TRACING THE WILD BEAM:

AN INVESTIGATION OF THE PROCESS APPROACH IN USE

AT PRICKLY MOUNTAIN, VERMONT

by

KELSIE M. GREER

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Student: Kelsie M. Greer

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This thesis has been accepted and approved in partial fulfillment of the requirements for the Master of Arts degree in the Department of the History of Art and Architecture by:

| | |
|---|---|
| Albert Narath | Chairperson |
| Brook Muller | Member |
| Ocean Howell | Member |

and

| | |
|---|---|
| Kimberly Andrews Espy | Vice President for Research and Innovation; Dean of the Graduate School |

Original approval signatures are on file with the University of Oregon Graduate School.

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THESIS ABSTRACT

Kelsie M. Greer

Master of Arts

Department of the History of Art and Architecture

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Title: Tracing the Wild Beam: An Investigation of the Process Approach in Use at Prickly
        Mountain, Vermont

        This thesis attempts to shed light on the process approach developed at Prickly

Mountain, Vermont by investigating the influence of Yale professors Robert Engman and

Chris Argyris. As a sculptor, professor Engman influenced the way in which Prickly

Mountain builders interacted with their materials, allowing space for discovery. On the

other hand, professor Argyris from the Industrial Administration program inspired Prickly

Mountain builders to consider the element of human behavior in interacting with their

structures. Argyris' teaching also inspired critical engagement with the practice of

architectural education. Together, Engman and Argyris present a more in depth picture of

the design process at Prickly Mountain and thus help to provide an academic footing for this

otherwise eccentric practice.

CURRICULUM VITAE

NAME OF AUTHOR:  Kelsie M. Greer


GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

       University of Oregon, Eugene
       University of California, Santa Cruz


DEGREES AWARDED:

       Master of Arts, History of Art and Architecture, 2014, University of Oregon
       Bachelor of Arts, History of Art and Visual Culture, 2008, University of
           California Santa Cruz


AREAS OF SPECIAL INTEREST:

       History of Architecture
       Urban Development


PROFESSIONAL EXPERIENCE:

       Program Coordinator, San Luis Obispo Regional Rideshare, 2009-2011

GRANTS, AWARDS, AND HONORS:

       Roger Keith Swim Innovation Award, University of Oregon, 2013

       Ina McClung Scholarship, University of Oregon, 2013

       Ina McClung Scholarship, University of Oregon, 2011

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To my friends and colleagues who kept my spirits lifted throughout this process and to my family, who always checked in.

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CHAPTER I

INTRODUCTION

The Tack House (Fig. 1. See appendix for all figures). Built in 1966 as a joint project

between David Sellers and William Reineke, two recent graduates of the Yale School of

Architecture, it was the first of several homes to be constructed on Prickly Mountain in

Warren, Vermont. The name of the building adequately describes its shape, as the house

bends to one side, coming to a sharp point that pierces the air.  Shortly after the completion

of the Tack House, *Progressive Architecture* published an interview with Sellers and Reineke

and author C. Ray Smith that framed these designers as "renegade architects," turning away

from the traditions of the profession. The article describes the Tack House with a sense of

curiosity and a bit of sarcasm, calling it a "sculpture for living".[1] At the same time, Smith

proposed that the house might indicate a potentially revolutionary development in

architecture.

What was so intriguing was not just the home's eccentric appearance but the fact

that this home and those to follow, were built without the use of plans. The building

materials were simple, consisting mainly of concrete, plywood, two-by-fours and whatever

other low cost lumber they could purchase from the local yard. The houses, however, did

not come together in a typical building procedure. Looking back on the work at Prickly

Mountain, Sellers explained that often the only drawing completed before the start of

construction was a basic design for the foundation and outer frame. [2] As they went about

building, the form of the structure would emerge piece-by-piece, staircase and doorway.

Sellers believed that "the best part of the building isn't always available to be known before

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[1] C. Ray Smith, "Architecture Swings Like a Pendulum Do," *Progressive Architecture*, 47 (May 1966): 154.

[2] David Sellers conversation with author, March 22, 2013.

you are making it" and stated "If everything you know is already known…there is no point in doing it."[3] This notion of "process" in building became the guiding force behind the construction at Prickly Mountain, allowing the self-taught builders to make design decisions within the space as they were needed.  The materials provided some of the direction, and the rest was a combination of instinct, an understanding of one's presence in the space, and a developing knowledge of how to actually nail something together. It is this curious process of architectural practice that caught the attention of *Progressive Architecture* and many lifestyle publications in the late 1960s, including *Glamour* and *Life Magazine*. It is also this method that has served as the thread for my investigation.

Aside from these early mentions in scholarly and popular publications, the scholarship on Prickly Mountain is limited. Today, Prickly Mountain is largely referenced for its contribution to what is known as "design-build." Design-build in the professional world today has come to mean that the person hired to design a space or building is also the one who builds it. In the realm of education, design-build programs are geared towards providing students with hands-on experience in construction and the business of architecture. The work at Prickly Mountain is often credited in discussions around the development of both professional design-build endeavors as well as in the development of many educational programs that followed, such as The Yale building project, and Yestermorrow Design/Build School.

In 2008, Daniel Sagan, a Professor at Norwich University, curated and co-authored an exhibit and accompanying catalogue for the University of Vermont's Robert Hull Fleming Museum entitled "Architectural Improvisations: A History of Vermont's Design/Build Movement, 1964 -1977." This catalogue is the most extensive investigation of Prickly

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[3] David Sellers and Daniel Sagan, "An Interview with David Sellers," *Chicago Architectural Journal* 10 (2002): 33.

Mountain to date. In this study, Sagan re-introduced process oriented methods practiced at Prickly Mountain, calling it "one of continual design and problem solving". [4] While Sagan's work serves as a solid foundation for further study into Prickly Mountain, I believe that the term design-build is limiting when discussing the processes at Prickly Mountain. Today, design-build comes in stages, design and then build. The work at Prickly Mountain however, happened simultaneously; they designed as they built.

Sagan does however mention various influences to the development of Prickly Mountain, most notably the teachings of distinguished Yale faculty members Robert Engman, Professor of Sculpture, and Chris Argyris, Professor of Industrial Administration. [5] This is where I pick up the discussion.

My thesis seeks to flesh out the interdisciplinary and intellectual foundations that influenced the processes at Prickly Mountain by linking the Prickly Mountain design approach to the architect's Yale training, or more specifically, the teachings of Robert Engman, Professor of Sculpture, and Chris Argyris, Professor of Industrial Administration. The study of these individuals provides for the reader a better understanding of the foundation upon which Prickly Mountain was built.[6] As recent graduates from the Yale Architecture program, Sellers and Reineke appeared to be turning away from the traditional practice of architecture as laid out to them in the Yale program. However, by looking deeper into the work of Engman and Argyris, one may begin to understand just how this education served to inspire the creative approach to design that made Prickly Mountain revolutionary

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[4] Janie Cohen, Danny Sagan, and Kevin T. Dann, *Architectural Improvisations: A History of Vermont's Design Build Movement 1964-1977* (Burlington: University of Vermont Press and Robert Hull Fleming Museum, 2008), 12.

[5] Ibid.

[6] While Sagan mentions Engman and Argyris, he gives little attention here to their work and how it relates to Prickly Mountain.

in the 1960s. My thesis thus adds to the discourse around Prickly Mountain by framing it

within a discussion of the development of not design-build, but as a design-process rooted

in a strong intellectual foundation.

Recently there has also been an outpouring of writings that revisit this era of

architectural education.[7] While my thesis is not specifically focused on this area, I non-the-

less contribute a piece to the story of the development of education in architecture schools,

particularly highlighting the interdisciplinary approach to architecture that developed at

Yale and how this later helped to change this school's architectural curriculum.

During the young architect's studies, Yale was under the leadership of Paul Rudolph.

Rudolph held the belief that theory was more important than action when it came to the

development of one's architectural practice and Sellers fundamentally disagreed. Sellers felt

that Rudolph's method of teaching made students rely too heavily on their instructors and

steered students away from taking risks in design. Disillusioned by the traditional role of

the architect as hiding behind a drafting table, Sellers and Reineke entered Prickly Mountain

as entrepreneurs, with the goal to break away from theory and be physically involved in the

entire process of building, from conception to sale. They purchased 450 acres of land just

outside of Warren, Vermont with the intent to design, build and sell ski-homes to those who

frequented the nearby resorts.[8]  At the time of the young designer's arrival in Vermont,

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[7] See, Joan Ockman. *Architecture School: three Centuries of Educating Architects in North America* (Cambridge: MIT Press, 2012).

[8] David Sellers conversation with author. Sellers was not interested in waiting around for work, Instead, he and Reineke chose to follow the idea that if you build it, the clients will come. In the interview with Smith, Sellers delivered his disapproving view of the current state of architectural practice: "The architect is irresponsible today in terms that he thinks there again that he has to sit in his office and wait for some client to come up and say all right, build me that". Smith, *Architecture Swings Like a Pendulum Do*, 150. Other architects at this time, such as John Portman, were working in a similar vein, acting as both architect and entrepreneur. "Portman has learned to think of real estate architecturally, and architecture entrepreneurially." For more information, see John Portman and Jonathan Barnett, *The Architect as Developer* (New York: McGraw-Hill Book Company 1976), 4.

there were little to no building codes, the land was available and affordable and there was

simply no one there who would tell them not to build. [9]

Sellers and Reineke chose Vermont as the location of their endeavor for a few

simple reasons.  First, they needed space. The Mad River Valley is 245 miles north of New

Haven, situated amongst acres of undeveloped, wooded land. Just before graduation, Sellers

convinced a few of his fellow classmates to invest in what he believed would become a

lucrative business venture. They began building with loans from the local lumberyard,

hardware store and grocer, each of whom they promised to pay back at the end of the

summer. At the time of the young designer's arrival in Vermont, there were little to no

building codes, the land was available and affordable and there was simply no one there

who would tell them not to build.  At the time, Vermont allotted a freedom unavailable to

them in in New Haven.

