Journal of Sustainability Education
Vol. 4, January 2013
ISSN: 2151-7452

Catskills-Inspired Learning: Place and Design in a Community College Program

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Keywords: Catskills; community college; design; green building; place; place-based education; transformational learning; sustainability

Abstract: Drawing on various dimensions of place, pedagogies of place, and the relationship between place and design, this article presents a case study of place-based learning in a career-oriented higher education program—the Green Building Maintenance and Management program at SUNY Sullivan. This program is rooted in the Catskills, an iconic ecological-economic place setting that supports the program's goal of training a workforce that can help create and defend sustainable human-landscape dynamics. Current practices and recommendations for the future are discussed.

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Background: Place-Based Education

Historically, education was largely attuned and responsive to the particulars of local communities and cultures. More recently, however, education has been subject to the increasing pressures of globalization and industrialization. American industrialization has influenced the role and purpose of formal education by introducing mechanistic values and systems that became deeply entrenched during the 20th century (Ackoff & Greenberg, 2008). In response to this entrenchment, educational theorists and practitioners have developed a variety of more holistic and responsive pedagogical innovations, including place-based education. Designers of place-based curriculum and instruction have crafted this approach to ensure that education has "some direct bearing on the well-being of the social and ecological places people actually inhabit" (Gruenewald, 2003b, p. 3). This well-being of social and ecological places is central to sustainability education. Sustainability educators can benefit from better understanding the opportunities in place-based education, as well as strategies for incorporating various dimensions and pedagogies of place.

Place-based education, at its core, is "the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum" (Sobel, 2004, p. 7). This process is guided and aided by the principles and practices of various educational frameworks. These frameworks include experiential learning, problem-based learning, indigenous education, multicultural education, bioregional education, community-based education, outdoor education, and environmental and ecological education (Gruenewald, 2003b). Drawing on these frameworks, numerous authors—including Theobald and Curtiss (2000), Smith and Williams (1999), Traina and Darley-Hill (1995), and Hames (1995)—have helped to define the essential characteristics of place-based education, showing that place-based education emerges from the particular attributes of place; is inherently multidisciplinary, is inherently experiential; is reflective of an educational philosophy that is broader than "learn to earn;" and connects places with self and community (Woodhouse & Knapp, 2000, p. 2-3). These characteristics encourage students to connect to their local socio-ecological contexts through experiences in a range of learning environments.

Place-based education is generally intended to complement and expand classroom instruction, encouraging an explicit connection between the school and the community where the school is located (Powers, 2004). The effectiveness of this place-based approach, especially in terms of sustainability outcomes, can be supported through a classroom shift from transmissive to transformative education. The extent to which educators can embrace transformational learning will largely determine the extent to which our educational system can respond to the issue of sustainability and, in turn, the extent to which students can develop the skills necessary for facilitating change and stimulating action towards sustainability (Sterling, 2001). Sustainability-oriented, place-based learning should be supported by educational policies and values that favor collaboration, diversity, flexibility, responsiveness, interdisciplinary connections, locally appropriate knowledge, self-evaluation plus external support, decentralized and bottom-up policy, students actively constructing and owning meaning, creative and open-ended inquiry, and—of course—ongoing community integration (Sterling, 2001).

Evaluations of place-based programs are beginning to reveal promising educational trends, such as improved academic achievement and student engagement; increased student interest in the community; increased teacher satisfaction with their profession; and increased

community investment in schools although research remains limited (Powers, 2004). These trends are supported by fundamental theories within education—including the need for intrinsic motivation—that are inextricably linked to the underpinnings of place-based education (Powers, 2004). Another underpinning of place-based education is the increasingly well-understood psychological benefits of natural places, which support various place-based pedagogies. Specifically, Kaplan (1995) demonstrated the relationship between restorative experiences in nature and information-processing effectiveness. This relationship is supported by the nascent field of ecopsychology, which posits that a cultural sense of separateness from place has led to destructive actions and practices in both the human and more-than-human world, and that co-healing might be necessary for individual and planetary well-being (Roszak, Gomes, & Kanner, 1995). These larger, more philosophical connections will, ideally, be embraced by place-based education, helping to ensure that learners reach their full potential—emotionally, physically, spiritually, socially, and intellectually.

