Introduction

Smith College is in the process of building the Bechtel Environmental Classroom, a new State-of-the-art Living Building at MacLeish Field Station on the satellite Whitney Property. As a Living Building, it will be completely self-operating, comprised of local materials and equipped with sustainable equipment. The Classroom aims to provide a wide range of opportunities—keeping true to the liberal arts education Smith proudly exemplifies. The original Bechtel proposal included funding for a pavilion design by then student Corey Eilhardt ’09. Her design thoughtfully reflected the circular harmony of a balanced liberal arts experience.

However, designs are frequently forced to evolve over time to comply with the fluid transformations often encountered during building projects. Aspects previously devoted to the pavilion, such as storage, are now incorporated into the Classroom. Therefore Eilhardt’s original pavilion required redesigning to comply with its new function and, consequently, form.

Just as the MacLeish Field Station offers its land to multidisciplinary research, the collaboration between architecture and landscape studies’ students and faculty further reflects Smith’s education philosophy to further educational boundaries—a key part of the pavilion’s concept. I envision students of all disciplines enjoying this new space. Everyone from biologist, poets, artists, and engineers to citizens, hikers, campers, and passers-by should feel the pavilion is meant for their presence.

Concept:

To build upon Smith College’s liberal arts system by designing a pavilion that attempts to incorporate all areas of study.

Site Orientation

Smith College is in the process of building the Bechtel Environmental Classroom, a new State-of-the-art Living Building at MacLeish Field Station on the satellite Whitney Property. As a Living Building, it will be completely self-operating, comprised of local materials and equipped with sustainable equipment. The Classroom aims to provide a wide range of opportunities—keeping true to the liberal arts education Smith proudly exemplifies. The original Bechtel proposal included funding for a pavilion design by then student Corey Eilhardt ’09. Her design thoughtfully reflected the circular harmony of a balanced liberal arts experience.

However, designs are frequently forced to evolve over time to comply with the fluid transformations often encountered during building projects. Aspects previously devoted to the pavilion, such as storage, are now incorporated into the Classroom. Therefore Eilhardt’s original pavilion required redesigning to comply with its new function and, consequently, form.

Just as the MacLeish Field Station offers its land to multidisciplinary research, the collaboration between architecture and landscape studies’ students and faculty further reflects Smith’s education philosophy to further educational boundaries—a key part of the pavilion’s concept. I envision students of all disciplines enjoying this new space. Everyone from biologist, poets, artists, and engineers to citizens, hikers, campers, and passers-by should feel the pavilion is meant for their presence.

Features: Logistic

Our budget was a major factor in many of the decisions made while redesigning the pavilion. Costs of labor and material shipping and purchasing consume a large chunk of the $20,000 allowance. The limitations of the budget influenced the size of the pavilion, the materiality, and the quantity of special features. The evolution of the pavilion is as interesting as the separate designs themselves.

Features: Aesthetic Quality

Environmental sustainability is a large part of the design morality. It was a goal to include as many local and natural materials into the pavilion. Large rocks found on site during construction of the Bechtel Classroom will be placed around the perimeter and stone dust from a local company will form the floor. As much wood as possible will be salvaged from the forests around the site to supply material for the beams. As an addition to the pavilion, proposals for designing a rain water catchment system may be implemented through the student organization Engineers for a Sustainable World.

By aesthetically incorporating the natural environment through use of local materials, framing views of nature, and providing a space for environmental learning, the pavilion brings together Smith’s fundamental values with the purpose of the new Classroom through the Center for Environmental Engineering, Ecological Design & Sustainability's activism.

Student learning experience at the MacLeish Pavilion site
Apples in Academia: Integrating Agriculture and Ecological Design Into Education at MacLeish Field Station  
Tia Novak ’13 Adviser: Reid Bertone-Johnson

### Introduction

The goal for MacLeish Field Station is “to foster field-based education and research that promotes environmental study and experiential learning in a forested and agricultural landscape.” Some of the many opportunities that the field station offers include environmental research, outdoor education, and low-impact recreation. Construction of the Bechtel Environmental Classroom under the guidelines of the Living Building Challenge has spurred opportunity to enhance the experience of the field station through creating spaces for research and collaboration while remaining in-tune with the environmentally sound principles that govern the place.