As it turned out, many others held similar ambitions. Rather than attracting wealthy

homebuyers as initially planned, Prickly Mountain drew the attention of architecture

students from many of the top architecture schools, including Princeton, Yale and

University of Pennsylvania. [10]These included Peter Gluck, Jim Sanford and Steve Badanes,

who went on to start the design/build firm Jersey Devil. [11] Students from various

architectural programs purchased plots on Prickly Mountain from Sellers and Reineke and

used the space to develop their own building projects. By 1971, at least seven buildings had

been or were in the process of being constructed on Prickly Mountain.

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[9] Sellers and Reineke put $1,000 down on the 450-acre parcel. Sellers conversation with author.

[10] Sellers went to Yale to recruit students to help with Prickly Mountain on during their summer break. He offered to pay them each a $500 stipend for their efforts. David Sellers, conversation with author.

[11] Ibid.

Though they were leaving the walls of their Ivy League institution to get their hands dirty, Sellers and his colleagues took many lessons with them from those they studied with at Yale. The first to be discussed in this thesis is the sculptor Robert Engman. Engman's method was to release the natural shapes within a material by applying a hammer to metal and observing the results.  Engman stressed that his students come to understand the uses and limits of their materials. To Engman, the final product was not as important as the process. On his website, the artist explains:

> What I saw was how those warped surfaces bent and twisted the environment around me. More importantly, I realized that the thickness of the metal was conceptually unimportant and that the polished surface represented what seemed to be a cerebral metaphor. It no longer was a thing or an object with a name like sculpture, but rather it stood as a metaphor for a very complicated wonderment or dream.[12]

Sellers was exposed to Engman's teachings as a student at Yale and speaks fondly of the sculptor's lessons: "[Engman] had a theory of design and a way of teaching it which was magnetic. … He would talk about quality and beauty in a way which was just so clear and so graspable. He had these exercises he would have you do which would really help you understand it. He didn't just ask you to believe what he said. He would have you try it out."[13] Engman had a significant impact on the way in which Sellers approached design at Prickly Mountain, allowing the environment and materials to dictate the structural form.

Chris Argyris is the other line of influence that this thesis traces. Argyris was a professor of Industrial Administration at Yale from 1951 to 1971, Argyris' research was in human behavior and he focused on interpersonal relationships within organizations. He was a professor of Industrial Sciences at Yale in the 1950s and 1960s, a time when the behavioral sciences were still an emerging field. Argyris helped to build a foundation for

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[12] Robert Engman, "Writings," Robert Engman. accessed December 15, 2012, http://www.robertengman.com/?view=writings.

[13] Cohen, *Architectural Improvisations,* 36.

this area of inquiry. His early work focused on studying the way in which people interact and react within the workplace. He later developed methods to improve the workplace relationships by teaching people how to recognize and positively change their behavioral patterns. Overall, Argyris called for an open mind, setting aside judgments until one understands the full scope of the person or project at hand.

The theories of these seemingly separate areas of study were combined by the builders at Prickly Mountain and translated into architectural methods. Through building, these young architects were learning how to work with the materials, understanding their uses, gaining a sense of what was possible in a space and putting their education to a physical and very real test. The process approach to building was not a way to escape from the classroom as Milne expressed, but rather served as a way to dive deeper into their education.

The second chapter explores the teachings of Robert Engman and the impact that his methods had on the Prickly Mountain builders, using the Tack House and the Mackall House as examples.[14] This chapter also touches upon the history of the Yale School of Architecture from the early 1950's under the leadership of George Howe to the mid 1960's when Paul Rudolph finished his term as department head. It is during these early years that many of the philosophical ideas that influence Prickly Mountain are at their height under the influence of Howe and Art Professor Joseph Albers. Albers was a prominent professor at Yale with roots in the Bauhaus and Black Mountain College and deeply impacted Engman's work. A look at the later years attests to the nature of the school during the time that Sellers was a student at Yale. This foundation serves to highlight the educational methods that inspired the work of Sellers and his Prickly Mountain partners.

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[14] Both constructed at Prickly Mountain in the 1960s.

The third Chapter begins to unpack the work of Chris Argyris and the study of human behavior in relation to the educational and process oriented approach taken at Prickly Mountain. It also introduces the work of his student Fred Steele. Together, Steele and Sellers conceived and built the Pinhead House. Shortly following the completion of the home, Steele published his own theories on the importance of environmental understanding in organizational development based on his experiments at Prickly Mountain.[15] In this sense, Prickly Mountain acted as a way to test not only architectural practices, but served as a means to better understand how to interact with and shape one's environment.

The fourth and final chapter discusses the impact and implications that Prickly Mountain had and may continue to have on the development of educational practices within and outside of the realm of architectural practice. In this chapter, Dimetrodon, a multi-unit home constructed in the 1970s, serves as an example of the culmination of the theories and practices that were developed at Prickly Mountain. This chapter will also explore the programs that sprang from Prickly Mountain, most notably the architecture program at Goddard College and Charles Moore's program, the Yale Building Project.

Prickly Mountain's methods extend beyond the time of initial construction and continue to have a lasting impact on those who had a hand in the process in some way, either at its beginning, or even now, on those who are living in the spaces. The final chapter will examine these impacts, both on individuals and on educational establishments, tying the network together.

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[15] Fred Steele, *Physical Settings and Organization Development* (Reading: Addison-Wesley Publishing Company, Inc., 1973).

CHAPTER II

ROBERT ENGMAN: LEARNING HOW TO SEE

The course of discovery has no measure of use or standard. All the advances, even in the

most useful disciplines, were once dreams, outrageous dreams, at one time.

-Robert Engman[16]

**The Beginnings**

Driving up to Prickly Mountain today is not unlike driving into many other American

wooded housing developments. The homes are generally organized into a familiar

neighborhood system with three main roads, each feeding into one another to create an

oval loop. What is not so familiar, however, is the form and presence of these buildings.

Jutting, sharply angled roofs are balanced by bulbous plexiglass windows. Many come to a

towering point as though they are striving to bridge the space between the earth and the

sky. Their exteriors, constructed largely from local timber, blend into their wooded

surroundings. The forms on the other hand, which protrude from the ground, appear, as

Sagan stated, like "rock outcroppings" amongst the wooded landscape. As one moves

around the buildings, they seem to transform. Each side can look wildly different than the

others. The materials, both natural and manmade, coupled with the angled construction,

allow these structures to appear at once integrated into their surroundings and alien to

them. Though each house is distinct, these characteristics are shared, thus making Prickly

Mountain homes immediately identifiable.

The interiors of these homes are equally unique. Moving through the space, one

begins to understand the way in which the movement of the body played a role in the layout.

There is a sense of fluidity despite the angled ceilings. Staircases twist and turn in

unexpected directions, sloping doorways seem to roll you through them, and there are

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[16] Nancy Schiffer, *Robert Engman: Structural Sculpture*, (Atglen: Schiffer Publishing, Ltd, 2012), 64.

endless nooks, portholes and passageways to provide privacy and comfort. It is not too far a

reach to say that the country's recent obsession with space exploration inspired the

imaginations of the Prickly Mountain designers, as some of the elements give the sense of

being encapsulated in a spaceship.[17] The towering roofs and decks that overhang the sides

of Prickly Mountain provide a view of the valley and town as though the inhabitant is

looking down from a platform in the sky.

### What They Did There

The foundation for the unusual aesthetic of Prickly Mountain homes was largely

established by the construction of the Tack house. Reineke and Sellers began building with a

simple sketch of the frame and used whatever inexpensive materials they could purchase,

or rather, get on credit from the local lumber supplier. As they built, they also began to

incorporate elements and materials that they reclaimed from older buildings in the area.[18] C.

Ray Smith explained this apparent curiosity: "what they [Sellers and Reineke] praise is a

virtue of the building process as a source of inspiration, and the virtue of allowing things to

happen when they do."[19]  Smith continued by proclaiming that their work indicates the

design of a "new generation", one where "young architects [are] involved in the joy of

building, the joy of creation, who are rediscovering the fun and games of architecture and

building, of improvising new solutions during on-site construction, of calculating tactile

surprises and imaginative detailing…these are architectural happenings."[20]

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[17] Though no direct reference is made to space exploration in the architect's writing or articles on Prickly Mountain, Louis Mackall, a Prickly Mountain builder, assured me that this was certainly on the minds of the Prickly Mountain architects.

[18] As Sagan notes, beams from an old sugarhouse are still visible with the supporting structure of the building. Cohen, *Architectural Improvisation*, 14.

[19] Smith, 154.

[20] Ibid. Around this time, the practice of participatory design was on the rise around the world and artistic happenings were becoming more and more frequent. The term "happenings", as the author

The idea behind the building was to start with a very basic and undeveloped idea and allow the form to emerge from the foundation and frame.  Sellers explained it this way: "If you can take the simplest, most important thing and call it the seed, then the building may just generate itself… It is a growth process: It starts with nothing and it evolves."[21] This organic imagery played a large role in the conception and writing around Prickly Mountain. It was viewed as a cultivation of an idea, planted and cared for but not forced.

It was through the construction of the Tack House that the builders developed the seeds of the "Wild Beam Theory," a design principal that would ultimately inform the methods and aesthetics of many Prickly Mountain homes. As Reineke explained, the idea was this: "When you have a joist that you put in that happens to be 6' too long, and [then] you put 'em all in…they may start to develop something…But if you had something drawn, and you cut them up to follow the drawing before you put them all in, that would be it, and you wouldn't learn what the pieces are doing themselves."[22] By leaving the beams the length and shape that they were when they were pulled off of the lumber truck, there arose the potential for new opportunities for the direction of the house. In a way, the beam acted as a line in a sketch, wildly drawn. It coaxed the builder to think of new possibilities, and allowed the materials to have a hand in directing the form. The form of the beams reveals the process of the building experience to be a method of inquiry. The interior of the Tack House exhibits the ways in which these "wild beams" came to crisscross one another or meet in unpredictable ways (Fig. 2). The principals behind the Wild Beam Theory carried over into other design elements of the houses as well.

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evoked, is a term that is often used in reference to artistic practices of the 1960s, an idea that will prove to be important to our understanding of Prickly Mountain.

[21] Ibid., 153.

[22] Ibid.