Dimensions of Place

Before exploring pedagogies of place, it is essential to understand the concept of place—a multidisciplinary construct that has been shaped by a variety of dimensions and methodologies. Specifically, Gruenewald (2003a) identifies five dimensions of place that can shape what he calls "sociological-ecological, place-conscious education" (p. 1): the perceptual, the sociological, the ideological, the political, and the ecological. The perceptual dimension of place has been largely shaped by the phenomenological inquiry of David Abram (1996) and others. Gruenewald (2003a) notes that "beginning with Husserl and extending the world of Merleau-Ponty (1962, 1968), Abram's phenomenology aims to reawaken human sensual perception of the animate and inanimate world of human environments" (p. 623). To reawaken this perception, these phenomenologists have suggested that human must, in fact, relearn how to listen and communicate with the interconnected ecological and cultural dimensions of a given place. This enhanced communication can directly impact our experiences with place by deepening our understanding, empathy, and ethics towards the places we inhabit (Abram, 1996; Berry, 1988).

The sociological dimension of place is also essential to consider, given the inextricable connections between place, identity, and cultural experiences. Gruenewald (2003a) notes that "not only is our experience of place mediated by culture, education, and personal experience, but places themselves are products of culture" (p. 626). Unsustainable societies, for example, are largely defined by human constructs that support exploitation, exclusion, and homogenization. A sustainable society, on the other hand, must be defined by equity, inclusion, and multiculturalism, recognizing that "diversity of life in all of its manifestations—biological, cultural, and linguistic—. . . are interrelated (and likely co-evolved) within a complex socio-ecological adaptive system" (Maffi & Woodley, 2010, p. 5). Issues of race, class, gender, power, and politics are all integral components of place and place-based experiences that must be acknowledged and addressed (Haymes, 1995).

The ideological dimension of place is shaped largely by critical social theory, especially as it applies to spatial relationships. Various authors—including Foucault (1980, 1986), Harvey (1996), Keith and Pile (1993), Lefebvre (1974, 1976), Massey (1994), and Soja (1989)—have explored how spatial relationships can shape culture, identity, and social relationships of power and domination. For example, Foucault (1986) argues that the control of space by government, schools, or social institutions tends to legitimize and reproduce the authority of those institutions.

The related perspective of critical pedagogy reminds us that "being in a situation has a spatial, geographical, contextual dimension. Reflecting on one's situation corresponds to reflecting on the space(s) one inhabits; acting on one's situation often corresponds to changing one's relationship to a place." (Gruenewald, 2003b, p. 4). In terms of addressing oppressive elements, there are clear relationships between the ideological and sociological dimensions of place that are oftentimes bridged by politics.

The political dimension addresses the spatial dimension of social relationships. This spatial-social dynamic shapes patterns of oppression and marginalization, which are most effectively addressed through political responses that are framed by radical multiculturalism (Gruenewald, 2003a). To enter into these politics, Gruenewald (2003a) notes that learners might ask: "Where are the margins? How have they been constructed? How do they reveal not only multiple forms of oppression, but possibilities for resistance to and transformation of domination? What have they to teach us about an education that can help move us toward more just societies and communities?" (p. 16). These types of questions embrace multiculturalism and support the concept of eco-justice, which aims to "develop an ethic of social and ecological justice where issues of race, culture, gender, language, politics, and economics must be worked out in terms of people's relationship to their total environments, human and non-human" (Gruenewald, 2003b, p. 6). In this way, a place-conscious political framework can dramatically shift both power dynamics and identity-making processes.

Finally, our understanding of the ecological dimension of place has been shaped by a range of disciplines beyond the traditional field sciences, including environmental education, bioregionalism, and ecofeminism. Ecological matters have been absent from traditional education for decades and, despite institutionalized environmental education emerging as a response, there has been a failure to shift the underlying values of our schools or educational models (Bowers, 1993; O'Sullivan, 1999; Sterling, 2001). Place-based concepts, such as bioregionalism, have the potential to help environmental education better realize its goal of developing a citizenry that is able to live well in a place without destroying (Woodhouse & Knapp, 2000; Orr, 2002). As landscape architect Robert Thayer (2003) points out, this idea of bioregionalism or life-place "connects natural place, awareness, knowledge, wisdom, affection, stewardship, sustainability, and, most importantly, action, as a 'fuzzy set' of nested and covariant concepts" (p. 6). In complement, ecofeminism "offers perspectives on place that are responsive to a broad range of social and ecological issues, including local economic livelihood, equity and social justice, resource depletion, ecological limits, cultural and biological diversity . . . and the importance of grassroots political action to renew damaged human and nonhuman communities (Gruenewald, 2003a, p. 635). These socio-ecological traditions are critical for place-consciousness.

Pedagogies of Place

The perceptive, sociological, ideological, political, and ecological dimensions of place are closely intertwined. Collectively, "phenomenologists, cultural critics, bioregionalists, ecofeminists, and others show that places teach us who, what, and where we are, as well as how we might live our lives" (Gruenewald, 2003a, p. 636). Similarly, the related framework of place-based education has been shaped by numerous pedagogies. Gruenewald (2003a) identifies three of these pedagogical traditions as natural history, cultural journalism, and action research.

