. Today NOLS has expanded to include programs ranging from expeditionary study abroad semesters across the globe and instruction in Emergency Wilderness Medicine to NASA astronaut training and outdoor/environmental educator instruction courses.

As with Hahn and Dewey, the NOLS curriculum is based upon learning to lead through direct experience. This principle is realized by cycling students through a variety of leadership responsibilities throughout each trip, placing them in strategically planned but high-stakes decision making scenarios. By placing an emphasis on tactile leadership skills like these NOLS has been able to enter realms as yet unknown to the outdoor education canon. Many contemporary NOLS programs are now accredited by Universities in the United States and abroad; its wilderness medicine certifications are a global standard, and its instructor courses are recognized as some of the outdoor education canon's most rigorous and rewarding. By taking the professional element of outdoor education one step further, The National Outdoor Leadership School has begun to bridge the gap between the institutions of conventional education and traditional outdoor education programs.

NOLS and Environmental Conservation

One of the most important roles that the National Outdoor Leadership School has played in recent years is bringing environmental education forward as a large component in some of its outdoor programs. Petzoldt established NOLS as not only an expeditionary training school for outdoor activities, but as a school that demands leadership in maintaining the environment where they take place. The NOLS textbook Wilderness Ethics invokes influential conservation writers and thinkers such as Roderick Nash and Rachel Carson, describing an environmental ethic that

looks to protect wilderness for generations to come. Chief among NOLS' environmental education goals is invoking the personal responsibility of each person to take part for their own ecological footprint. One of the first principles that any student on a NOLS trip learns are the seven principles of Leave No Trace. These principles, discussed in-depth in Colorado River Module, originated as an initiative of the Forest Service seeking to limit human impact in protected wild lands, and now is one of the most widely accepted tenets, and basic lessons of outdoor education.

Perhaps most important however, was NOLS' formulation of a more general 'environmental ethic' that incorporates the most recent and progressive environmental standards possible. Embracing the rights of nature and abandoning a perspective that was concerned with human culture alone are central tenets of this ethic:

> A broad anthropocentric approach to environmental values forms the underpinnings of most current environmental policy. One of the greatest contributions of environmental ethics is its influence in changing this momentum, contesting the anthropocentric valuation of the world. New ways of thinking are encroaching on traditional mindsets, as the field of environmental ethics and the political, legal and economic worlds of resource management come together.[12]

These broad-stroked concepts were new to the field of outdoor education when they were introduced in the late 80's and early 90's. They were a fundamentally different way of looking at outdoor education, signaling a shift from the traditional skill-based model of Outward Bound, to one that was capable of addressing a variety of topics within environmental science. In many ways NOLS continues to place a strong emphasis on the hands-on, activity based leadership training that gives it its name, but its firm roots in understanding the environmental changes that

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12 Chadwick, Susan Brame and Chad Henderson et al. *NOLS Wilderness Ethics: Valuing and Managing Wild Places.* (Stackpole: Mechanicsburg, 1992, 2006), 56.

are taking place, and the responsibilities that necessarily accompany these changes remain in each of their programs, from Alaska to Argentina.

The National Outdoor Leadership School's adoption of an environmental ethic represents a fundamental, and most likely permanent shift in the purpose of outdoor education, but its role as an environmental education program is limited to the wilderness in which it operates. Education on conservation and personal responsibility is essential in coming to a true 'environmental ethic', but it is important to ask whether this is enough to understand the 'big picture', outside of the conservation of wild lands and endangered species? It is also important to learn about how the role of humanity has affected these changes, and whether they can be remedied through a broader understanding of ecology and environmental systems.

The goals of environmental education are plentiful and even growing, and conversations on environmental change especially require learning about more than wilderness conservation. To be true to Dewey's comprehensive approach, this dialogue must expand to include a greater spectrum of environmental phenomena. NOLS has been able to fill a specific niche within the realm of outdoor education that explores conservation of preserved wild lands. The vision for my own curriculum includes this, but is not limited to it. In the next chapter I will show how the approach of Outward Bound and NOLS in creating an approach valuing personal responsibility and active learning can be applied to educating for a more widely applicable understanding of the impacts of environmental change. A true environmental ethic is one that can be applied in any location or context, not only in the undeveloped wilderness.

Chapter 3: Deep Ecology and an Environmental Ethic

Environmental Education & Outdoor Programing

The same elements that inspired the work of Kurt Hahn and Paul Petzoldt in outdoor education curriculums throughout the twentieth century caused a similar shift in the methods and goals of environmental education. During the first half of the 20th century environmental education was defined by the traditional fields of biology and geography, yet with the influence of these early thinkers a new branch was beginning to emerge that included conservation and restoration-specific biological inquiry. For the first time principles of ecology had been brought into the mainstream of environmental studies.

In recent years this trend has allowed environmental education to take a larger place in both public and private education. Progressive outdoor education organizations like the National Outdoor Leadership School and Outward Bound began to integrate this environmental approach early in their field's development because conservation was at the core of their existence. Nowadays environmental education have been able to take a larger role, and have popped up even in the most unexpected places. In metropolitan areas like New York City, for example, where wildlife is scarcely seen in its original form, many schools are beginning to implement environmental education programs. Indeed, the Nature Conservancy's LEAF program (Leaders in Environmental Action for the Future) has building entire curricula with environmental education goals in mind, a curricula which has already been embraced by five individual

Brooklyn High Schools.[13] The recent expansion of new environmental education curricula that emphasize examining environmental processes and engaging with the impacts of human developmen, have blossomed in necessary correlation with the measurable acceleration of contemporary environmental challenges.

The Earth Education Institute

Yet some environmental educators see this expansion as double edged sword. While the conversation on environmental change has been expanded, so too have the variety of intentions of environmental education programs. Professor Steven van Matre has spent a good deal of his academic career addressing the inconsistency of methods in the field of environmental education. Van Matre criticizes the trend in environmental education that examines issue-specific projects without extrapolating the essential ecological functions that they exemplify. As a result of this Van Matre says that:

"Environmental problems are viewed as the result of something or someone out there, rather than within us as individuals. It encourages the perspective that if only *they* would do this, or if *they* hadn't done that, then everything would be fine."[14]

Van Matre's Earth Education Institute started in the 1970's with an individual program, and now operates numerous environmental education centers throughout the globe. It emphasizes environmental protection and conservation, but its primary focus is to instill the basic tenets of ecology in its students. Van Matre's lessons ask for students not only to examine primary

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[13] The Nature Conservatory. "LEAF Partner Schools". Last modified 2014. http://www.nature.org/about-us/careers/leaf/partner-schools/index.htm

[14] Steven Van Matre. *Earth Education: A New Beginning*. (Institute for Earth Education: Warrenville, 1990), 22.

ecological functions like the water cycle, ecosystem interdependency, photosynthesis, etc but to internalize how these systems support the everyday experience that humans oftentimes take for granted. Van Matre's goal is for students to form a familiar and comfortable, even loving relationship with the natural world.