The Luis Mackall House serves as a prime example of this burgeoning approach to architecture. Luis Mackall was a fellow student at Yale who joined the Prickly Mountain crew in 1967 to build his own summer home. In the article "Adult Tree Houses on Potato Road" published in *Progressive Architecture* that year, the Mackall House was described as an example of a new phenomenon in design. Much like Smith, the author, Jim Burns, emphasized the organic, experimental and often playful way in which architecture and construction was approached at this site.[23] He stated, "If there is anything that characterizes this approach, it is spontaneity, the willingness to operate from few or no preconceived ideas in order to see what will happen in solving the problems of design and construction as they arise."[24] Examples of this appear throughout the Mackall house. When the pipes burst from freezing in the winter, Mackall cut them off at the wall and re-routed them into the living space to make for easier access in the future. The architect took a similarly unconventional approach to a set of stairs leading from the ground floor into a loft by abandoning his original spiral concept for one that turned at a sharp right angle, deciding that this was a more natural movement for the body (Fig. 3).[25] The idea was again that the building was allowed to emerge almost as if it was doing it on its own.[26]

Burns argued that unlike the architects that came before Mackall (specifically Paul Schweikher and Edward D. Dart, also Yale graduates), the important thing for Mackall,

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[23] Jim Burns, "Adult Tree House on Potato Road: House for Louis Mackall, Prickly Mountain, Warren, VT," *Progressive Architecture*, 48 (1967), 119.

[24] Ibid., 120.

[25] Ibid., 125.

[26] This notion coincides with the ideals of vernacular architecture that was explored by others during this time. Though there is no mention that I have found of Sellers referencing the work of Christopher Alexander, or vice versa, there are similarities in their approach. Alexander was interested in the notions of vernacular architecture and building within the context of a place. He and others were interested in the ways in which non-architectural buildings merged with and seemingly morphed from the surrounding landscape.

Sellers, Reineke, and all of the others who had a hand at Prickly Mountain, was "involvement". With this method, the architect was able to easily swap out one idea on the spot for another that might prove to function more effectively; as Sagan described, "The process of working with the materials was one of continual design and problem solving".[27] Each beam that was placed opened the possibility for a new way of looking at the building and asked the designers to answer questions they may not have faced should they had it all pre-planned. Each nail also invited a new avenue for creativity, and as problems arose, new creative solutions. To be involved in the building was like being involved in a social event as the builders interacted and were in dialogue with the space. They gained an intimate relationship with and understanding of the buildings that they could not have developed simply through drawing.

Involvement also pertained to their working relationships. Throughout construction, the builders were in constant dialogue with one another to flesh out details of the design or lend a hand in construction. Ed Owre, a Yale sculpture graduate and friend of Sellers, recalls the air of collaboration at Prickly Mountain: "The Tack House gave us a way to work together. We learned more from each other when we were working together than we [would have] sitting around making drawings, and I don't remember anybody sitting around making drawings. It just wasn't part of it."[28] They learned by working and designing together, hashing out their dreamed ideas and how they might actually bring them to life. It was a collective pool of skilled workers-in-training and each could bring their insights to the table.

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[27] Cohen, *Architecture Improvisation*, 12.

[28] Ibid., 8.

For Sellers, the involvement with the building itself was also necessary in that it helped to give a sense of what it would be like to live in the space. Sellers argued that the drawing only created an idealized picture of living and that through their processes, the Prickly Mountain designers understood how people do and would want to live.[29] It was a sophisticated method of learn-by-doing, as they were conducting an experiment in materials and design thus "calculating tactile surprises and imaginative detailing."[30] Each step was just- if not more- important, than the completed picture, and they took notice of and learned from every move along the way.[31]

## Bob Engman: Encouraging Invention

The methods undertaken at Prickly Mountain, while revolutionary to architectural practice, did in fact spring from a well-established tradition. Despite their desire to leave the classroom, Sellers and his Prickly Mountain colleagues were greatly influenced by their Yale education, from within and outside of the architecture department. It is not a coincidence that correlations have been drawn between Prickly Mountain and processes in contemporary art. Robert (Bob) Engman was an American sculptor and professor at Yale University from 1954 to 1964. Engman graduated with an M.A. in sculpture from Yale under the direction of Josef Albers, his mentor, and sculptor Jose de Rivera.[32] His own education as a sculptor began when de Rivera challenged him with a simple metal problem. First, it was to mimic a sculpture, which Engman, having experience with welding, did rather quickly.

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[29] Smith, "Architecture Swings," 153.

[30] Ibid.

[31] Though much of the work was not physically documented in photographs or drawings, each step in their building process built upon the next. Because everything was new to them, every move was a discovery.

[32] He came to Yale in 1957 after learning about Albers' teaching at Black Mountain College and the Bauhaus. Robert Engman interview by Daniel Sagan, September 24, 2004.

The more difficult challenge came however, when he was asked to make something unique. According to Engman, Jose de Rivera believed that the individual could only achieve the creative act without the clear inspiration of his teachers. At first, Engman unconsciously crafted sculptures that were in the image of either de Rivera or other artists that he had studied. It took Engman weeks before Albers approved of his work.

Though Albers had a well-established artistic career, he is perhaps best known as an educator and had a significant impact on the school of design.[33] Before coming to Yale, Albers taught alongside Walter Gropius as an instructor of art at the Bauhaus through its many transformations. After leaving this school, Albers helped to establish the curriculum at Black Mountain College. It is no coincidence that each establishment has been recognized for their innovations and unconventional approaches in both design and educational practices. Throughout his career, Albers argued that schools in general had become stagnant, passing down facts instead of fostering "a creative, intellectually curious population".[34] To combat this, Albers' efforts were centered on teaching students to be creative, to rely on one's own abilities and to be independent. [35] As Horowitz and Danilowitz explain, Albers' mission was "to teach students to bring the conscious mind to bear on the task at hand; to regard restrictions as challenges and to question assumptions; to recognize the uniqueness of any given situation; always to be alert and receptive to serendipitous events" and most importantly, to teach students to actually see what it was that they were looking at.[36]  Albers' main goal as an educator was to teach his student to "see".  He would

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[33] Albers created the school of design, changing it from the School of Fine Arts. Frederick A. Horowitz, *Josef Albers: To Open Eyes: The Bauhaus, Black Mountain College, and Yale,* (London; New York: Phaidon, 2006).

[34] Ibid., 23.

[35] Ibid., 7.

[36] Ibid.

often hold up two fingers and explain that what you see is not just his two fingers, but also a space in between. In Albers' words, "I have never taught painting. Instead I have taught seeing."[37]

Albers' classes have been described as "brilliant models of risk and experimentation."[38] He worked to develop students' self-confidence through what he called a "a systematical studying of the basic problems of art." In his classes, Albers would set up very specific parameters for his students and often require them to use the most basic materials, such as paper and wire. He wanted his students to see the expansive possibilities of even the simplest materials and avoid getting caught up in difficult techniques that would come with more complex mediums. He was a proponent of simplification. Despite his guidelines however, he did not expect one answer. Fredrick Horowitz, who was once a student of Albers, explained, "[Albers] would have strict restrictions but no one way of carrying out an exercise. The idea was that it would clear away any diversions thus making it easier for students to really see and examine the limited elements that they were working with…There was never, ever only one right way to solve an Albers problem."[39]

Albers was a proponent of "learning" rather than "teaching," and he strove to guide his students to their own answers rather than hand it to them.[40] In order to learn, Albers felt that the student needed space to experiment rather than following the lead of his teacher. He believed in tinkering, and entering into a problem without pre-conceived ideas of where one's work might lead: "Albers believed that only through a confrontation with lines, colors,

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[37] Ibid.

[38] Ibid.

[39] Ibid., 85.

[40] Ibid.

and materials that was point blank and 'without preconceptions' could students truly

confront themselves, and, in that way, develop their creative powers."[41]

For Albers, process was essential to learning and the creation of art, as reflected in

Engman's work.

Engman's sculptures are smooth, open, twisting metal works. They often appear as

if they are molten, flowing metal suspended in zero gravity. Engman's artistic process may

be described as an arrival at form. When he began sculpting, he did not set out knowing

what it is that he wanted to create (at least at first), but rather his work was a process of

discovery.  Sellers described Engman's process:

> He would take a piece of bronze… and he would then cut an X in the middle of it and
> then he'd take his hammer and start pounding the edge of it and as he pounded
> these middle things would curve up or down, and what he found was because metal
> is malleable and it takes shape as you compress it, that the change in shape had to go
> somewhere, so it went into warping the surface, and by warping the surface he
> found a shape that didn't exist in planning, it only existed in discovery.[42]

Much like the Wild Beam theory at Prickly Mountain, Engman discovered his form

through experimentation. He did not attempt to force the material into a shape, but rather

let it emerge, to grow and transform. An example of this is seen in *Construction No.1* from

1961-62, a piece that Engman created while studying in Florence, Italy (Fig.4). The center of

the square sheet of bronze has been split open. It appears as though the metal is pouring

into itself from the top, and through a twist that divides the opening into a horizontal figure

eight. One can see where Engman made his cuts, and imagine the way that the metal twisted

as he hammered at the center and smoothed at the edges. Engman describes that this

method of working brought him to a new place in the discussion of art. He states that

through creation, "all of a sudden words were no longer words, they were facts. Things that

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[41] Ibid., 84.

[42] Sellers, conversation with author.

I could put my hands on."[43] Sagan explained his technique as simple approaches in processing rather than a creation of a strict structure.

Engman carried these ideas over into his teaching. Sagan summed up Engman's methods as "encouraging invention," in that he asked his students to experiment with materials and give up their preconceived ideas of what it means to practice art.[44] He also asked his students to find value in the accidents that they had along the way and to even watch for them because he felt that it was through accidents that an artist could discover a new, promising direction, much as he had in his own work. Engman believed that encouraging invention was simple and that there was much to learn in the properties of material.  He explained the learning process this way: "Cut the piece of paper- this has a memory, it has a tendency to return. In crushing the paper I have gone past the elastic limits of the material. So it starts to absorb that action. So in order for this to be a part of my thinking, it would have to be something that we do in sequence."[45] It was a process of trial and error as a means to find one's own artistic voice. Engman states, "I think becoming free often means being willing to give up what you know a great deal about in order to experiment with activities which may appear useless at the time."[46] Working with paper may not have immediately made sense to someone who wants to construct from metal, but it taught students how to engage in their own process of discovery.