Natural history, once a standard and popular practice in American schools, has been particularly effective at encouraging engagement with place (Pyle, 2001).

The former prevalence of natural history education "suggests the once commonplace notion that students and teachers should have regular and direct contact with the plants, animals, and natural features of their environments" (Gruenewald, 2003a, p. 637). Furthermore, the interdisciplinary tradition of natural history provides a valuable structure through which more holistic, ecologically-oriented educational processes can be developed. Kolan and Poleman (2009), for example, view "the practice of natural history as one doorway into the study of wholeness—an inquiry that strives for depth as well as breadth and a commitment to deepening our sense of connection and belonging to this world" (p. 31). To this end, Kolan and Poleman (2009) offer eight ecologically-inspired principles that should encourage the design of natural history education, and that would be consistent with the values of transformative sustainability education (e.g., favoring diversity, creativity, open-ended inquiry, and locally-attuned and responsive processes). The principles that the authors suggest are: (1) reestablish relevance; (2) start in place; (3) engage the senses; (4) commit to curiosity; (5) design for emergence; (6) reintegrate the whole; (7) emphasize relationships; and (8) lead with values. This orientation to natural history education is systems-oriented, embracing an expansive view of natural history that encourages its resurgence as a primary pedagogy of place. It is also consistent with recent literature on place attachment, which has shifted from focusing primarily on geographical attributes to a broader conception of landscapes that also considers sociocultural aspects of attachment (Beckley, 2003).

This expanded understanding of place has led, increasingly, to a valuable overlap between natural history and design-related disciplines. This overlap is supported by the work of Relph (1976), who explores the phenomenon of place as an expression of human involvement in the world. His understanding of place extends well beyond basic geographic or functional classification and includes the experiences that a person or group has within a given place. In fact, Relph (1976) identifies three fundamental components of place, which include the physical component (natural and built), activities (e.g., destructive, creative, or passive; communal or individual), and human intentions and experiences. These components are linked by the character or personality of a place, i.e., the "spirit of place," "sense of place," or "genius of place" (Relph, 1976, p. 48). He also points out that neither the physical component or the patterns of social relationships can fully determine the character of places, and the exact dynamic between these different components of place-making must be considered within the context of a specific place.

Place and Design

Widespread feeling of placelessness—marked by less concern for diverse characteristics and needs, and more homogenous design—can be partially attributed to inauthentic place-making. Relph (1976) distinguishes between inauthentic and authentic place-making, noting that an authentic attitude "comes from a full awareness of places for what they are as products of man's intentions and the meaningful settings for human activities, or from a profound and unselfconscious identity with place" (p. 64). Design that is not rooted in this identity with place tends to be "single-purpose, functionally efficient, often in a style independent of the physical setting, reflecting mass values and contrived fashions" (Relph, 1976, p. 78). On the other hand,

more authentic, sustainable design must include deep, holistic connections between people, nature, and the built environment (Seamon, 1993; Todd & Todd, 1993).

Acknowledging these connections, Casey (2009) notes that "the strangeness of a wild place disappears not just because I have become familiar with it but because I realize that I am bonded to it—and it to me—at the most primordial level" (p. 246). These connections are not simply about combination, compromise, or synthesis. Instead, Casey (2009) argues that something "emerges from the conjunction itself that is not present when the factors are held apart" (p. 252-253). He terms this reciprocal emergence as "thickening," contrasting it with concepts such as coarsening and thinning. To this end, the creation of built places should also be a mutually transformational process through which participants transform not only local landscapes but themselves as subjects (Casey, 2009; Van Der Ryn & Cowan, 1996). Design should also grow from place: "building calls for heeding the parameters of the natural setting: a building, like a mythology, 'reflects its region.' Not to heed the natural features of a region is to build unreflectively; it is to occupy a site rather than to construct a place adequate to its setting" (Casey, 2009, p. 149).

Ecological design is one framework through which these goals have been pursued. David Orr (2002) explains ecological design as "an art by which we aim to restore and maintain the wholeness of the entire fabric of life increasingly fragmented by specialization, scientific reductionism, and bureaucratic division . . . grounded in the belief that we have an ancient obligation to act harmoniously within those larger patterns" (p. 29-30). In addition to transforming our physical relationship to the planet, these ecologically-inspired built environments can inform our emotional and intellectual relationships to places and spaces. Several of the precepts of ecological design overlap with previously discussed dimensions of place. Among other things, ecological design calls for design that follows the laws of life, is determined by biological equity, and reflects bioregionality (Todd & Todd, 1993).