As an outdoor as well as environmental educator Van Matre has a great deal to say about the contemporary environmental curricula in the general outdoor education field. He proclaims that the most basic problem with environmental curricula as found in contemporary outdoor education programs "is their overall lack of clearly identified learning outcomes and matching learning experiences."[15]

Van Matre critizes the ways in which well established outdoor education organizations have seemed to integrate environmental education piece by piece, without fully reorganizing the intention of their programs. Van Matre says this is not only unproductive, but indeed damaging at times in that it allows student's to avoid answering some of the fundamental questions that an environmental education requires. In his instructive manual "Earth Education: A New Beginning", Van Matre does his fair share of expanding this critique, but moves on to discuss a variety of specific suggestions for environmental educators; these include how to cultivate productive learning environments and student-teacher relationships, as well as ways in which to productively reflect on and revise your lesson strategies. Van Matre's arguments are constructive in examining the ways that outdoor education programs can fully articulate an environmentally-centric lesson plan. Most influential for this thesis, however, is Van Matre's fundamental goal of imparting the logic of basic ecological phenomena. This approach, both specific and holistic in

[15] Van Matre, *Earth Education Institute,* 26.

its scope, constitutes an essential part of the environmental ethic which serves as a foundation for my own curricula, presented in Section Two of this thesis.

Arne Naess & Deep Ecology

In order to further consolidate this environmental ethic, it is necessary to examine one of Van Matre's own influences. The Swedish eco-philosopher and professor Arne Naess established the school of thought known as Deep Ecology in the early 1970s, and has contributed to a wide spectrum of ecological philosophy.[16] Whereas Van Matre's schools emphasize direct conversation on ecological phenomena, Arne Naess is concerned more specifically with how humans can interact with this phenomena in a productive way. He conceives of a human civilization that embraces ecological diversity and environmental health for its own sake, but also as a source of cultural innovation and joy. Naess envisions an environmental ethic that addresses not only the contemporary effects of environmental degradation and climate change, but fulfills essential human needs in ways that have been ignored by the industrial paradigm of the past two centuries. In his essay "Deep Ecology and Lifestyle" Naess enumerates some of the basic principles that make up this ethic.[17] Below are some that I would like to highlight and discuss in terms of how they could be folded into my own curriculum.

1. Use of simple means. Avoidance of unnecessary complicated means to reach a goal or end.

This principle is exemplified in most outdoor education programs that participate in wilderness travel like backpacking or river rafting; it is inherent in taking all your belongings with you on your back or in your boat. More than this, it is a lesson that manifests itself in every

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[16] George Sessions, ed. *Deep Ecology for the 21st Century.* (Shambala: Boston, 1995), xxiii.

[17] Sessions, *Deep Ecology,* 260.

decision of back country travel, from cooking to navigation, in that for every action there is an equal reaction, or left-over. By allowing students to live an experience (perhaps their first situation) that avoids complicated means, I hope to suggest that such a lifestyle is possible on a more regular basis, and in more regular settings.

7. Appreciation of ethnic and cultural differences among people, not feeling them as threats.

Not only does this ethic inspire a much more safe and comfortable learning environment, but it opens up some of the discussions of social justice which are at the core of environmental stewardship. Specifically Naess' inclusion of 'not feeling them as threats' is most important: it supports curiosity for new experiences, and an engaged learning dynamic. One of the most difficult problems that environmental educators and activists encounter are those who shy away from or demonize differences of opinion and the fluidity of changing ideas. I have tried to my utmost to avoid this kind of reduction, and seek most of all to encourage student-initiated examinations and conclusions .

13. Cultivating life in community (Gemeinschaft) rather than life in society (Gesellschaft)

This tenet highlights another keys aspect of outdoor education programs, and one that is crucially important for the two modules that make up the second section of this thesis. This perspective asks student to think about how communities are cultivated and how they evolve. Naturally, this idea is easily facilitated in an experiential, field-based learning environment such as an outdoor education program. Supporting this ethic in lesson plans supports the ecological model of local community in general, as well as creating a safe learning environment where student discussion plays a central part in the instruction.

14. Appreciation of, or participation in, primary production - small scale agriculture, forestry, fishing.

The next natural step from principle # 13, this opportunity is often found in experiential learning environments. To engage with this principle is to ask students to take on a portion of responsibility for themselves; to fulfill their own needs with their own gumption. It opens up a discussion of how we as a civilization can be more self-sufficient in our communities, and more engaged with the people and phenomena that directly surround and affect us. Indeed, this principle is a central part of any conversation on climate change and energy sustainability, and thus figures more practically into specific conversations of waste and consumption in the modules below.

18. Tendency to appreciate all life-forms rather than merely those considered beautiful, remarkable, or narrowly useful.[18]

This principle underlines the importance of teaching basic ecological phenomena introduced by Steven Van Matre's teaching approach. It is a natural outcome of discussions which drawn out the wider patterns within ecological interdependency. Questioning why some things are valued over others is one of the central ways that this thesis and the modules below engages with environmental degradation in a variety of applications.

Innovation in a Holistic Perspective

As with many thinkers discussed in this thesis, Arne Naess was particularly concerned with a holistic approach to examining the phenomena he studied. Like John Dewey, he saw a danger in dividing education into categorically organized subjects. He likened the 'fragmentary'

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[18] Sessions, *Deep Ecology,* 259-261.

effects of this breakdown to the piecemeal division of environmental management which have time often confused efforts of environmental stewardship. Naess points out that humanity naturally organizes its knowledge in fragments because to analyze the whole is impossible. Naess argues that this breakdown cannot remain un-dealt with in a responsible society, and that ehe reassembly, or synthesis, of these specialized areas is a crucial function that has disappeared from contemporary understandings of environmental change and ecological health.

> The principle point is that *all these studies are fragmentary*: they select and isolate relational nets through abstract analysis. One does not ever attempt to study the whole net. According to our intuition, though, there is something we call reality which is in some sense a unity. The idea of totality cannot be discounted.
>
> The fragmentary studies are satisfactory only because the questions posed are fragmentary. The questions are fragmentary because we cannot study everything simultaneously. In our daily work, and our interdisciplinary cooperation, we must, somehow split up considerations of totality. *But the synthesis must be carried out each time an eco-political decision is to be taken*: we are then responsible for all aspects or sides to the question at hand.[19]

To many environmentalists, the specialization (or alternatively, the fragmentation) of contemporary economic and social processes in our civilization is one of the most environmentally dangerous aspects of our current society. This is because, as Van Matre mentions above, it allows for most people to externalize the parts of this process which they do not directly deal with, and shift blame instead of taking responsibility in their day to day interactions with ecological systems. Naess analyzes this trend and finds that specialization is

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[19] Arne Naess. *Ecology, Community and Lifestyle: Outline of an Ecosophy.* (Cambridge University Press: Cambridge, 1989), 78.

one of the well springs of human creativity, and indeed has become central to our way of interacting with the world and our societies. Naess argues that rather than attempting to eliminate this well-established trend, it should be embraced as a key attribute of human innovation. The danger, he proposes, is not in the occurrence of acute specialization, but in the absence of a final synthesis that aligns human innovation with the ecological principles that it must work within.