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[43]  "Writings", Robert Engman. Engman was not the only artist working in this way at the time. Engman's approach was characteristic of the process art movement that was evolving in the early 1960s Well known sculptor Richard Serra was also a student at Yale in the early 1960s producing work that is reminiscent of this process approach.

[44] Robert Engman, unpublished interview with Daniel Sagan, September 24, 2004.

[45] Ibid.

[46] Schiffer, *Robert Engman*, 64.

Engman explained that the department had a philosophy of teaching that made it a point to never tell the students what to do with the given materials, and really only limited them in the choice of the materials themselves. He states that "[the students] had to invent, whatever they made, not knowing anything."[47] Following in the tracks of Albers, Engman also assigned simplistic materials such as copper wire, paper and found objects. Engman saw these simple forms as a creation of situations, one that forced the students to think through a solution. These "situations" he said, changed the way that the student's minds operated. Engman points to Sellers as an example of this.[48]

At one point during class, Engman was called away. He assigned Sellers with the task of ensuring that no one left. During this time, Sellers collected scraps of wood from woodshop and started a tournament where the students had to build something from the ragged scraps. Engman clarified that the idea behind this game was that it was an exercise in creative improvisation, and very real in the sense that you were physically making something emerge from the unpredictable. He explained that "these off, unpredictable shapes would grow in clusters."[49] This act was indicative of the way in which Sellers would approach his own self-education and building at Prickly Mountain. Engman described that he "always attributed to the idea that [Sellers] had a special mind to begin with and when he found this stuff it just triggered all things within him."[50]

### Why This Matters to Prickly Mountain

Engman's courses had an important impact on Sellers. Sellers explained: "It changed how I thought when I was designing architecture. Rather than try to sketch

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[47] Ibid.

[48] Engman interview with Sagan.

[49] Ibid. This activity became the "final" for the class.

[50] Ibid.

something up and try to fit all those rooms into that little idea, or rather than try and logically fit the program with the shape around it, why couldn't I figure out how you make it. And as I'm making it, building it, through designs or models or whatever, why don't I watch to see what it looks like? It was like discovering a new planet."[51] At the time, the practice of what came to be known as "process art" was gaining popularity throughout the art world. Artists such as Richard Serra were experimenting with ways to explore the experience of art making, drawing attention to the process rather than a product.[52] To Sellers, the idea of watching a building unfold was exhilarating and foreign in the world of architecture. He states that he went back to architecture with a new way of seeing. Sellers was used to a world where students would have to defend each every line and shape. Through the process method that was introduced to him by Engman, however, architecture and design suddenly became more exciting. Sellers explained that it was as though he was waiting to see what new forms would emerge while everyone else was disappointed because they were not living up to their own preconceived expectations.

This was undoubtedly influential on the design approaches taken at Prickly Mountain. Working with Engman at Yale, Sellers recalled that there were no mistakes or limits. Again, this was a distinct contrast to the critique process within the architecture school. Sellers recalled: "I would go back to architecture classes and it was like day and night…so completely different. Paul Rudolph established a concept of criticism that was demeaning, direct, dependence- creating, but very smart, very clever."[53]

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[51] Sellers interview with Sagan.

[52] Serra was also a student at Yale in the early 1960s. In a famous work, Serra throws molten lead against a wall. He follows a list of infinitives such as roll, throw, etc. In this case, the work was more about the actions than the outcome. For more information see Richard Serra, Kynaston McShine, Lynne Cooke, and Museum of Modern Art (New York, N.Y.), *Richard Serra: sculpture: forty years* (New York: Museum of Modern Art, 2007), 29.

[53] Ibid.

Paul Rudolph became the head of the architecture school in 1957. Rudolph believed that there needed to be a return to architectural theory, stating that "action" had overthrown theory. As a "great university" he felt that it was Yale's responsibility to uncover the unknown and to do so, theory needed to usurp action. Rudolph wrote that "Architectural education's first concern is to perpetuate a climate where the student is acutely and perceptively aware of the creative process…He must understand that in the exhilarating awesome moment when he takes pencil in hand, and holds it poised above a white sheet of paper, that he has suspended there all that will ever be. The creative act is all that matters."[54] While he speaks of the creative process, Sellers believed that Rudolph's way of teaching made the student dependent on the instructor. Sellers claimed that Rudolph was intent on analyzing the elements of the design and thus made the student weary of taking chances. Sellers compares this approach to Engman's:

> Engman was never talking about your design. He never talked about it as an end product, he would talk about the relationship between the parts and how that evolution either logically gets to that place or doesn't…where your structure falls apart and where you make a brilliant move. He called it "mutational"… he used the word 'mutational' a lot, where there would be an opportunity for brilliance.[55]

Sellers believed in the act of creativity, but unlike Rudolph, he felt that action was just as important, if not more so, than theory.  Unlike an architectural critique, Engman was not concerned with the concept of beauty but rather focused his student's attention on process and the choices that they made along the way. Sellers explained that Engman would not discuss beauty with his students, but would rather ask them about their decision-making process and their choices. If one were a "dead-end" as Sellers called it, then Engman

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[54] Robert Stern, "Yale 1950-1965," *Oppositions 4* (1974).

[55] Sellers interview with Sagan.

would ask the student to go back and try making another choice. He would make his

students aware of the fact that there was more than one way to go.

 In 1974, the journal *Oppositions* published an article by Robert Stern, which gave an

account of the Yale School of Architecture from 1950- 1965. Stern focused on what he

believed to be some of the most transformative years of the school under the leadership of

George Howe and Paul Rudolph. [56] These years are important to Prickly Mountain in that

they lay the foundation for how David Sellers and others engaged with the Yale School of

Architecture and how this in turn influenced their approach to their work in Vermont.

According to Stern, before the arrival of George Howe, the Yale school- as was

typical of many architecture programs- was based around the Beaux-Arts method, focusing

on the Neoclassical building traditions. However, when Howe accepted the position as the

Chair of the Architecture school, he was already a well-established modern architect and the

first to become full-time faculty at Yale. With his professional background, Howe blended

the Beaux-Arts with the formal design systems and theories of modernism. He believed that

the technicality of modernism needed to be met with the practice of architecture as an art.

His philosophy insisted that architecture "was an artistic discipline involved with issues of

administration, planning, technological competence and simple problem-solving." [57] He

argued for an educational approach that fed the creativity of the students. In an address to

the school he stated, "We must not lose sight of the fact that the primary purpose of

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[56] The editor notes that Stern's analysis is based in large part off of the opinions and experiences of those who attended the school at the time, taking much of his content from personal letters that alumni of the program wrote to Stern upon his request to gather their input. This includes the opinions of David Sellers.

[57] Stern, "Yale", 38.

architectural schools is to create architects, not draftsmen for office work."[58] He believed in

finding a balance between technical skills and design.

There was, however, no existing model for this approach to education. Howe

believed that this lack of a model provided an opportunity for Yale to forge a new path in

education and architectural style. Stern explained, "Howe spoke of his intention to develop a

'course of training'… peculiarly Yale's, based on no doctrine or theory but worked out from

day to day by experience."[59] Stern summed this up as the belief that style was the product of

discovery and not force. [60] In Howe's approach, Stern argued, education was not a set of

rules, but rather a process of day-to-day discovery. He believed that Yale, the students and

faculty, were in the midst of a time where a new architectural style could emerge and he put

his trust into the creative abilities of the Yale students to carry out the task of developing it.

Diverging from the Beaux-Arts tradition, Howe sought to build a department that

empowered the Yale students to be individual thinkers and encouraged the students not to

mimic the past examples of architecture, but to consider the needs and environments of the

present moment. In an address to the school, Howe stated, "The mind and imagination

prepared to seek an answer always in the underlying conditions of a particular present

situation, instead of in books or precedent, will be flexible, muscular and never at a loss for

an answer…I prefer the organic notion that the task of the University is to fertilize

imagination with experience and experience with imagination. This task we shall share

together." [61]

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[58] Ibid.

[59] Ibid.

[60] Ibid.

[61] George Howe, "Training for the Practice of Architecture: A Speech Given before the Department in September 1951," *Perspecta* Vol. 1 (Summer 1952): 2.

To support his vision for the development of the school, Howe built a faculty that shared a similar philosophical approach. This included Albers, who took over the role as the head of Fine Art. As discussed, Albers' teaching techniques and philosophies had a very direct and profound impact on the school and inadvertently, on Sellers and his colleagues as well. Though Albers had retired by the mid1950s, his principles were translated to the students of the early 1960s through Professor Engman.

Gleaning from his experience in Engman's courses and taking the "mutational" concept to architecture, Sellers began to rethink the possibilities of design. He remembered thinking, "if I could design stuff intentionally so that it would change its shape or its use overtime without reducing its utility, it would become better and better."[62] The idea was to create a building which could continue to change and grow over time as the needs of its inhabitants changed. The Tack House once again serves as an example. Over the years, the Tack House served as a clubhouse and then as Seller's personal residence. With each new use, equally eccentric additions were made to the structure. As it stands today, the Tack House has tripled in size. With each addition came a new avenue for exploration (Fig. 5).

Engman's approaches to teaching and design, aside from Sagan's brief mention, get little notice in the discourse around Prickly Mountain or in the history of design/build, for that matter. It is important to understand, however, that the innovations at Prickly Mountain came as the architectural manifestation of both Engman's and Albers' innovative methods. Jim Sanford, a fellow builder on Prickly Mountain whom will be discussed in greater depth in Chapter Four, explained that he gained an extensive understanding of the properties of concrete and the importance of truly knowing how to handle a material through experimentation at Prickly Mountain, which now allows him to be fully creative

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[62] Ibid.

with the media, making for a design that is unique to each situation, home and client.[63] What

seemed like a wild revolution in design was actually an exercise in artistic process. The Wild

Beam Theory, the eccentric forms and the willingness to dive into building, were all a

product of experimentation and detachment from the final product. What this shows is that

the designers at Prickly Mountain were deeply rooted in an important educational and

modernist history. However, utilizing the tools gained in their education, the architects

branched away from the walls of the architecture school and combined the science of

building with the freedoms allowed in art.  Much like a student in a course with Engman

and/or Albers, these architects were working to understand their materials, the value of

process, and were simultaneously breaking away from the walls of the school while also

exploring deeper into artistic principles and trends that they learned in the classroom. More

importantly, they were learning how to see.