Design that follows the laws of life would strive to adapt and evolve, and create conditions conducive to life. This would include various ecologically-inspired strategies, such as ensuring resilience through diversity, leveraging interdependence, being locally-attuned and responsive, and using cross-pollination (Biomimicry Guild, 2008). Each of these strategies can enhance biocultural diversity and long-term sustainability. In the same way that biological diversity and cross-pollination are essential for healthy ecosystems, the cross-pollination of ideas and diversity of cultures will be essential for developing sustainable biocultural systems and designs. In fact, research has shown that the most successful and resilient urban communities are often those that are the most diverse (Talen, 2008). In this way, design, ecology, culture, and politics begin to merge.

The theme of creating conditions conducive to life must also be applied, explicitly, to the well-being of humans. For this reason, another precept of ecological design is that biological equity (i.e., the just access to and distribution of basic resources) must determine design. This should include water, food, climate, and other factors that contribute to equity. By consistently considering how design will impact the oppressed and impoverished, design can begin to more effectively address the interconnected challenges of resource and environmental depletion, cultural degradation, and poverty. A renewed focus on bioequity will also help to ensure that those individuals who have been most negatively affected by unsustainable development will be able to reap the benefits of future sustainability, through green jobs, political engagement, and other justice-oriented strategies (Jones, 2008).

One other key precept of ecological design is that design must reflect bioregionalism. As Todd and Todd (1993) point out:

> For most of humanity's evolution bioregionalism has been unselfconsciously and effortlessly a part of design . . . culture and identity, geography, topography, climate, and indigenous resource base all have been for millennia silently but eloquently expressed in a manner appropriate to the bioregion. The contrast is great between the diversity of such structures with the recent trend towards homogeneity in cities worldwide which have been erecting skyscrapers that are ringed with bands of urban sprawl. (p. 45-46)

The more we reflect biocultural diversity in the built environment, the better both biological and cultural diversity will be supported; at the same time, the stronger the biocultural diversity of a given area, the more locally attuned and appropriate design will be, both socially and ecologically. As Van Der Ryn and Cowan (1996) point out, sustainable design solutions must grow from place: "Ecological design begins with the intimate knowledge of a particular place. Therefore, it is small scale and direct, responsive to both local conditions and local people. If we are sensitive to the nuances of place, we can inhabit without destroying" (p. 77).

Collectively, these precepts highlight the deep connections between the perceptual, sociological, ideological, political, and ecological dimensions of place, as embodied by the built environment. This supports the concept of design as pedagogy, which can enhance both place-based education and broader sustainability education. Place-based learning opportunities expand significantly when design encourages and supports interaction between the physical and lived components of a place. In educational settings, for example, the design and place-making process can be ongoing through the activities and functions of the building (Orr, 2002). These ongoing interactions between people, nature, and the built environment can highlight connections and promote transformational learning experiences. An educational model that is rooted in these practices would redefine human-landscape dynamics, ultimately encouraging a cultural shift towards an ecologically-inspired society that is both "deeply autonomous and self-organized, yet deeply connected—with the earth, all species, and each other" (Shiva, 2005, p. 117).

Case Study: SUNY Sullivan's Green Building Maintenance and Management Program

In 2008, I was hired to implement a first-of-its-kind curriculum in Green Building Maintenance and Management (A.A.S.) at SUNY Sullivan, a small community college that is part of the State University of New York system. SUNY Sullivan's rural, 405-acre campus—which includes various renewable energy systems and other sustainability features—is nestled in the Catskill Mountains less than two hours from New York City. This setting has shaped the Green Building Maintenance and Management program, which provides students with the skills and knowledge needed to effectively manage buildings that incorporate sustainable building principles and technologies. This program includes coursework related to ecological design and maintenance principles; energy efficiency and renewable energy; green building products and materials; building automation and controls; sustainable landscaping and site selection; the LEED building assessment system; and life-cycle economic analysis. Through this coursework,

my students and I are exploring the vital relationship between place and design, and recognizing the potential of place-based learning in career-oriented higher education.

The Catskills: An Iconic Ecological-Economic Place Setting

To understand this case study, it is crucial to establish an understanding of the landscape-human dynamics in the Catskill and Hudson Valley bioregion of New York State. Water has been a central social, ecological, and economic theme throughout the region for generations. We can see this in how water has been important for recreational pursuits, in the construction of an elaborate reservoir system for New York City's drinking water, and most recently in the "hot-button" issue of hydraulic fracturing for natural gas. Geologic evidence suggests that these environments are especially vulnerable to water erosion if deforested and particularly challenging to restore (Wilder & Kiviat, 2008). At the same time, the value of services provided by Catskill ecosystems has often been cited as an economic rationale for preservation (Sagoff, 2002). This complicated relationship between ecology and economy has shaped the social and cultural dimensions of the Catskills during the past three centuries.