The next section of this thesis is an attempt to create an outdoor program that takes bits and pieces from the methods and approaches discussed above in order to form this synthesis. The two lesson modules found below inspect a variety of ecological principles drawn from student community, the natural environment, specific conservation issues, recreation and skill-based education, discussion of civic leadership, observations on consumption and waste, and more. At their most basic level they seek to uphold the values of experiential education introduced in Chapter One: Dewey's belief in using the surroundings as a classroom and encouraging students to make connections between topics, the ethics of civic responsibility championed by Kurt Hahn, and the lessons in self-reliance and capable decision making of the National Outdoor Leadership School. By cementing this sense of social responsibility in the ecological philosophy derived above from the works of Naess and Van Matre is the most basic way to describe the environmental ethic that this paper seeks to describe, and to teach. Keeping in mind the ultimate necessity of Naess' synthesis, the tools that are made available by this ethic are numerous and broad. The lesson modules below seek to use these tools as best they can.

The Colorado River: Interacting with Conservation and Development

Introduction: Aims and Means

The first module I would like to present is an exploration of the Colorado River. This exploration is built upon a series of interactions with key geographies, both natural and manmade, within this vast river system that expose a number of ecological principles. The Colorado River irrigates a huge section of the driest area of the United States, and its water is subject to the control of six separate state legislatures (Wyoming, Utah, Colorado, Arizona, New Mexico, California). Water from the Colorado makes possible a wide variety of activities in this huge area of the United States that lacks an alternative water source. Because of the diversity of uses for this water, an issue compounded by recent population explosion in the cities of Las Vegas and Los Angeles, conservation measures on the Colorado River have been controversial since their inception. In keeping with the environmental ethic discussed above, my primary educational goal for this expedition is to introduce the basic functions of watershed ecology. My secondary goal is to explain the complicated relationship that human development has with the health of the Colorado River through a dialogue on ecological phenomena.

The expedition will begin with a few days of camping in the Rocky Mountains of Colorado. These days will serve as a chance for the group to become acquainted with each other, and an opportunity to set the educational tone for the course. From the great divide we will drive to Arches National Park, just north of Moab, Utah, for a three day backpacking trip. This backpacking section will be an opportunity to begin basic backcountry travel education, and

introduce the arid Colorado Plateau. Most importantly this section will give students a chance to see the crucial role that water plays in desert landscapes like Arches. It is important to give students a chance to see the expansive and remote dry areas above, before moving into the narrow river canyons themselves.

Following arches we will begin the water bound segment of our expedition and travel further south to Glen Canyon National Recreation Area. Here we will prepare for an eight night rafting expedition beginning on the San Juan River and moving into Glen Canyon as the San Juan converges with Lake Powell, the reservoir that feeds into the Glen Canyon Dam. This is the most academically weighted section of the course in terms of reading time and learning objectives. During these eight days topics for discussion will range from basic skills such as water rescue and first aid, to the environmental policies of Glen Canyon Dam, and the the ecology of reservoirs and their removal, or natural dissipation. The final portion of the trip will be a stark juxtaposition from the natural environment, finding students in the middle of Las Vegas in order to discuss the effects of urban development on the Colorado River.

Overall, this course aims to illustrate the wide spectrum of environmental and social issues surrounding water use in the Colorado River area. It seeks to extrapolate from these examples an introduction to some of the most difficult and contentious problems surrounding water management in the 21st century. It's goal is to give students the tools to understand these issues in a tangible way that will allow them to make responsible and informed decisions concerning water use and management in a general way.

Walking the Divide: Introductions & Goals (Day 1 - 3)

- Education Goals: Introductions…Camping Basics… Leave No Trace… Seeing a Watershed…

- Location: Two nights camping at Timber Creek Campground, Grand Lake, CO

The starting point for this module will be right on top of the continental divide in the Rocky Mountains. These three days will be an important introductory time for both students and instructors. They will also serve as a crucial time for establishing the expectations and goals of the course. This is often accomplished in a conventional way through games and icebreakers that build rapport with students and create an equitable space for conversation. A serious discussion on the other hand might be intimidating for students on the first or second day of a trip.

I find that both are useful, but lean towards a more serious and exploratory discussion-based introduction, finding it a useful way to open up dialogue early on. It is much more important to learn from the beginning what the students want from a trip, what their expectations are for it and themselves, than it is to dictate your own terms straight off. An honest dialogue about where students (and instructors) are coming from, what their experiences are with the material they are covering and places they are going to, and what they ultimately want to have done at the end, is direct and effective in establishing a course's tone.

In order to get started on topics that students may not have any background in, like ecology and even the Colorado River itself, I have selected an introductory reading from the book Resurrection: Glen Canyon.The second chapter of this book examines the recent history of water use and storage in the arid western United States during the nineteenth and twentieth centuries. It attempts to look objectively at how the policies of federal land use and water storage

have contributed to a contentious relationship between a variety of governmental and private interests throughout the Colorado River Basin. An excerpt below reveals the depth of complexity that has plagued Colorado management for nearly a century:

> "The legal groundwork for the West's dam-building binge was laid in 1922 with the historic signing of a compact between the Colorado River basin states. As California politicians pushed the federal government to build Hoover Dam, six other states in the basin worried they would lose their development prospects if California claimed their water rights. Western water law dictates that whoever uses the water first can claim rights to it, even if its being pumped from hundreds of miles away. The compact negotiated, called the Law of the River, divided Colorado river water evenly between the upper basin (Wyoming, Colorado, New Mexico, Utah) and the lower basin (Arizona, Nevada, California)."[20]

Activity: Leave No Trace

Camping in the Rocky Mountains will provide an accessible and stable location for introducing the basic responsibilities of wilderness protection and respect: one of the most important pieces of instruction for the entire module. The term "Leave No Trace" is both a mantra for backcountry travelers and a code of ethical behavior for human interaction with the wilderness. Begun as an initiative of the Forest Service in the 1960's, Leave No Trace is now monitored and updated by an organization of the same name that has been producing instructional material and running classes for students and educators alike for several decades.[21]

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20 McGivney, Annette. *Resurrection: Glen Canyon and a New Vision for the American West.* (Braided River: Seattle, 2009), 45.

[21] Leave No Trace. "Our History". Date modified, 2012. https://lnt.org/about/history.