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[63] Jim Sanford, conversation with author, March 25, 2013.

CHAPTER III

CHRIS ARGYRIS

The aim of this chapter is to add another dimension to Prickly Mountain's

foundation by exploring the work of Chris Argyris. As a professor in Industrial Science and a

well-known scholar of human behavioral studies, Argyris's research instilled ideals of

human behavior and the way that we learn into the practices at Prickly Mountain. The

discussion will focus on three books written by Argyris, spanning from 1957 To 1974:

*Personality and Organization*, *Interpersonal Competence and Organizational Effectiveness*

and *Theory in Practice, Increasing Professional Effectiveness*.  It will also look into the

writings of Fred Steele, a student of Argyris. His work *Physical Settings and Organization*

*Development* will show the evolution of Argyris' teachings through the process of building

Prickly Mountain and how this in turn produced theories of its own.

In a conversation with Sellers, the architect shared the story of the construction of

the Pinhead House, a Prickly Mountain home built with and for Steele, who was Seller's

college roommate during his undergraduate studies.[64] This home, much like the Tack House,

inspired yet another unique outlook on the building process and will serve as the entry

point into the discussion of Argyris.[65]

Sellers explained that as they were dreaming up the possibilities for Steele's home,

Sellers was having difficulty deciding how to construct the interior of the living room. Steele

studied Organizational Development at Yale in the late 1950s and early 1960s. Drawing

from his interest in human behavior, he addressed Seller's concerns by proposing that they

wait, building the exterior of the home, the frame, siding and roof without completing the

foundation. Steele's theory was that the longer one waits, the greater the possibility for

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[64] Sellers also received his undergraduate degree from Yale in

[65] Pinhead was Steele's college nickname.

creativity. He argued that it was important to learn to exist in the unknown, as it is through

this uncomfortable space that the individual is most likely to come up with an effective

solution. Sellers clarified Steele's theory: "the longer you stay and live and be comfortable

with irresolution, the more likely what you do will be more inclusive and more

successful."[66] Referencing the Wild Beam Theory, Sellers explained, "a lot of people will get

nervous and cut the beam off."[67]

Heeding this advice, Sellers and Tom Luckey, whom Sellers hired to help with

construction, worked with the dirt beneath their feet as they built the walls and

surrounding spaces. It was only after the home's shell had been completed and the builders

were able to see and be within the space that they came up with their solution: the living

room floor became the furniture. The space was intended to serve, in part, as a retreat for

Steele's work, which often involved group gatherings. To suit this purpose Sellers and

Luckey created padded, carpeted mounds, or as Sellers called them "sculptural chunks" that

would support various social situations (Fig. 6).[68]  Sellers explained that he made this

permanent furniture in a way that would support the natural shapes of the body. He stated

"the sizes and proportions of these things will be based on the size of your arm, and what

sitting posture is and standing and walking up stairs…any place that you sat or lay down, it

would fit your body". [69] From the photographs, the floor of the living room appeared as

though it was undulating and one could imagine the way that the perception of the space

might transform as people shifted their bodies into different postures based on their moods

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[66] Sellers conversation with author.

[67] Ibid. Referring once again to the Wild Beam Theory.

[68] Cohen, *Architectural Improvisations*, 31.

[69] Ibid.

or the purpose of the discussion.[70] As a proponent of the behavioral sciences, Steele was interested in how the process of building reflected and promoted certain behaviors. For Steele, the construction of the Pinhead house served as both a vacation home, while also providing a space for the study of choice and engagement, both in the design and the use of the structure. Building and utilizing the space became a tool for not only experimentation but studying the creative act.

## Personality and Organization

Steele's theoretical approaches to Prickly Mountain were greatly informed by his professor and mentor, Chris Argyris. Argyris' work focused on the study of human behavior and its relation to organizational development and function.[71] Argyris' definition of an organization was broad, and he deemed it to mean " strategies designed to achieve certain objectives". He stated "It includes the managerial controls, leadership, technology, indeed anything in the organization defined in consonance with the strategy."[72] Despite this all-encompassing view of an organization, Argyris's research was focused mainly on the workplace and gave much attention to what appear to be corporate settings.

Argyris believed that it was important for executives in organizations to understand how the structure of the organization affected the individual and in turn how the collective of individuals shaped the organization. He sought to develop an understanding that personalities and the needs of those personalities are not a given, but rather vary greatly and should be treated with a sense of scientific inquiry rather than blanket assumptions. The aim of his research was to help organizations understand the science behind working

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[70] Sellers said that Steele hosted many seminars in the space.

[71] Throughout his life, Argyris authored and co-authored countless books and articles on the subject.

[72] Chris Argyris, *Interpersonal Competence and organizational effectiveness* (Homewood, Ill.: Dorsey Press, 1962), 28.

with different personalities and to develop tools to help organizations promote positive personal growth to improve the working relationships of the individuals within the workplace.

Argyris' early studies served as documentation for the current state of individual behavior in the workplace and explored some of the possibilities for the source of that behavior, both amongst the employees and the executives. In 1957, Argyris published *Personality and Organization: The Conflict between System and the Individual*, a book that Sellers recalls as being influential on Steele's studies.  At the time, the behavioral sciences were only recently gaining recognition as a mode of valid scientific inquiry.[73] The goal of this early work was thus to bring together the small amount of research that had been conducted on the relationship between the individual and the organization and to provide some understanding of "why people behave the way that they do in organizations," which Argyris called a study of "organizational behavior."[74]

In this book, Argyris pushes the reader to ask what lies underneath the behavior of the individual. He argues that every person has inherent needs and that energy - productive, negative, et cetera- comes from these needs. Needs are based on the individuals personality that has been formed throughout one's lifetime and thus differ from person to person. One need he believed to be innate in many individuals, however, is the need to grow. People throughout their lifetimes are working towards a more developed state of maturity, consciously or unconsciously. Argyris argued that often individuals in the workplace are expected to work hard and challenge themselves, but that often the organization's structure

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[73] At the time that he published this book, there were two camps of thought. The first was more concerned with the logical structuring of the organization and the second, which Argyris was most inclined towards, was more concerned with the behavior of the individuals.  For more on this see *Administrative Organization* by John M. Pfiffner and Frank P. Sherwood.

[74] Argyris, *Personality and Organization: The Conflict Between System and the Individual* (New York: Harper& Row, 1957), 2.

does not support these goals. Argyris introduced the example of working on an assembly

line in which a person is assigned to one very specific, repetitive task. He found that ninety

percent of individuals in this setting are unhappy with their working situation because they

have little to no freedom in how they approach their work, and after mastering their task

are no longer challenged.[75] He argued that people need to be challenged throughout their

life so as to be working towards personal growth and self-fulfillment.

> In order for the individual to express more of his knowing and feeling abilities, he requires a work environment over which he has greater control, where he can make decisions concerning goals, policies, and practices. The employee must be provided more "power" over his own work environment and therefore he must be given responsibility, authority, and increased control over the decision-making that affects his immediate work environment. He must become self-responsible.[76]

Argyris believed that without freedom in one's work, a sense of personal achievement and

room for growth, people tend to fall into dependency on the superiors rather than striving

to better themselves. Though he does not give solutions to these findings, he argues that

this situation presents room for change.

Having witnessed a range of interactions within the workplace, Argyris concluded

that conflict is inevitable, whether it be between individuals or within oneself. However, he

claimed that, if dealt with properly, conflict could prove to be an important tool for personal

development. He argued, "True, conflict can be uncomfortable, but it is even more true that

conflict harms a person's personality when the personality uses incorrect *ways of dealing*

*with the conflict*. When dealt with correctly, conflict is an experience of growth for the

personality."[77] In order to deal with conflict properly, Argyris explained that one must

address the issue at the source, or in Argyris's words, "If headaches are to be cured, the

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[75] Ibid., 73.

[76] Ibid., 181

[77] Ibid.., 39.

cause must be found. Similarly, human relations problems have to be understood in their full complexity."[78] Like Steele, Argyris believed that people needed to learn to be able to positively face the uncomfortable nature of conflict, and argued that looking at behavior could teach us how to better understand its source and thus how to better respond in a positive, productive matter.  This, he argued, begins with looking deeper at how to understand the motivations behind the individual's behavior.

## Interpersonal Competence

In the early 1960s, Argyris switched his attention to developing ways of addressing the behavioral tendencies that he found throughout his years of research. In 1962, just a few years before the creation of Prickly Mountain, the professor published *Interpersonal Competence and Organizational Effectiveness*. In this book, Argyris focused on assisting top executives in becoming more competent leaders. He found that this was often where the most change was needed. Generally, he found problems with the executive top down model. He believed that it fostered employee dependence and conformity. Argyris's aim was to turn this problem around by empowering the individual. Rather than having the decision makers and the workers separated, he called for the building of competent employees at every level, not simply at the top.[79] He argued that "Mutual understanding, trust, self-esteem, openness, internal commitment, fully functioning human beings who aspire to excellence- all these we as a society say we value" yet, he added, this is rarely promoted within the organization.[80] He argued that organizations had the potential to be models for society by implementing ways to empower the individuals at every level. The individuals adhere to the wishes of the executive, but there is often poor communication between the two. He sought to change this

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[78] Ibid*.,* 26.

[79] Argyris, *Interpersonal Competence and organizational effectiveness*,131-132.

[80] Ibid., 5.

by starting with the executives of the organization, believing that they could set a positive example and bring change to the foundation of the organization.

He began to address these issues by setting up what he called a "laboratory" for the top executives of an organization with whom he was working to improve their performance. Within this setting Argyris presented scenarios to the executives and then walked them through understanding how they responded. What is interesting for this thesis is that in this process, he made it a point not to give the participants an answer as to how they should respond or act. Furthermore, he compelled the participants to direct the conversation and progression of the experience. In his reflection of this study, he states that typically the teacher is in charge of providing the material, conditions and organization of the course. Much like the current problems he found in the structure of the organization, he believed that this way of teaching led to a heightened external commitment. "External commitment," Argyris explained, "exists when the individual is induced to learn through someone else's influence." [81] Instead he advocated for an approach where the individual is motivated by his or her own personal desire to achieve or improve. Working towards the internal model, he concluded with a few points for developing what he believed to be an effective training program for fostering personal drive.