Ecologically, much of the Catskill region is defined by the Catskill/Delaware Watersheds (Figure 1), which cover roughly 1600 square miles of Delaware, Greene, Schoharie, Sullivan, and Ulster counties, west of the Hudson River (Wilder & Kiviat, 2008). The Catskills reaches its highest elevation (1281 meters above sea level) on Slide Mountain, the peak made famous by the pursuits of renowned naturalist John Burroughs (Wilder & Kiviat, 2008). The Catskill/Delaware Watersheds are primarily forested although these forests were profoundly impacted for various agricultural and industrial purposes during the 18th and 19th centuries. It is probable that all of the Catskill forest has been cut one or more times, current estimates are that the region has between 80-90% forest cover (McIntosh, 1972; Wilder & Kiviat, 2008).

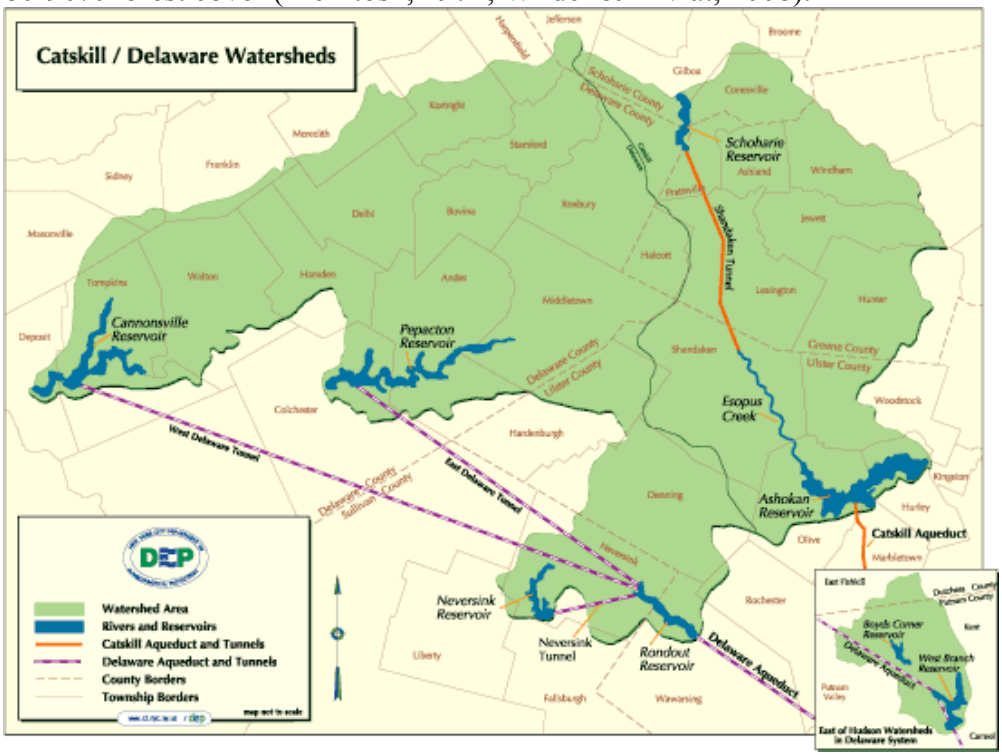

Figure 1. Retreived from http://www.nyc.gov/html/dep/html/drinking_water/wsmaps_wide.shtml.

Only modestly inhabited by native tribes and early European settlers before the 18th century, the region became quickly transformed because of the demand for natural resources. The first industry to develop was timber rafting, followed by tanning. In 1860, a staggering $7 million worth of tanned leather was manufactured in the Catskill region (Conway, 2008). Unsustainable practices, however, quickly depleted the hemlock forests upon which the tanning industry depended. By the 1880s, many of the people that had made fortunes in tanning were bankrupt (Conway, 2008). This served as an important lesson for the region about the often complicated relationship between economy and ecology.

Tourism in the Catskill region expanded in the 19th century, encouraged by the opening of the Catskill Mountain House in 1824 and the vistas for which it was famous. Authors and artists of this era "reconstructed the mountains in their work, creating powerful images of the mountains, developing expectations for Catskills visitors and encouraging pride among the region's residents" (Stradling, 2007, p. 77). As visitors to the region grew, so did additional accommodations and opportunities for recreation—including the introduction of fly fishing to the United States. At this time, the Catskills began to solidify their legacy as one of the places "most central in shaping subsequent American attitudes toward wilderness" (Stradling, 2007, p. ix). Ever-increasing cultural enthusiasm for fresh air, clear water, and inspiring landscapes ultimately bolstered support for policy addressing wilderness issues.