Although this organization, and many educators, look at Leave No Trace as a code of ethics to be applied in 'protected natural areas', it is my belief that limiting the application of LNT principles to wild settings alone is to lose much of its overarching value. One could compare it with demanding pollution standards solely for companies that extract fossil fuels: it is known that they play a great role in carbon emissions, but to single them out is to excuse other contributors and ultimately complicate the problem with double standards. Similarly, we know that wilderness and other protected areas are the most vulnerable to ecological disruption, but this does not mean that the necessary principles of responsibility and care do not apply to regional parks or even city streets as well. It is important to frame any discussion of the LNT principles with this holistic perspective, because it is too often that principles learned on outdoor education course are idly left somewhere on the trail back to civilization. One of the ways that I teach LNT in the first days of a trip is to gather students in the center of our campsite and unveil the seven core principles of responsible backcountry travel:

1. Plan Ahead and Prepare
2. Travel and Camp on Durable Surfaces
3. Dispose of Waste Properly
4. Leave What you Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Others

In order to give students a direct application of these principles I ask them then to provide examples of good and bad LNT practices as they pertain to the surrounding of our campsite. *Plan ahead and prepare,* for example, can entail the simple task of checking the weather before packing for a trip, or it can be as important as anticipating that the next water supply will not be

for several miles so everyone better fill up their water bottles now. It is important to get student's involved with discussing Leave No Trace practices actively, not just asking them all to repeat the phrases, in order to encourage their actual application.

Activity: The Water Cycle

The top of the Rocky Mountains is one of the best locations to illustrate the regional systems of rainwater and snowmelt drainage known as watersheds. From this epic vantage on the 'top' of the watershed students will literally be able to see how mountains divide the flow of water between two areas. How one cloud raining on their heads may flow to the nearest western creek and continue into the Colorado, while another precipitating only a mile to the east and may find itself draining eventually into the Mississippi delta. The goal of this activity is to illustrate how the watershed cycle works from beginning to end. The beginnings in this case are glacial streams, precipitation, and natural springs at the top of the Rockies. Students will have the opportunity to see where water that has been collected in the soil and glaciers emerges in a vast network of small creeks and streams. In following one of these small creeks down the side of a mountain, students will see how numerous tributaries collect into larger and larger rivers, eventually coming down to our campsite beside the Colorado River, the last connection. This chain of collection is called a watershed, and I hope that this activity will give students a way to think tangibly realize this phenomena, rather than accept it theoretically.

Arches National Park: Water Relationships (Days 4-6)

-Education Goals: Canyon Safety & Water Dependency…Water & Development…

-Location: Two night backpacking trip in Arches National Park

Arches National Park is an area of the southwest that remains geographically remote yet well known in public land management debates. I would like to introduce this section of the course with a literary passage by environmental writer Edward Abbey's almanac Desert Solitaire, a reminiscence of living and working on these public lands in the 1960's. Abbey was one of the most controversial and influential environmental writers of his era. He is known particularly for his anti-establishment perspective in the fight to protect wild places, including the support of eco-sabotage, or monkey-wrenching, a movement that gained notoriety with the organization EarthFirst! as an extreme way of furthering environmental justice. Abbey is a polarizing figure: his contributions to the philosophy of conservation are often interpreted as extreme, yet they remain thought-provoking and have fueled the fire for more than one generation of environmental activism. Despite his occasionally reactionary views, Abbey's work remains an exemplary tribute to the environmental movement of his time, and a testament to the importance of as-yet untouched areas like Arches that he invokes.

Harsh Conditions: Abbey's "Water"

The chapter of Desert Solitaire I would like to have students read and discuss, simply called "Water", is a vivid description of the conditions of water scarcity in Arches and the greater Colorado Plateau. Abbey discusses the improbable chances of finding water in such an unforgiving landscape, and describes the process of assessing its potability when one does. He

brings up how basic canyon life is absolutely dependent on understanding water: how to find it, how to manage it, and, in the case of flash floods, how to avoid it.

This is an important opportunity to bring up Naess' tenet of simple means described in Chapter Three. When one has to bring all of the water they will need to drink, to cook, and to clean with them on a two day backpacking trip, their relationship with it will inevitably shift from being taken for granted to valued more highly than almost anything else. By engaging with these topics experientially, in a situation where their importance is tantamount, I hope to move past simply *telling* students about water scarcity and its effect on life, to *showing* them.

Abbey brings up another topic in "Water" that is central to the exploration of environmental ethics in this course: the role of water in human development and our management of the land and its resources.

> There is no shortage of water in the desert but exactly the right amount; a perfect ratio of water to rock, of water to sand, insuring that wide, free, open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different than any other part of the nation. There is no lack of water here, unless you try to establish a city where no city should be.[22]

Discussing this idea of water scarcity in relation to our place as humans in an unforgiving landscape both on a large scale (Las Vegas) and a small scale (a handful of students on a backpacking trip), is central to understanding the ways in which water management could better serve both the environment and humanity. In this case some interesting discussion questions might be: *Where should the line be in developing places like Arches in the context of population*

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22 Abbey, Edward. *Desert Solitaire*. (University of Arizona Press: Tucson, 1968), 130.

expansion in the area? Can humans draw the line between management and over-development, or are we destined to always expand until the bubble pops? Is there an inherent value in open spaces, without people, as Abbey proposes? This discussion will undoubtedly bring up questions which will be turned over again and again in the context of several other examples and readings throughout the course.

Glen Canyon and the San Juan: A Wilderness Intact (Days 7 - 15)

- Educational Goals: Rafting 101… Colorado Water Wars… Glen Canyon Case Study… First Aid…

- Location: four nights rafting/kayaking on the San Juan River, four nights rafting and kayaking on Lake Powell.

The third section, a river trip that features rafting and kayaking in Glen Canyon and one of its tributaries the San Juan River, is perhaps the central section of this module. The complex history and ongoing policy battle over the controversial Glen Canyon Dam can be seen as a microcosm for many of the water-related issues surrounding the Colorado River. I hope to set up a case study of Glen Canyon's history that traces the region from pre-reservoir to current times. This history will illustrate the many facets of water management that go into decisions like whether or not to build a dam, how to divide space between federal protection and agricultural pursuits, and which areas should be protected by law from development. In traveling by raft and kayak I will elevate this case study above the usually loaded bickering of environmental policy discussions, and emphasize the importance of observing the decision making criteria *for yourself*.

This is important not only for empowering students to think critically, but also to avoid the same stalemate that many Glen Canyon Dam stakeholders have been locked in for years.

However, I believe it is problematic to simply throw students into a discussion armed with a reading and one day of experience. Allowing students to get to know a place, or a phenomenon, before judging it is crucial in engaging their full capacity for understanding and exploring a topic. Thus I have broken the Glen Canyon Dam Case Study into two sections. The first section will span four days on the San Juan river exploring the more active and recreational side of a 'river trip'. During this time I want to work on rafting and kayaking skills such as water rescue, introductions to reading (assessing difficulty/danger) white water, and basic river navigation and risk assessment skills. Depending on the time of year and the water level, the Colorado's rapids can be very dangerous, and students need to be one hundred percent clear on protocols before starting on this portion of the course.