First, Argyris believed that the training program ought to emphasize the participant's responsibility for his own self-development. Through this model, he hoped to show the executives that their behavior with each other and their employees did and could have a significant impact on the workplace environment and on the growth of the individuals within their workplace. It was important for the executives to come to their own conclusion about their ability to change and begin to recognize potential areas of improvement. It could only be done if they wanted to make those changes. Argyris chose the

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[81] Ibid., 132.

laboratory model because he believed that learning takes place in interpersonal small groups as it creates conditions where people may learn from one another and practice better communication techniques. Argyris also argued that self-acceptance is key to change and that through group exercises, one may learn to accept oneself as they are and in turn better understand others which helps to decrease defensive reactions. Argyris believed that he was "re-educating" these executives and argued that like conflict, re-education needed to change the root of the problem. This meant changing the behavior of the executives rather than simply changing a few structural systems of the organization. He argued, "Re-education should focus more on change of basic values than acquiring skill." "Skills", he says, "follow values".

Argyris' books are intended for developing professionals and researchers in the behavioral sciences. He focused not on what they learned but how they learned. This approach responds to many of the same issue that Sellers found with the architecture school and is in line with much of what Albers and Engman were teaching in their courses. Sellers argued that students became dependent on Rudolph and were afraid to take chances because of it. Argyris finds similar problems within the world of business, which he believed, leads to improper function within an organization.  He approached the problem by challenging the ways in which people are educated. Rather than prescribing the answers, he challenged participants to develop their own understanding and goals in the laboratory process. This open-ended approach, spanned across disciplines, appearing in Engman's art courses and here again in organizational psychology. Education, change and growth were viewed as a process of discovery.

**Theory in Practice**

In 1972, over a decade later, Argyris and Donald A. Schön published *Theory in Practice, Increasing Professional Effectiveness*.  In this book, the authors discussed what they

called "theory in action" versus "theory in use". Building upon years of previous research and experience working with organizations, the two researchers found that the way an individual thinks that he or she will respond to a given situation is often different from how that person will actually act in the moment. The first is considered to be the theory of action and the latter, the theory in use. Argyris and Schön provided the act of learning to ride a bike as an analogy to this discrepancy, stating that one can learn the program of riding a bike, how it should be done, but it does not give "a complete description of the concrete performance," or how riding the bike is actually performed by the individual. [82]

Turning perhaps even more to educational practices in this work, Argyris and Schön found that there is often an inconsistency between how one learns in the classroom and how tasks are actually performed in the professional environment. They pointed directly to the practice of architecture in their discussion, stating "Critics of education in both architecture and law agree that the student becomes a competent professional in the office after graduation rather than in school. Depending on the critic, this is taken as a cause for alarm or the natural order of events."[83] The authors quote various deans of architecture (names undisclosed) in their concern for the state of architectural education. The first stated that the traditional studio is inadequate because "Teachers practice architecture rather than educating students in architectural practice. They leave intact the hidden magic of the professional design process."[84] They add, "The traditional studio doesn't address the problem of simulating the client/architect relationship at all. It keeps it under the rug."[85]

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[82] Chris Argyris and Donald A. Schön, *Theory in Practice: Increasing professional effectiveness* (San Francisco: Jossey-Bass Publishers, 1974), 13.

[83] Ibid*.,* 143.

[84] Ibid., 142.

[85] Ibid.

Fitting into the model of action, Argyris and Schön claimed that the theory in action of the architecture studio, what a student thinks he or she might do in a working environment, is different from the theory in use once students enter into the workforce.

It is plausible that Sellers and many of his fellow builders at Prickly Mountain would agree with Schön and Argyris' findings.[86]  Relating theory in action to the architecture studio, the theory in use could be equated with the work at Prickly Mountain. The students at Prickly Mountain were exploring what one would actually do in a building situation as opposed to theorizing about how it might unfold on paper. Rather than drawing up their conceived plans, the Prickly Mountain designers reacted to the moment and the space, learning and observing how something would actually be constructed and used. They began to rely on experience rather than their architecture professors and were able to address the problems that Argyris mentioned regarding architecture school. Sellers and his colleagues were taking it upon themselves to demystify the architectural practice, and in the eyes of Argyris, were practicing theory in use.

In November 1971, Steele and his colleague David Hall published an article on the outcomes of a course on organizational psychology that they taught together at Yale called "Self-Directed, Self-Relevant Learning" in *The School Review.* The course objectives were set to fill what they believed was a need within general learning and teaching practices, arguing that courses typically focused more on cognitive development than personal growth, or in their words, to "promote the personal growth and self-understanding of the student."[87] To

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[86] It is also interesting that Argyris turns his attention to architecture here. This book was published after the work at Prickly Mountain had been happening for many years, after Steel returned to Yale to teach in the Industrial Sciences department. Nowhere have I found such a direct reference to architecture in Argyris' work prior to this book. It is possible that Argyris was indirectly referencing the Prickly Mountain builders and their desire to leave the classroom.

[87] Douglas T. Hall and Fred I. Steele, "Self-Directed, Self-Relevant Learning," The School Review 80 (1971): 94.

combat this, Steele and Hall designed the course to give more responsibility to the students, believing that through this autonomy, students would experience a sense of personal competence and thus would be more motivated to learn.[88]

In addition to a weekly lecture, students met in smaller discussion groups to dive deeper into topics of their choice. It was up to the groups to decide what they would discuss and how they would go about it. "The common element in all of these exercises was encouragement for each student to exercise autonomy, to examine his own behavior and interests, and to do some thinking and writing about those things that seemed most relevant and important to his own life."[89] In effect, the students were prompted to take charge of their education. Steele and Hall championed what they called "exploratory behavior" and unlike the traditional classroom, students were rewarded for finding alternative solutions to problems presented in class. Much like Josef Albers in the Art Department, Hall and Steele believed that the student must learn to be independent from the instructor.

In the article Steele also addressed the concept of failure. In many courses, the authors argued, the student is steered away from failing. This makes students afraid to experiment. However, in this course, students were encouraged to take charge, experiment within their groups, and if they failed, to simply understand why. Steele and Hall explained that the question they encouraged was "How can I learn why that experiment failed so that I can behave more competently the next time?"[90] In a sense, failure was expected and turned from a negative experience into a tool. Again, drawing similarities with Engman, Steele and

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[88] "The element of our theory of learning on which this course was based is that students, like other human beings, have a need to experience personal competence. The more opportunities they have to experience the intrinsic reward of a sense of personal competence in a course, the higher will be their future involvement in and motivation toward learning as a process." Ibid., 97.

[89] Ibid., 95.

[90] Ibid., 105.

Hall saw failure and success as equal tools for learning, each providing an entry point into personal discovery. Rather than hypothesizing the potential outcomes, this class challenged the students to try out their ideas and bear witness to the outcome of their experiments.

This, the authors believed, was the first "process-oriented" course offered at Yale. According to the article, the course was originally taught by Argyris, then later by both Argyris and Steele before Hall replaced Argyris and he and Steel taught the course. There is no discussion as to whether or not Argyris ran the course in the same manner, but the basic principles certainly reflect the theories that Argyris presented in his writing.

Argyris' research may have indeed also influenced Sellers' sentiments about the school and some of the thinking behind his journey into building. Steele was exposed to Argyris' work before Sellers returned to Yale to get his Master's in Architecture. It is thus possible that Steele shared Argyris's work with Sellers as undergraduates and thus influenced how Sellers viewed his time in architecture school.

**Steele's Work**

Building from his studies with Argyris, Steele used his experience at Prickly Mountain to develop his own theories relating to the world of organizational effectiveness. In 1973, he published *Physical Settings and Organization Development*. This book posited that the development of change within a workplace was based on principles of understanding one's environment. Steele proposed that behavior is greatly affected by one's physical setting and argued that having control over the workplace environment creates the potential for better connections amongst people and a sense of heightened personal responsibility. Often times, he stated, the space does not suit the needs of those using it: "The crisis here is a lack of fit between needs and settings".[91] He continued,

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[91] Fred Steele, *Physical Settings*, 4.

All human activities take place in some kind of setting- everybody must be someplace. Some settings are good for what people are trying to do, some are irrelevant, and many are literally unusable for the purposes for which they were intended. I therefore look upon an understanding of behavior and environment as valuable for consultants, organization members, designers, and people in general- especially in this period of accelerating change in the world.[92]

Steele's first goal of the book was to bring environmental awareness into the workplace. Second, he sought to use or change it in order to provide a better fit between the person and the setting. He defines space as a convenient term for "the places that are potentially available to people".[93] The term includes the voids as well as desks and chalkboards, equating objects walkways. Steele exclaimed, "I wish to stress here that *any universal solution applied to all settings is likely to be inappropriate at least as often as it is appropriate*. Settings must vary with the particular people and activities for which they are used."[94]

This theory came directly from processes developed while building his home on Prickly Mountain. Steele used the construction of the Pinhead House as a laboratory, watching how he and his fellow builders responded to the space and crafted it to suit their own needs rather than a preconceived idea of what a home should look like. They were developing an understanding of their environment, and in a sense, themselves as they followed the wild beams. Steele translated this process into his own tool for organizational development: "A recent example of this structural flexibility is a living room designed for my Prickly Mountain, Vermont, house by Thomas Luckey. The room has no furniture but is *all* furniture…People can arrange themselves in many different patterns. My use of this

[92] Ibid., 5.

[93] Ibid.

[94] Ibid., 15.

space for different social activities has confirmed that interaction is facilitated by wide

choice about how to arrange oneself."[95]

The ability to shape and choose your own environment was further exhibited in the

rotating guest room of the Pinhead House. As Sellers explained in an interview with Daniel

Sagan, he took it upon himself to create the smallest possible, yet comfortable guestroom.