In 1885, New York State took public action by creating the Catskill Preserve, which was originally almost 34,000 acres. This designation marked the beginning of a new era in the Catskills: "As second growth trees on state-owned land reached marketable size, they remained to protect the Catskills' streams and soil instead of being cut [and] beginning a new cycle of . . . stream pollution and erosion. Mountaintops were available for hikers, climbers, and campers. Fishermen and hunters were welcomed" (Evers, 1982, p. 589). The Catskills began to solidify their legacy as one of the places "most central in shaping subsequent American attitudes toward wilderness" (Stradling, 2007, p. ix). In 1904, additional acres were added to the preserve and the region was designated as the Catskill State Park.

Shortly after the Catskill Preserve was created, the rural landscape of the Catskills and the urban landscape of New York City became more intertwined. In 1905, the state legislature created state and municipal water commissions, and the Catskills quickly came to be perceived as part of an urban watershed. An elaborate system of reservoirs and pipelines were proposed, approved, and constructed. Sacrifices in the Catskill region were great, with residents giving up homesteads and businesses; dozens of communities were completely inundated. Over time, the scenic reservoirs have become naturalized, yet feelings of anger and pride both endure: "anger at what the city had forced upon [the Catskills] and pride at what the mountains had accomplished as a result" (Stradling, 2007, p. 176). The Catskills have become a parable for linking economics and ecological services, demonstrating "how New York City realized billions of dollars in economic benefits by sustaining the Catskills watershed as a water filtration system rather than . . . building a new filtration plant" (Sagoff, 2002, p. 17). While the realities of this relationship are decidedly more complex, the dynamics between economy, ecology, and culture in New York State continue to be shaped in large measure by forest and watershed services.

In the mid-20th century, the ongoing relationship between New York City and the Catskill region was exemplified by the booming tourism industry. Resorts catering to a complex ethnic geography offered a range of world-class entertainment and recreational opportunities in what

became known as the Borscht Belt (Evers, 1982). As the Borscht Belt began to decline, another culture began to emerge. By the 1960s, the Catskill region had become a haven for artist colonies and famously, a retreat for folk artists like Bob Dylan. Ultimately, in what can be viewed as a last hurrah for a region in decline, the Catskills became the site for one of the era's most famous events: The Woodstock Festival. As the sounds of Woodstock faded, however, the range of challenges facing the Catskills became increasingly clear. Economies based on natural resource extraction and tourism had collapsed, and the counterculture of the 1960s was unable to fully establish a new model for living in the region. Historian Alf Evers (as cited in Heppner, 2011) notes that:

> Among the mountains, two powerful sides of life have operated side by side and, by a thousand strokes, giving the region its shape. One was the greed for land and wealth and the power over others, which both symbolize; the other was the free play of the imagination in the arts and the exploration of nature. Sometimes the two forces worked together, more often they were locked in battle. The story of their relationship is, at the same time, the story of three centuries of the Catskills. (p. 15)

These landscape-human dynamics have helped to shape place-based education and design in the Catskills, including SUNY Sullivan's Green Building Maintenance and Management program.

Catskills-Inspired Learning: A Unique Opportunity for a Community College Program

What could place-based learning look like in a career-oriented higher education program and, more specifically, in the Green Building Maintenance and Management program at SUNY Sullivan? There is a great deal of potential for place-based education at the community college level. Community colleges are not only deeply connected to the communities in which they are located, but they are also uniquely suited to adapt to the needs of their surrounding area. Generally, these adaptations are geared towards the social and economic realities of a given region. In a region like the Catskills, however, the environmental history and ecological elements of place are also central. By drawing on these connections, community colleges can facilitate the study of the ecological-economic relationships, and train a workforce that can create and defend sustainable human-landscape dynamics. The Green Building Maintenance and Management program at SUNY Sullivan strives to accomplish both these goals.

As discussed earlier, Kolan and Poleman (2009) argue that a systems-oriented, expansive view of natural history could encourage its resurgence as a primary pedagogy of place. To encourage place-based learning, the Green Building Maintenance and Management program tries to embody a similar approach when it comes to our view of design. The program, as a whole, is approached through the systems-oriented framework of ecological design. Consistent with this framework, the program is structured to emphasize locally attuned and responsive solutions; interdisciplinary and holistic connections; and community integration. All these elements are strengthened by cultivating a strong sense of place, supported by a deepened understanding of ecological principles and bioregionalism.