Practicing environmentally sound principles includes being able to sustain oneself. Unsurprisingly, to meet the Living Building standards, a building must provide productive agriculture. In an effort to meet these requirements, I have designed an organic apple installment using disease-resistant, cold-hardy varieties that are able to meet the needs of the station while providing productive agriculture for Smith College. Due to the high demand for local produce by dining services, a growing agricultural interest on campus, the establishment of a Sustainable Food Concentration, and the expanding need for agricultural education in the face of social, economic, and environmental challenges, the installment of an orchard would greatly benefit the Smith Community and provide an opportunity for collaborative learning.

### Proposed Design

The orchard design includes fifty trees spread over a two acre (87,120 ft²) rectangular piece of land northwest of the field station. The land consists mostly of active pasture and hayfield, as well as old pasture black birch forest long the perimeter. A small driveway and two-car gravel parking lot for handicapped access to the field station will be located in the southeast end of the plot. A pollinator garden of native perennials will surround the orchard.

- Nova Spy
- Freedom
- Liberty
- Enterprise
- Pristine
- Redfree

### Orchard Goals

- To enhance the curriculum of Smith horticulture classes and the Summer Botanic Garden Internship through hands-on training
- To provide resources for scientific, artistic, and academic exploration and collaboration
- To serve as a source of student recreation; MacLeish Field Station will be a future go-to location for Mountain Day, a surprise break from classes during the fall

Acknowledgments: I would like to thank Dr. Duane Greene, Department of Plant, Soil & Insect Science at UMASS Amherst, Dr. Jodi Lew-Smith ('89) of High Mowing Organic Seeds, Cayte McDonough of NEWFS, Steve and Jen Gougeon of Bear Swamp Orchard, Kate Kerivan of Bug Hill Farm, Bashistas Orchards, Kathy Zieja and Patrick Diggins of Dining Services, Gaby Immerman of the Botanic Garden and Biology Department, and my adviser Reid Bertone-Johnson for their generous guidance and support.
Edible Forest Garden at the MacLeish Field Station: A Permaculture Design Demonstration
Ellena Baum '14, Reid Bertone-Johnson, STRIDE research, Department of Landscape Studies, CEEDS

Introduction: What is an Edible Forest Garden?

"An edible forest garden is a perennial polyculture of multi-purpose plants" — many species growing together (a polyculture), most plants re-growing every year without needing to be re-planted (perennials), each plant contributing to the success of the whole by fulfilling many functions. In other words, an edible ecosystem: a consciously designed community of mutually beneficial plants and animals intended for human food production." (Dave Jacke, Edible Forest Gardens, 2005)

Current Goals:

• Make use of a recently disturbed space in a productive and educational way that will both benefit nature and the people who will interact within this space.
• Comply with the regulations of the Living Building Challenge with healthy and ecological food production
• Create an educational garden space in conjunction with the Betchel Environmental Classroom that will integrate the classroom with its surroundings.
• Demonstrate the coexistence of a wide range of species by mimicking natural processes of the environment
• Select plant species that coexist with minimal human attention and maintenance
• Beautify the disturbed habitat and encourage healthy human interaction with edible and medicinal plant species

Design Plan Sketch

Next Steps:

• Research into specific plant varieties and availability
• Finalization of species lists
• Analysis of short term and long term water resources, and water maintenance plan
• Total cost analysis
• Site preparation and soil rehabilitation through sheet mulching, composting, and nutrient amendments
• Planting of initial herbaceous groundcover to create a healthier soil habitat
• Succession plantings of larger species
• Long term plan for overall maintenance of the garden

One of the purposes of creating an edible forest garden within direct proximity to the environmental classroom is that eventually certain courses and programs will become involved with the garden, for example, to study and monitor species growth and interactions. The garden will contribute to a healthy culture around food production. The Edible Forest Garden at MacLeish Field Station can also have a place within age-old Smith traditions such as Mountain Day, where students pick fall ripened fruit, and enjoy spending time in nature.

Site Analysis

The site is a recently cleared, rocky landscape, approximately 9000 square feet in area. It was initially cleared as the location for the solar panels for the BEC, but then was rejected for a variety of reasons. The site is downward sloping to the northwest. The eastern side is adjacent to the wheat field, which a neighbor is currently using for his cattle. The northeastern side of the site gets the most sun exposure. Along the western side of the site is a linear wetland. The southern side of the clearing is closest to the classroom, ± 190 ft from the northeast corner of the classroom.

Acknowledgements

Thank you to Reid Bertone-Johnson for advising and mentoring my design process this semester.

References

Jacke, Dave and Zaltzberg, Keith. Final Design for the MacLeish Field Station. Wellesley College. Greenfield MA. 2011