He and Luckey designed a 7 x 7 foot cylinder shaped room for the Pinhead house that could

rotate to accommodate different uses (Fig. 7)."You'd walk in and you could dial it to what

you want."[96] A picture of the space shows a young woman lounging on what appears to be a

sofa. The walls wrap around her like a tube, and again, look as though she could be

modeling the latest in spaceship accommodations. Though it is difficult to discern from the

photo, Sellers explained the there was a closet fixed on one end, and a small desk at the

other. The walls were made from sheets of layered plywood and "hoops". The ends were

fixed with a closet on one end and a desk on the other, and like a rolling pin, the center of

the room would spin, moving the bed to the ceiling, bringing the couch into a position for

use and vice versa. Openings were cut into the cylinder to create a window and entry, which

could be opened to the interior of the house depending on how you positioned the room.

The construction of this space was similar to many that had been created at Prickly

Mountain thus far. The builders went in with an idea but allowed the feeling of the space to

guide the next move. Sellers shared,

> It was the same thing as the living room floor, once you are in there, it started to
> happen. The cues came out of the walls, the space, what was happening up there,
> what was happening down there, how the texture of the materials and the materials
> you knew about.  And there would be this discussion and it would go on and on and
> on, and all of a sudden, Boom! An idea would come out, and we'd make it.[97]

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[95] Ibid., 64.

[96] Sellers interview with Sagan.

[97] Cohen, *Architectural Improvisations*, 31-32.

This unique and transformative guestroom evolved from the ability of the designers to be

physically present in the space and though not from a wild beam, it stemmed from the ideas

of waiting, of learning from and working with one another, and understanding the potential

wants and needs of the occupants to be able to also direct the space. Rather than creating a

stationary setting, Steele, Sellers and Luckey invited the guest to interact with the furniture

and transform the room to suit their personal needs. Sellers told Sagan that this was the

most popular room in the house, particularly with children. The room playfully coaxed

people into thinking about their environment and their needs at any given time.

Steele takes this experience as a basic principal for how organizations can promote

a healthy environment.  He proposes that spaces need to remain "flexible," arguing that "[...]

the task of organizational design is to create settings that are neither so amorphous that

nothing can be done well there, nor so inflexibly specific that the setting cannot be used for

changing tasks and needs."[98] He continues that "most of us tend to take our spatial

arrangements as we find them," and this, he argues creates a blockage to personal growth. [99]

To unblock, he suggests that one learns to recognize and become comfortable with making

necessary changes to our spatial arrangements:  "Spatial problem solving promotes

individual growth; one learns how to consider alternatives, how to look at things, what he

wants in physical spaces, and what the outcomes were of his activities…asking what do I

want to do here?"

He argues that we have a fear of failure explaining that "We want something to be

perfect the first time and then left as is. We are unfamiliar with the notion of settings as

ever-changing, evolving, and experimental."  So often, he argues, people walk into a space

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[98] Steele, *Physical Settings*, 64.

[99] Ibid., 34.

and shape themselves to fit the environment rather than the other way around. Generally people do not take the time to consider that there is always potential for change. "This lack of understanding makes us wary of actually starting to change something, because we might somehow reduce its value or have to make replacements." [100] This finding I believe came from what Steele witnessed and participated in at Prickly Mountain. The Wild Beam theory left things open, undone, in a way making it impossible to feel that the space was perfect and untouchable. The nature of the light and often-inexpensive materials used at Prickly Mountain had a similar effect. Because these houses were constructed largely out of plywood, changes could be easily made, and this was also a part of leaving things open and unfinished. The needs and functions of the house were determined as the inhabitants built and lived within the space, and nothing was ever truly set in stone. It gave people the freedom to choose and to see the possibilities for change. The homes invited imagination and interaction with the space.

Steele concludes, "My Purpose has been to provide some dimensions that will help individuals and organizations take a more realistic and complex view of what they gain… In this book I have not tried to provide hard and fast rules for the "best" way to lay out a plant or office, but rather to stimulate a *process* whereby consultants, users, and designers engage in a collaborative problem-solving process that is relevant to both the goals of the system and the human qualities of the people who will have to use the place."[101] A solution to the problem is ever-changing, as new personalities will come and go, and the needs of the organization change. Steele sums up by saying that in organizational development, there is no substitute for being in and around the client environment. [102]

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[100] Ibid., 120.

[101] Ibid., 143

[102] Ibid., 110.

It is easy to see (and of course it is referenced) that Prickly Mountain played a significant role in the development of Steele's theories on environmental development. He physically employed techniques within a built setting to experiment and actualize his theories related to environment. It was through the process of building his house that he was able to pay attention to the details of what he found necessary to the function of his space. He took the time to feel the space, to react to it and make choices. And these choices, as we have seen, can and did change with the change of needs, much like the Pinhead House and the many other homes at Prickly Mountain that have seen a change of ownership over the years. It was an environment that was changeable, interactive, and open for learning. Argyris' sentiments about education and the process of learning reflect the discontents that Sellers felt with the architecture program.

As for personal interaction, Argyris believed in taking the time to simply be with conflict and with one's responses. He asked his clients to pause and consider the underlying sources of one's behavior. This was translated into the building at Prickly Mountain as well. As they worked, they took the time to stop and feel the space, to understand how one might move and behave within their environment. I believe that the work at Prickly Mountain influenced Argyris as well. Steele worked with Argyris after completing his home on Prickly Mountain, so it is most likely not a coincidence that Argyris uses the practice of architecture to discuss issues with education. Sellers and Steele translated human behavior studies into their work and in a sense, the process of building helped them to understand human behavior. The Prickly Mountain phenomenon was more than learning how to build, it was learning about why one builds the way they do, about understanding the process of creation, and about providing the personal challenge that the architects needed for their personal growth.

CHAPTER IV

BEING

I dream an image and stuff it with its requirements. The trouble is, I'm clever enough to make it seem to work. But, even if I could, it still would be a horror of a life, one that always facing the problem of commitment to an image, and that is depriving itself of the incredible wealth of discovery, the joy of the effort of discovery, allow myself to grow with the growth on the end of my pencil. To let things live life.

- David Sellers[103]

**Dimetrodon**

Perhaps one of the most striking buildings on Prickly Mountain is a multi-unit housing project known as Dimetrodon (Fig. 8). This five-unit structure appears to rise from the earth like a large ship in a sea of trees. More than the other Prickly Mountain homes, this building showcases a multitude of differing architectural approaches, as if various houses had been broken into pieces and reassembled at random. Looking at the east side of the building, "the tower" gives way into a low slanted roof, which on a snowy day, might invite an attempt at sledding down the corrugated iron sheeting. Midway through this slant, there is a large, solid cement deck that connects the unit entrances and provides an outdoor leisure space.  Walking through here is indeed much like walking through the corridors of a ship, with numbered wooden doors signifying each individual apartment. From the opposite side of the building, all of this is forgotten and it appears more like an odd patchwork of a cabin and a craftsman home, with a stark white siding alluding to modernist architecture. With a mix of conventional, ribbon and bulbous plexiglas windows that also appear in the Tack House, the West side looks more like a home than a spaceship, though wonderfully confused.

This arresting structure was the creation of three architectural students from the University of Pennsylvania: William Maclay, Robert Travers and Jim Sanford. In 1971, the

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[103] David Sellers, sketchbook, 1965, accessed at the Arts Riot Gallery, March 23, 2013.

three young men ventured to Prickly Mountain from the University of Pennsylvania with the idea of making a quick buck by building and selling a vacation home in what they thought would be one summer's worth of work (the three ended up living there for the next twenty years). They started construction in the summer, camping on the property. As did many others, the house began with only a plan for the foundation and frame. In Sanford's words, "The concept was you build the trusses and people can mess with them as they see fit. They can build in and out of them but you can still read the trusses." [104]

Dimetrodon began to evolve into the large structure it is today when the builders realized that it was going to take much longer than they had planned. As time went on and Vermont became colder, they moved into the house, sleeping on the expansive open floor. Eventually, as the three developed romantic relationships and girlfriends joined in on the project, the architects in residence required a more private living situation. Eventually, Dimetrodon was divided into five units, with each architect in charge of the design and construction of their own living space. As the years progressed, each unit was adapted to accommodate children and pets, and Dimetrodon eventually became a semi-communal housing project. [105]

In a conversation with the author, Sanford recalled the experience of building at Dimetrodon with enthusiasm. "All of a sudden," he described,

> Everything is a major decision. What we learned from working on the whole place is a knee jerk reaction to something, you know, what do we do, becomes way less of a force, and the reaction to make something that you love, something that is yours

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[104] Sanford conversation with author, March 25, 2013.

[105] Sanford explained that the building was named after a dinosaur that used its skin flaps as panels to heat and cool its body. Dimetrodon was an early experiment with "living sustainably". They constructed a windmill on the property to help provide power to the structure. They also installed solar panels on the roof, had a community garden and a large wood burning boiler room that provided heat for all of the units. The occupants would take turns watching and stoking the fire throughout the winter months.

becomes much more powerful."[106]  He added, "doing things, making stuff, oh I get this, I get how this works. You try and figure all that stuff out on paper, it is never going to work, or it can work but with not as much information. There is no better information than standing right there.[107]

Following the path carved by Sellers, the architects improvised their design. Sanford also described the building process as a lesson in ownership and independence. He related:

> Here you are, you are the guy that is building the whole building and then you are the guy who is building his own house and then the question comes up, what am I going to do here? And there isn't somebody to guide you on that and there isn't somebody to make it for you. You are the guide, the maker and you are also the guy reaching into his very shallow pocket to pay for it. So those three things inform what you're doing?[108]

Like Sellers and the others building on Prickly Mountain, Sanford understood this method of building as a way to discover the possibilities that are unearthed when one is physically present within the space and working closely with the materials. Unlike in the classroom, at Prickly Mountain, Sanford had the freedom to follow an idea and bear witness to the outcome. He demonstrated the act of building as he explained the process: "The architect stands in a place like this, doing this (holding up his arms and looking around inquisitively), with a hammer, saying wait a minute now, should I do this, or would that be better, and saying oh yea, that looks good and then nailing it in."[109]  Like so many others, Sanford learned to make decisions on the spot, reacting to the process of building rather than planning it.

Sanford characterized his experience as a practice of making art.  He believed that every element - the sink piping, the shape of the door - was an expression of one's creative intuitions. He explained, "So you got a panel box here, and you want to have a rechargeable

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[106] Sanford conversation with author.