For students, spending time immersed in and reflecting on place seems to be very important. In recent course reflections, one student wrote that the program "has helped me see my surroundings in a much more connected way. My vision has evolved on walks by looking at the gradient and slopes, and seeing how there is interplay between the hills, trees, streams, wildlife—all the different species." Another student wrote that understanding these ecological

principles "has encouraged a more thoughtful understanding of building shape, function, and purpose . . . I find myself realizing the overall requirements for healthy places." This understanding will help to ensure that our graduates are not only effective advocates for place, but also effective managers of place and placed-based relationships. As green building managers, they will be tasked with adapting and evolving to changing realities, and optimizing various different systems and processes—ecological, economic, and social.

Recommendations for the Future

Specific courses in the Green Building Maintenance and Management program—including the introductory courses (i.e., Introduction to Green Building and Introduction to Renewable Energy), a more in-depth course in renewable energy (i.e., Solar and Wind Systems), and a course focused on sustainable landscaping practices (i.e., Care of Green Spaces)—lend themselves to direct engagement with place, and a wide variety of place-based projects and assessments. This range of opportunities isn't as compatible with the more technically-oriented courses related to mechanical and electrical systems (e.g., Energy Management, Building Automation and Controls); however, the potential to use the campus and the broader community as a learning, living laboratory is ever increasing. Furthermore, lessons learned through the study of ecological principles—specifically those related to communication, system integration, and "free" (i.e., passive) energy—are directly applicable to these technical courses.

In addition to incorporating place-based experiences across the curriculum, it may be beneficial to have a course that more explicitly considers the Catskill bioregion (Figure 2). As one student notes, "the program should include a course that talks about the history of the Catskills and the ecological functions in the Catskills. I have a shallow understanding of these things, but an elective dedicated towards examining the social and ecological functions of the region, as well as the interplay between the two could help our designs and management strategies." In this place-based course, students could examine the patterns and processes on local landscapes from an interdisciplinary perspective, with an emphasis on ecology, geology, soil science, plant ecology, and ecosystem geography. The identification, life history, distribution, abundance, behavior, and inter-relationships of various species could be included in this course. Historical and current human-landscape interactions would also be explored. Upon successful completion of this course, students would be able to: (1) identify and discuss key natural patterns and processes that have shaped the Catskill region; (2) articulate a bioregionalist perspective of the Catskill region; and (3) apply their understanding of the Catskill region to advance place-based initiatives, including those related to sustainable building management. Case studies and field trips highlighting the most successful examples of ecological design throughout the bioregion could help students achieve these learning outcomes.

Beyond specific courses, the program as a whole can encourage direct engagement with place and place-based projects. In terms of program content, integration with ecological systems and community stakeholders is considered essential for sustainable building management, reemphasizing the importance of bioregionalism. However, in terms of course format and delivery, this integration could be encouraged much more directly. From an ecological standpoint, there is student consensus that more time should be spent outside, both in the wild and the more developed areas of the Catskills. As one student pointed out, "this could help my creativity in figuring out systems to work in this environment." From a social standpoint, another student noted that she and her peers are motivated by service-learning projects that encourage

"stronger relationships with local people, businesses, and activities." A particularly transformational experience for several students was imagining, proposing, and ultimately developing a community garden on campus and subsequently, a straw bale shed construction within the garden. Similar college-wide and community-based projects should become more central to the program's offerings.

Recognizing this potential, SUNY Sullivan at one point proposed the development of the Center for Advanced Sciences and Technology (CAST) building. As originally envisioned over five years ago, the building would incorporate the latest in sustainable design principles and serve as a bioregional showpiece that would teach its occupants about sustainability in multiple ways. This building was also proposed as a home for all of the college's sustainability- and health care-focused offerings. A Green Technology Park, which would provide a series of shovel-ready sites for light manufacturers and distributors of sustainable products and services, was envisioned adjacent to the CAST building. This unique endeavor was intended to link higher education with business and government, providing students with internship opportunities as well as encouraging economic growth and development in the region. While the general vision for the CAST building and Green Technology Park was developed several years ago, the project has stagnated, and many specifics have not yet been considered or need revision.

The process of reimagining the CAST building and Green Technology Park could engage students, faculty, and staff, as they work together with architects and the broader community. As an initial step, I think it would be valuable to create a Design Studio course through which students would be able to refine the project proposal and, perhaps most pressing, the fundraising strategy (Figure 2). This would help to reengage the campus community and ensure that students were involved from the outset. Following this, a variety of projects—such as calculating projected building energy savings, selecting and specifying green building materials, designing monitoring systems, designing renewable energy systems, designing green roofs, designing landscape plans that incorporate local and native plantings, designing waste treatment systems, and/or developing management plans for the facility—could be integrated into existing courses. Many of the required courses in the Green Building Maintenance and Management curriculum (e.g., Energy Management, Green Building Materials, Building Automation and Controls, Solar and Wind Systems, Green HVAC, and Care of Green Spaces) would be well-suited for these types of projects (Figure 2). These projects would all be grounded in and inspired by the students' understanding of the Catskill bioregion.