The book Encounters with the Archdruid by John McPhee is an excellent resource for discussing the Colorado River, and especially Glen Canyon Dam. Riding the line between a narrative of adventure and a study of two polarized men debating environmental issues on the Colorado River, the book's third chapter chronicles a trip down the Colorado which finds former president Sierra Club David Brower in the same boat as his antithesis, the ex-director of the Bureau of Reclamation and chief designer of Glen Canyon Dam, Floyd Dominy. This chapter is at once a personable tale highlighting the contentious arguments between two icons of American land use, and an interesting dialogue that unveils the surprising amount these two men have in common.

We cruised into the vicinity of a large natural rock span called Gregory Arch, which was now thirty-five feet beneath us. 'If I could swim, I would want to go down and lay a wreath on Gregory Arch, because we've covered it up,' Dominy said. 'Dave, now that we've cemented our friendship, let me ask you: Why didn't you make a fuss about Gregory Arch?'

'We didn't know about it.'

"No one else did, either. No one could have helped you.'

'The public's evaluation of a place they may not have ever seen is what will save a place- it is what saved Grand Canyon. It's what might have saved Glen Canyon.'

'Saved? For every person who ever could have gotten in here when this place was in its natural state, god damn it, there will be hundreds of thousands who will get in here, into all these side canyons- on the water highways. Its your few against the hundreds. Kids can see this place. Eighty-year olds. People who can't walk.'

''Ninety-nine per cent of the population can walk.'

'Before I built this lake, not six hundred people had been in here in recorded history.'

'By building this lake,' Brower said, 'mankind has preempted a hundred and eighty six thousand acres of habitat for its own exclusive use.[23]

This reading provides the perfect platform for beginning an examination of the Glen Canyon Dam. It creates a space for the recreational side of this section, while introducing incredibly contentious environmental issues without having to resort to bad-mouthing or argumentation. Ultimately, it shows that there is more common ground between the two 'battling' sides in this specific debate than might be supposed.

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23 John McPhee. *Encounters With the Archdruid*. (Noonday: New York, 1971), 202.

Glen Canyon Case Study:

This academically minded case study will rely on another section from Resurrection: Glen Canyon that ties together the myriad of issues concerning Glen Canyon Dam: state and federal water management policy, private competition, the demands of environmental conservation: all difficult economic questions that often pit development against protection in a seemingly endless battle between wildlife and humanity.

Glen Canyon has had a central place in the history of American conservation battles since it was dammed in 1963. The 1950's and 60's saw a number of dams erected on the Colorado, most of which were used for creating the reservoirs which have allowed for large-scale urban and agricultural development in a region that could not naturally support such large numbers. As Glen Canyon began to fill, the economy of the region boomed but vast numbers of pristine slot canyons and nearly-untouched native american ruins were submerged underneath the newly (and ironically) christened Lake Powell. The irrigation made possible by Glen Canyon dam supported new agricultural enterprise, and the broad and gentle surface of the reservoir sent tourist numbers, especially those with motorized watercraft, sky rocketing.[24]

Yet the benefits that Lake Powell has brought to the community of Page, Arizona and its surrounding area seem to be fleeting. Lake Powell water storage has decreased dramatically in the last decade (in some places more than one hundred feet) and its water storage has been reduced by as much as seventy percent.[25] Because of this trend many have begun to question whether the dam is still necessary, or even if it is doing more harm than good in its current states.

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24 John McPhee. *Encounters with the Archdruid.*

25 McGivney, *Resurrection,* 26.

It has been proposed by the Sierra Club and other conservation groups that the American public has been given a rare second chance to protect Glen Canyon as a national park, and that this 'second opportunity' should not be missed. In this case study I want to examine the pros and cons of this line of thinking.

The first chapter of Resurrection: Glen Canyon examines the vying interests of agriculture, state and federal policies, local economy and conservation that make this example so difficult but illustrative. This chapter asks questions about how the reservoir has been used since its construction, how the ecology of the Glen Canyon area has changed in that time, and how the general weather systems of the southwest make reservoirs like Lake Powell necessary for human survival, but also sometimes mercilessly at the will of mother nature.

> Although there is little going on in the way of official, government-sponsored biological inventories of Glen Canyon National Recreation Area, the anecdotal evidence of ecological recovery is everywhere. *Backpacker* magazine editors exploring sections of the canyon along the outer reaches of Lake Powell have witnessed the landscape transform in just three years from clogged, barren silt banks to pristine slick rock stream beds bustling with native plants and wildlife. Dave Wegner, science director for the Glen Canyon Institute, estimated in 2005 that the many stretches of side-canyon habitat where the reservoir has been consistently absent for five years are at least halfway recovered to their pre-dam environment.[26]

Activity: Regeneration

Exploring the Glen Canyon of today is a remarkably visceral experience. Miles and miles of lake-floor sediment flows have been exposed by receding water levels, and are like valleys on

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26 McGivney, *Resurrection,* 32.

the moon with no vegetation and little resemblance to their former state. An obvious method that will allow students to see the ecology of a floodplain is to explore it directly. Sending groups of students into the dry areas of Lake Powell's floor to look for areas where revegetation has taken the strongest hold will ask them to think about what conditions allow life to grow in such a landscape. Observing the varying periods of growth to be found in this floodplain, the respective species of plants and animals which have returned to the ecosystem in separate stages, is a direct way to enable students with the tools to measure the greater revitalization of ecology in this region.

Las Vegas: City Water & City Population (Days 16, 17)

- *Educational Goals: Urban Water Use…*
- *Location: Two days exploring the city of Las Vegas, camping at Red Rock Campground*

Las Vegas constitutes the pinnacle of inefficient water use and poor planning for the long term health of the Colorado River, and thus the antithesis of this project. Hoover Dam, the cities largest water source, is approaching the same fate as Glen Canyon: it is running out of water. With this in mind students will explore the urban and suburban areas of the city and look at the ways water is used there, from bathrooms to lawns to giant fountains. Students will be asked to create models that compare the various components of the natural water cycle to the water cycle of Las Vegas. For example, how the infrastructure of a river could be compared with that of city water pipes? How is it filtered, or cleaned, if it is, and where does it end up? How can these differences be understood in terms of environmental sustainability?

In addition to this I would like encourage in another discussion. What can be done about urban inefficiency? If cities are the future of our social system, as they seem to be, in what ways can they be improved upon, both in planning and in everyday consumption practices, that will allow them to continue to thrive as they have in the twentieth century? Is it possible that cities will recede in importance as issues of water access become more and more dire?

New York City: Applications of Urban Ecology

Introduction: Ecology for an Urban Landscape

This second module builds on the questions surrounding urban impacts on environment brought up during the final section of the Colorado River module. In short, it applies the experiential and ecological approach of this thesis to the urban environment of New York City. Unlike the Colorado itinerary it is not intended as a journey from one point to another, but more as a web of interacting elements. These elements are separate but integral systems of infrastructure that support life in New York City for over eight million people: water, food, shelter, transportation and green spaces like parks and wildlife preserves.[27] Ecology does not discontinue where the pavement begins, and I argue that learning about how humans shape their own environment is often ignored as an essential element to any environmental ethic. Understanding the vast network of communities and supply-systems that enable a city to function and grow is crucial in engaging critically and fruitfully with its increasingly important role in the global society. Some environmental advocates have turned a blissfully blind eye to the growing role of urban landscapes in our civilization, but I propose that excluding the 'concrete jungles' of the world inherently narrows the scope of environmental activism to a diminishing portion of the population, and most of all is to deny a vast wealth of human culture and ingenuity that exists in these incredibly diverse geographies. One of the primary goals of this module is to show both the positive and negative effect that cities can have on the land they occupy, and how

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27 United States Census Bureau. "State and County Quick Facts: New York". Last modified 2012. http://quickfacts.census.gov/qfd/states/36/3651000.html

this extends to effect their population. For example, pollution's role in shaping the socio-economic regions of the city is an interesting place to start a variety of conversations, from environmental justice to soil regeneration techniques. Only by engaging with the urban landscape positively, with the same mind for stewardship that one might assume in a wilderness area, can there be significant resolution to the many problems that cities do cause to the environment that sustains them. In its very essence, the aim of this module is to enable students to look critically at the ways in which humanity can create, interact with, and have the power to destroy, the environment they live in.

Water: Croton Reservoir…NYC Water Storage (Days 1, 2)

- *Educational Goals: Historical Perspective on City Growth & Water…Imagining a Natural NYC…Introducing Mannahatta*
- *Location: Two days exploring Croton Point and Reservoir, Camping at Croton Point Park, Westchester County, New York*

Like the cities of Las Vegas and Los Angeles discussed briefly in the previous module, New York City depends on a vast network of reservoirs and aqueducts to supply its enormous potable water 'need'. Covering a wide swath of watersheds from the north Bronx to as far as the Catskill Mountains, New York City consumes more than a billion gallons of water in an average year.[28] The starting point for this itinerary is north of New York City at the Croton Reservoir in Westchester county, one of the city's original water sources. This park is a good place to start the

[28] New York City Department of Environmental Protection. "History of Drought and Water Consumption". Last modified 2014. http://www.nyc.gov/html/dep/html/drinking_water/droughthist.shtml

trip because it is an example of the untouched regional terrain that at one time characterized both Manhattan and Long Islands.

Activity: Imagining the City, Then

In order to frame the students perspective for this module, the first activity that I would like to outline for this trip is one that re-imagines New York City before 'the big apple', and even before New Amsterdam. Manhattan Island was once one of the most diverse chain of ecosystems in the entire United States a thriving center of the Lenape indigenous tribe. As we explore the deciduous forests surrounding Croton Reservoir I would like to ask students to think about what Manhattan would look like if it were filled with trees like these, with hills and creeks and even lakes dotting its landscape. To be able to fish from the Hudson river, maybe even drink straight from its tributaries without worrying about pollution. This exercise in imagination has a dual purpose. First, it allows students more room to think about what Manhattan means historically, and encourages them to imagine it as more than only a 'city', but rather as a dynamic landscape that has seen massive and constant shifts in its composition and purpose. Second, it is important to remind students that, although at times contrary to appearance, the natural environment has not been completely eliminated from New York City, and indeed continues to sprout up between brownstones and root beneath sidewalks and streets.

Reading: Manahatta

Each of the sections of this module, with the exception of green spaces, will be accompanied by a short reading from Mannahatta: A Natural History of New York City by Eric Sanderson. Although the majority of this book deals with the history of New York as it existed before extensive development, its last chapter offers a variety of poignant insights into the

current systems of water, food, shelter etc, and the potential for sustainability in their future. The reading on water in Mannahatta begins with the same reservoir chain discussed above, serving to consolidate the historical frame of mind in 'Imagining the City'. The chapter then moves into a range of issues that concern the city itself, such as sewage and water treatment, erosion and soil health, and the problems that impermeable surfaces like concrete pose to natural cycles. For example, in the context of recently elevated concern for flood control stemming from Hurricane Sandy, Sanderson suggests simply looking at how natural processes deal with these phenomenon.

> What is the solution to floods in a city? Not surprisingly the answer is the same that forests came up with long ago: soil, vegetation and streams. The South Richmond section of Staten Island is being outfitted with restored streams that provide not only runoff and flood control. but also additional parklands and wildlife habitats, together creating a 'bluebelt'.[29]

This text provides one of many of the many examples found in Mannahatta which examine how city infrastructure problems can be solved by applying simple ecological solutions, rather than expensive engineering projects to renovate or build more drainpipes and outlets.

Food: The Bounty of the City…Added Value…Commercial Rooftops (Days 3-6)

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29 Eric W. Sanderson. *Mannahatta: A Natural History of New York.* (Abrams: New York, 2009), 218.

- *Educational Goals: Urban Agriculture 101…Soil Health and Social Justice…Commercialized Rooftops?…How to Shop in NYC.*
- *Location: Three days learning and working at Added Value Farms and the Red Hook area, One day touring the Gotham Greens greenhouses at Whole Foods in Gowanus. Camping at Floyd Bennet Field, Brooklyn.*

As with most urban centers, New York City is dependent on a complex network of food sources from across the world. With such a large population in such a dense space, it is hard to believe how this could be any other way. Yet to import fruits and vegetables from California and Mexico, corn and wheat products from the midwest, and rice from India or Thailand is not only wasteful in terms of carbon emission, but it drives up the prices that the population of NYC must pay for their basic needs. Sanderson makes this argument, but goes even one step further to provide commentary on the implications of eating locally in terms of taking on environmental stewardship.

"From the perspective of sustainability, buying local foods also means that eaters (that is, all of us) are invested in the health and productivity of the lands and waters around us. Keeping our farms around us means we can better appreciate nearby agrarian landscapes (think apple picking in the Hudson Valley or fishing off Long Island's south shore) and consider them, not as opposed to, but as part of, the urban landscape."[30]

This is a perfect example of the practical application of Naess' Deep Ecology, bringing community stake holding into a conversation of food security, and embracing the idea that an urban landscape can in fact produce its own means.

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30 Sanderson, *Mannahatta,* 215.

Case Study: Added Value Farms

Added Value Farms in Red Hook, Brooklyn is one of the larger urban farms in New York City. More than a simple vegetable garden, Added Value has taken on the community role that Sanderson describes above in a significant way: through education and outreach it has positioned itself as not only a primary source of local and organic produce through its CSA and farmers market, but as a job resource for the local community and an information resource for other urban agriculture projects starting in the city.