Students could also work to ensure that the CAST building and Green Technology Park, once completed, would encourage place-based learning and community revitalization. For example, students could co-create strategies for using the completed CAST building as a pedagogical tool; the maintenance and management of the CAST building should provide ongoing opportunities for place-based learning and engagement. Students could also help determine which business and activities would be appropriate to incorporate in the Green Technology Park. Once selected, students could draw on their understanding of the Catskills bioregion to help these partners consider the integrated, collaborative strategies that would be most appropriate for enhancing ecological, economic, and social performance. Finally, students could explore opportunities for participating in and supporting broader community initiatives and revitalization projects. Collectively, these actions would ensure that the CAST building and Green Technology Park at SUNY Sullivan would serve both as a powerful educator, and as a means of connecting to and sustaining the broader Catskills ecology and economy.

Contract of Study: Course Requirements & Suggested Sequence
Green Building Maintenance and Management AAS (61-62 Credits)

Name: _____ **ID #:** _____

Address: _____

Tel No: ( ) _____ **Cell:** ( ) _____

Email: _____ **Entry:** _____

	Course #	Course Name	Cr	Term/ grade	Notes
Pre-Program Requirements					
❑	Math Comp				
First Semester:					
❑	IAS 1001	Freshman Seminar	1		Proposed: Design Studio
❑	ENG 1001	Composition I	3		
❑	MAT	Basic Algebra or higher math	3		
❑	GRB 1100	Introduction to Green Buildings	3		Place-Based Project; Field Trips
❑	GRB 1200	Introduction to Renewable Energy	3		Place-Based Project
❑	CPT	Computer elective	3		Proposed: Natural History of the Catskills
Second Semester:			**15 - 16**		
❑	ENG 1301	Fundamentals of Speech	3		
❑	HUM 1304	Ethics	3		
❑	GRB 1300	Energy Management	3		CAST Project
❑	GRB 1400	Green Building Materials	3		CAST Project
❑	SCI 1515	Environmental Science	4		
❑	SCI 1516	Environmental Science Lab	0		
Third Semester:			**16**		
❑	ECO 1402	Microeconomics	3		
❑	GRB 2100	Building Automation and Controls	3		CAST Project
❑	GRB 2200	Solar & Wind Systems	3		CAST Project
❑	Elective	A Liberal Arts elective	3		Proposed: Liberal Arts OR Computer elective
❑	GRB 2300	Commercial Electrical	3		
Fourth Semester:			**15**		
❑	GRB 2400	Care of Green Spaces	3		CAST Project
❑	BUS 1652	Human Resources Management	3		
❑	GRB 2500	Troubleshooting Green Building Systems	3		Capstone Course
❑	ECO 2001	Environmental Economics	3		
❑	GRB 2600	Green HVAC	3		CAST Project
GRADUATION		**Degree date:**	**15**		**Total Credits Earned:**

Figure 2. Course Requirements and Recommendations.

Conclusion

The study of sustainable building management lends itself to place-based experiences and reflections. Specifically, the Green Building Maintenance and Management program at SUNY Sullivan has incorporated elements of place-based education across the curriculum by adopting the systems-oriented framework of ecological design; incorporating Catskills-inspired projects in various courses; and expanding service-learning across the campus and the broader community. These existing efforts could be strengthened by adding a specific course on the Catskill bioregion to the program, through which students would examine landscape patterns and processes from an interdisciplinary perspective. These pedagogical strategies could be strongly reinforced by creating a built environment that inspires, connects, and teaches. This type of built environment could be achieved by re-envisioning the previously proposed CAST building and Green Technology Park through collaborative, campus-wide processes. Collectively, these efforts would promote several key benefits of place-based education, including improved student engagement and increased student interest in the community. Furthermore, these efforts would ensure that SUNY Sullivan can help to create and defend sustainable systems in the Catskills, preserving this region as an iconic ecological-economic place.

Acknowledgements

I would like to thank Dr. Walter Poleman at the University of Vermont and Dr. Peter Sherman at Prescott College for their valued mentorship and guidance on this paper. I would also like to thank my colleagues at SUNY Sullivan, especially Dr. Robert Schultz and Michael Fisher, for their vision, dedication, and ongoing support.

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