Visiting Added Value farms over the period of three days will allow students to partake in some of the educational programs that they coordinate. Learning the difference between traditional and urban composting techniques, for example, is a crucial tool in understanding how everyday organic materials can be put into a cycle of re-use. Students will likely be surprised at the amount of city waste that can be used for various kinds of compost, and the speed at which this waste can be turned back to nutritious soil. This is a practical skill that students can use when they leave the program, and it also beautifully illustrates the ecological process of soil regeneration.

In fact, Added Value has recently had some trouble with the health of its soil. When Hurricane Sandy inundated the Red Hook area with floodwater, runoff from the nearby and heavily polluted Gowanus Canal spilled over a large portion of the area, including Added Value's soil beds. For Added Value this contamination necessitated an expensive soil replacement project, but for many in the Red Hook area with small home gardens this process was far too costly. While working with Added Values Farms in the fall of 2013, a graduate student and I began developing an outreach program that sought to introduce a soil regeneration technique

known as phytoremediation to the Red Hook community. This simple process entails planting specific 'hyper-accumulating' plants to remove heavy metals such as arsenic, lead and silver, as well as salts and other acidifiers, from the soil. Understanding how industrial and urban environments can cause severe damage to agricultural pursuits, and moreover how this damage can be remediated, is a crucial lesson for students to take away from their experience at Added Value. This issue not only identifies some of the more nuanced issues within sustainable urban agriculture, but introduces concepts of food security and environmental justice. I would hope for this case study to open a discussion that continues throughout the module addressing how and when environmental disruption coincides with the marginalization of an area or community.

Activity: Whole Foods and Gotham Greens

One of the largest challenges for urban farms is making the jump between a local community-oriented farm to a commercially feasible operation. The future of New York City requires both of these, and we have seen the first in Added Value. In going to visit the recently established Whole Foods Market in Brooklyn students will have a chance to see the latter. Whole Foods' partnership with rooftop agriculture business Gotham Greens is an opportunity to see a rooftop garden and begin to understand the nuts and bolts of how such an operation works. This activity is also an opportunity to discuss how business partnerships such as this one between WFM and Gotham Greens are a model for rooftop gardening in the city. Many buildings in the city are potential spaces for soil beds, yet most are uninterested in either investing in such a project, or unwilling to disrupt the building's tenants etc. I would like to engage in a discussion of how the city, or a private company perhaps, might build a program to incentivize rooftop gardens. What would be the negative or positive consequences of such a project?

C. Shelter: Green Building…Suburbia Lost… (Days 7-10)

- *Educational Goals: Green Skyscrapers…US Green Building Council…Passive building… Habitat for Humanity*
- *Location: Two days exploring the 7 World Trade Center and Hearst Tower, two days working with Habitat for Humanity. Camping in Floyd Bennet Field.*

Perhaps nothing defines the landscape of New York City more than its huge structures. From the skyscraper to the warehouse to the vast man-made parklands, over the years the city has been almost exclusively developed by human necessity . Yet these needs and tastes are changing in important and fundamental ways. As Eric Sanderson says, "Architects today, fortunately, are beginning to think of buildings as the organic structures they are, of and for the places in landscape they create: habitats for people, both responsive to and dependent on the larger ecosystem."[31]

Case Study: The Hearst Tower & 7 World Trade Center and Green Skyscrapers

Green buildings such as Hearst Tower and the 7 World Trade Center have recently arrived on the Manhattan skyline in full force. I would like to prepare students for a case study of these two green buildings with an article from the New York Times written in 2006 comparing their design and utility. The article introduces key concepts of contemporary green building, such as the Leadership in Energy and Environmental Design (LEED) standard developed the US Green

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[31] Sanderson, *Mannahatta*, 224.

Building Council. It also describes some basic techniques of passive building technology, and provides insight into the financial implications of making the 'green' decision.

"The cost of greening the World Trade Center project added less than 5 percent to its budget, Mr. Galioto said. In 2002, when the project was conceived, "manufacturers and suppliers weren't quite certain about it," he said, but "sustainable design is now mainstream. Suppliers, contractors all recognize this."

Habitat For Humanity: Green Building

In order to contrast the huge cost and large scale measures that these skyscrapers introduce, I would like students to also see how small scale homes and commercial buildings compare. In order to do this I would like to spend three days working with *Habitat For Humanity: NYC* volunteering, and learning about the measures of sustainable housing and infrastructure that they have recently adapted.[32] From electricity measurement and green lighting to structural design and material sourcing, I would like the students to have a direct hand in applying the concepts of green design to an actual project. *Habitat for Humanity* is a particularly good portal for this kind of education because it is rooted in the same ideals of social justice and equality, and promotes the shared learning experiences that were central to the approaches of Kurt Hahn, John Dewey and Arne Naess discussed in section one.

One of the major discussions that I would like all of these experiences to bring up is the question of density. Many, including the US Green Building Council that sets the standard for both skyscrapers and single unit homes, see building up rather than out as a way to reduce urban

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[32] Habitat for Humanity New York City. "Building Green". http://www.habitat.org/env/project_examples.aspx.

sprawl, and make city planning more efficient. Many also propose that it is the future of green cities: condensed populations that give more land over to potential agriculture, conservation and recreation projects. I would like to ask students their opinion on this matter, and see how they react to the idea of a city trying to become green.

Transportation: Trains, Planes & Automobiles… and Bicycles

- *Educational Goals: City Infrastructure…The Metropolitan Hub…Transportation Access… Green Subways?…Bicycle Lanes in NYC…*
- *Location: Everywhere, All the Time*

The traffic infrastructure of New York City is nearly inconceivable in its scope, in its cost, and in its sheer, literal bulk. The simplest and most direct way of learning about such a complex and intricate system is by trying to experience as much of it as possible. From the beginning to the end of this module I would like to use public transportation almost exclusively, both because it provides a platform for getting to know the vast NYC transportation network, and also because it is the most sustainable way to travel. Each of the sections presented in this module provide unique opportunities for discussing specific aspects of the city's transportation network. What follows here are some of the possible lessons and/or discussions concerning transportation that can be drawn from each section.

I. Water

A. Beginning this module in upstate New York is a unique opportunity to look at some of the peripheral communities of New York City. In using the Metro-North to travel from Croton

Point to the Bronx, and eventually to Grand Central Station itself, I hope to open an ongoing discussion of how the suburban train systems such as Metro-North, Long Island Railroad and New Jersey Transit create a wider and more interconnected metropolitan hub, and how the infrastructure of the City must fluctuate to support this population as well.

B. Another opportunity that presents itself in traveling from the Croton Reservoir into New York City via the train is following the old aqueduct that once brought the reservoir's water directly into Manhattan. Stopping at the High Bridge Park in the Bronx provides an opportunity to explore parts of this historic aqueduct, and see how water itself is part of the system of transportation allowing the city to function.

II. Food:

A. Added Value Farms in Red Hook is the perfect example of an area in the city that has struggled with transportation access. With no subway stations and only limited bus service, lack of public transportation options in the areas are limiting for the community and for commercial interests in the area. This is an important discussion to have because it highlights the way social justice issues are framed by specifically urban criteria in NYC.

B. Although it may not be as convenient as a car I would like to use the relative lack of access as an educational tool. Taking a bus with a bunch of students will likely be uncomfortable, and certainly will not be the most time-efficient way to travel. However, that is what I intend to do for the several days of commuting to Red Hook from the Brooklyn Marine Park; it is the only way that students will get a taste of what it might be

like to live in a neighborhood where basic needs like transportation are overlooked by the city administration.

III. Shelter & Green Spaces

A. The recent project that Citibank has undertaken in partnership with New York City to provide temporary bicycle access throughout Manhattan and parts of Brooklyn is one worthy of exploring in this module. Using Citibikes students will be able to explore the different parts of bicycle infrastructure such as traffic regulations and bike paths while traveling through Manhattan between the 7 World Trade Center and Hearst tower.

B. A bicycle trip from Brooklyn to Manhattan and back will provide ample opportunity for students to see how the development of Bicycle infrastructure has coincided closely with 'public greening' efforts within parks and streets alike. Places like Manhattan's east river parkway and Brooklyn's reentry renovated Brooklyn Bridge Park are perfect examples of how this phenomenon has grown rapidly in NYC's recent years. On this trip students will be able to see the way in which traffic, architecture, and green spaces integrate to form an increasingly well maintained NYC bicycle infrastructure.

Green Spaces: Quality of Life (Days 10-13)

- *Educational Goals: Park History… Bird Ecology of New York…Quality of Life?*
- *Location: Two days exploring Central Park, One day wrap-up discussion at Floyd Bennet Field and Brooklyn Marine Park. Camping*

Open and green spaces in New York City have always been a precious commodity. Their value is measured in a variety of ways, from real estate markets and urban farmlands to

children's playgrounds and dog parks. Although many New Yorkers don't need the vast openness of wilderness, most have a deep pride in the parks that define their city: Prospect park, New York Botanical Garden, the recently built High Line, and of course, Central Park. In such densely populated places even the smallest community garden takes on a significance whose value transcends that of the land on which it sits. In recent years NYC has seen a huge revitalization of parks and gardens and begun discussion of countless other 'greening' projects. Before examining some of this more recent activity, however, it is necessary to give students some perspective on the history of green spaces in New York City.

Central Park: Its Past, and its Birds

Central Park is the United States most visited urban park, and has been around for longer than many western cities. It was the first urban park in America, and its prominence heralded a movement of park development that follow the industrializing cities westward across America in the nineteenth century.[33] Although some would call Central park a poor excuse for 'real' nature, I find it to be a poignant example of the ways that nature and the city have learned to coexist. For example, even the past fifty years of its history reveals many an insight into the state of the city as a whole: the lows and highs of the city correlating closely with the maintenance of the park. Looking at how Central Park's management and health has fluctuated and at times faltered will allow students a more informed perspective on the iconic, revitalized and well-groomed Central Park of today, and allow them to look critically at how urben green spaces can be destroyed or

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33 Central Park Conservancy. "History". Last modified 2014. http://www.centralparknyc.org/about/history.html

supported. In many ways tracking the recent history of Central Park illustrates perfectly the city's slow-growing trend towards a more sustainable paradigm.

Today the park is a place where bird life is more healthy than one might expect. more than (#) species of birds visit the park every year, inspiring a wide spectrum of ecologic curiosities, along with a growing number of urban bird watchers. Taking the students bird watching may seem mundane, but its rewards go further than simply being able to match patterns and colors with names and habits. In identifying even a handful of different species to be found in Central Park, students will be able to see how a wide variety of native and invasive species have come to co-exist in a relatively small area. If they are timely, they will be able to glimpse a wood warbler, or another of the several species whose migratory patterns still pass unerringly through the middle of uptown Manhattan.

Discussion: Green Spaces & Quality of Life

Thoroughly discussing the important role that natural, greens spaces play in human life, regardless of urbanity, is one of the key objectives for this module. We have seen illustrated in Eric Sanderson's Mannahatta how natural systems can provide simple solutions to problems with city infrastructure, now let us look at the more basic function of green space in city life: providing quality. Arne Naess' eco-philosophy supposes that not only is access to the natural world essential for our continued existence, it is closely connected to our sense of joy and happiness as well.[34] Naess' supposition that this source of joy may not be accessible for some because the capacity has not been developed is both controversial and thought provoking.

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[34] Sessions, *Deep Ecology,* 257.

In the context of this perspective, I would like to frame a discussion with students on the last say of this module in which to go for a walk and discuss this idea: how joy is connected with nature. After having spent two weeks in the city going back and forth the green Floyd Bennet Fields to various urban locations across Brooklyn and Manhattan, students will hopefully have accumulated into interesting perspective on this idea. First, I would like to frame a discussion around this idea: that more green spaces in the city would bring its residents more joy and happiness. Second, I would like to frame a discussion around the group's experience in and out of nature on the trip, and whether in their experience green spaces brought them greater joy, and why.

Conclusion

Although I have come a substantial way in crafting a holistic approach to teaching an environmental ethic, I have not yet perfected it. Indeed, my own synthesis of the materials presented in this thesis is far from complete: there are many topics that I hope can be further examined in the future. For example, an extension of this thesis might look more closely at the nexus between environmental issues and social justice. Although some concerns for social and environmental justice have been discussed in this work, their full exposition could easily comprise its own entire project.

Over the past year many people have asked me: What is the purpose of this project? Are these modules intended for use in a school, or in an outdoor education organization? My answer has always been that I never intended to make a program for either in particular. More important to me has been crafting a general method that uses experiential education to arrive at an ethic of environmental stewardship. I have called the two curricula presented in the second section of this thesis *modules*, why? Because to me, and I hope to the reader, they do not represent only specific lessons for specific places. In creating these modules I address many specific environmental issues, but most of all I desire to frame these issue-specific discussions with an approach that can be modulated to any geography. The modules above are specific ways that this ethic can manifest, given a specific geographic focus, but they are not the limits of its application. This method *should* be useful in approaching school and outdoor education programs alike. It combines central aspects of each, and asks whether contemporary education

can make such a clean distinction between the two institutions. To say that this thesis is a a design for my own outdoor program, or environmental science class, is to miss the its more fundamental purpose: addressing environmental change through the means that make the most sense. In reality, this conclusion is only the beginning and its true test will be taking the approaches and ideas written down here into the field. Only by assessing these tools myself, through experience, will further adjustments and additions be made clear.

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