[107] Ibid.

[108] Ibid.

[109] Ibid.

flash light and you want a switch for outside. In the end, this is where you get the decoration

for the house. It's not something that's applied; it's actually the stuff that the house is made

of.  The trusses become a real element. All these things are getting their decorative nature

from the way they are made."[110] These design considerations, he argued, could not have

been realized had they been preplanned on paper. The challenge at Dimetrodon was to

address functionality and personal needs without discounting artistic freedom.

Though Sanford was not directly influenced by either Engman or Argyris, it is

reasonable to believe that the creative processes that had been cultivated though the

experience of building the Tack House, the Pinhead House and many of the other earlier

structures had by this time become the way of building on Prickly Mountain.[111] Dimetrodon

stands as a culmination of these developed theories. When asked what initially drew him

and his Dimetrodon partners to Prickly Mountain in the first place, Sanford half-jokingly

replied, "we didn't know any better." He described, "We never made any money on the deal,

we never sold anything, all the things we set out to do we didn't do, but we learned a

phenomenal amount." [112]  This was true for many of the homes constructed.

Those who live in the Dimetrodon units today continue the tradition of learning by

doing. The eccentric nature of the design and construction of Dimetrodon attracts the "do it

yourself" homebuyer. In speaking with a current resident, she explained that the home

continues to evolve. Over the past several years, she and her husband and children have

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[110] Ibid.

[111] When Sanford returned to Penn to complete his architecture degree, he was able to convince the school to allow him to leave out the structural courses since he had already been doing structural calculations for a real building. Also, knowing the inspirations of Sellers and what had been completed at Prickly Mountain thus far, Sanford enrolled in an independent study with Engman, who, as noted in chapter one, began teaching at Penn in the mid 1960s.

[112] Ibid. Sanford is currently a practicing architect in Warren, Vermont. "I do a lot of concrete work now, and it is easy for me to do whatever the heck I want because I have done a lot of concrete work."

learned to adapt the space to their growing needs as a family. They enclosed part of the tower to make a new bedroom, walls have been torn down and others crafted in new and interesting ways. None of the current residents are trained architects or experienced builders, but the intriguing and perhaps frustrating features of the home have inspired a sense of experimentation, adaptation and an opportunity for self-guided building education. Unlike the traditional home that may undergo a few remodels throughout its lifetime, Dimetrodon is a continual work in progress and perhaps will be an ever-evolving building.[113]

## The Wadsworth House

While Prickly Mountain has attracted architects and aspiring homebuilders, it has also turned the tables, inspiring some of the untrained participants at Prickly Mountain to try their hand at architectural practice. Libby Wadsworth spent her childhood summers at Prickly Mountain. Her father was Reineke's roommate at Williams College during their undergraduate schooling. Working in investments and banking, he was one of the first non-architecture students to build a house on Prickly Mountain (Fig. 9). [114]

The Wadsworth House served as a vacation home for the family. Shaped like a pyramid, the front of the home is dotted with windows that hint as to the location of the layered sleeping quarters. At the top, a round plexiglass window serves at the tallest point of the structure and allows light to flow through the center of the building. Much like the Pinhead House, the furniture was built in. Permanent bunks climb the inside front wall, creating sleeping space for roughly thirty people.

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[113] Sagan recognizes this in the caption of an image of Dimetrodon in the Architectural Improvisations catalogue. It reads, "started by William Maclay, Jim Sanford and Robert Travers; finished by whom?".

[114] Their house took one year to build and due to her mother's insistence, was one of the few to be a completed home as opposed to the others which she remembered as continually evolving overtime. Though Wadsworth is unsure as to whether or not there was ever a physical, drafted plan, she recalls that there was enough of one to pour a concrete foundation.

Wadsworth remembers that there was always an element of playfulness at Prickly Mountain. Games and group gatherings were frequent amongst those who lived and worked in this growing community, and this was reflected in the structure of their home. Wadsworth remembers that upon the initial construction, there were steep stairs that led to a sort of catwalk around the ceiling. In the early phases of completion, there was no railing on either the stairs or the walkway. Her mother, concerned with the safety of her children, advocated for a safety support. In the spirit of Prickly Mountain, rather than simply installing a standard rail, Sellers and Wadsworth's father created a piping system which wound around the interior of the house. Wadsworth called it a "kind of sculptural thing" and remembers having climbing contests on the pipes. The piping evolved in a similar way to Engman's sculptures, unfolding within the space.

Inspired by her experience of Prickly Mountain, Wadsworth went to college to become an architect. She was motivated by the organic hands-on nature of the approach taken at Prickly Mountain and believed this to be the general way of architectural practices. After college she worked for architectural firms, but found that the experience did not at all reflect what she knew architecture to be. Spending much of her time checking CAD drawings, she felt like "a peon" to the program of the office.[115] She described "Prickly" as a creative space and found inspiration in the freedoms that were allowed by the plan-free environment. Her office work, she realized, was an example of what the Prickly Mountain builders were working against. Her experience was another example of being trapped within the drawing. Wadsworth fondly recalled that everyone who touched Prickly Mountain added to it, and she wished to see the same sort of creative freedom and play in her own architectural practice. The designers at Prickly Mountain experienced architecture hands on, exploring possibilities in a way that she could not fulfill sitting in the office.

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[115] Libby Wadsworth, conversation with author, October 7, 2013.

Dissatisfied, she later left the New York architecture world and is now a practicing artist in Eugene, Oregon.

## Where Did It Go from There?

Though Wadsworth did not continue her own architectural practice, the work at Prickly Mountain did indeed spark a revolution in architectural education. After several years of building, Sellers and architect John Mallery were asked to start a design program at Goddard College, a small liberal arts school in Plainfield Vermont. Sellers' approach to design fit the school's mission to foster experiential and experimental learning.

In 1971, an article about Goddard's new architecture program appeared in *Progressive Architecture* under a section specific to architectural education. Reminiscent of Burns' 1966 article on Prickly Mountain, The author David Morton, exudes a similar tone of astonishment for the practice of building without plans. He writes, "Students at a small college in Vermont are learning to design and build in a radically new way: from the ground up, with hammer and saw in hand, but no drawings. "[116] Sellers explained to the author that the first class had the task of constructing the Design Center, the building in which the program would be held. Morton was impressed by this approach, stating that "with an enlightened faculty who do not teach, in the normal sense of the word, but act more as guides to the students, the result is an atmosphere of involvement in learning that few schools seem able to equal."[117]

Sellers stressed the importance of teaching his students to make decisions. This was something that he himself struggled with throughout his education and it is a practice that

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[116] David Morton, "Organic architecture at Goddard College," Progressive Architecture 52.2 (1971): 88.

[117] Ibid.

he learned to value in Engman's courses.[118] Morton explained that both Sellers and Mallery felt "that decision making capabilities are inherent in everyone, but that one problem with many students is their inability to make decisions, simply because they are rarely given choices." At Goddard, the students were given the freedom, much like at Prickly Mountain, to have full direction of the design, and the school had no standardized courses in design or history. The group decided where they would build the structure as well as how it would look and what materials they would use. Echoing the teachings of Albers and Engman, the students were encouraged to let go of mimicking what they knew and to enter into building with an open mind. Much like Steele and Argyris, Sellers and Mallery left the structure of the course program open, believing that if the students found that they wanted more formalized courses then the faculty would consider offering them.[119]

The article also explained that Sellers and Mallery believed that "The only excuse for not making a decision is lack of information. The basic plan is to teach students to make rational, coherent decisions based upon all available information- not only facts and ideas, but also material realities such as columns or beams."[120] Responding to their own experiences at architecture school, Sellers and Mallery sought to show the reality of what it was to work in the field of architecture, or in Morton's words, "to explode the mysteries of how a building goes together, so [the student] will ultimately be able to produce [the student's] own, real dreams "[121] Taking from what they found to be lacking in their education, Seller's and Mallery trained students to conceptualize a problem with real materials, and then to go out, pick up a hammer and do it. Students had to learn to work

[118] Sellers, sketchbook.

[119] Morton, *Organic architecture*, 90.

[120] Ibid., 88.

[121] Ibid.

within a budget, order their materials and schedule their work hours. This, Morton stated, was never possible in the "paper world":

> The student suffers a double disadvantage in that he is required to spend years working out imaginary solutions to artificial problems that have little, if anything, to do with reality […] The enormous virtue of having students build their own designs is that they are provided the rare opportunity of instant feedback (information); if the student makes a mistake he knows it immediately and can quickly change it on the spot, resulting in a positive learning experience rather than in emotional turmoil for having failed to do better.[122]

The result of this approach, Morton found, was positive. He described the Design Center as uplifting: "There is an undeniable quality of joy, exuberance and spontaneity to the Design Center."[123] Morton's description suits the Center well, as a sense of playfulness seems to come through the building's facade (Fig.10). A staircase that wraps around the exterior seems to call to the visitor, inviting them to climb into the building much like a child would ascend to the platform of a tree house. The many windows give the building a bit of a cartoon-like appearance, and one has to look closely to find a door, making entering the building into a sort of game of hide and seek.

After completing the first year Design Center project, the current second year students were given the task of designing and constructing Goddard College's Sculpture Center. Morton observed that the Sculpture Center showed what he believed to be a maturation of the student's sensitivity to design and construction. The students were able to take the experience of and lessons from the process of building the Design Center and apply them to the new structure, and the result was a more informed building (Fig. 11). Through this process the students were able to watch their progress and abilities grow.[124]

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[122] Ibid., 90.

[123] Ibid., 92.

[124] According to Sellers, the architecture program at Goddard was discontinued after the first several years due in part to disagreements between Sellers, Mallery and the new head of the school around how the program should be run. Though the buildings have been unoccupied since, Goddard is

**Yale**

Prickly Mountain's success provoked a response from the Yale Architecture School. In April 1968, the Yale architecture professor Murray Milne delivered a talk for a workshop on building and technology at the University of New Mexico. In a discussion concerning classroom education, he related a curious circumstance that was unraveling within architectural education at Yale. Students were trading their time in the classroom for an experience in the rural Mad River Valley of Vermont, choosing to leave their studios in order to work on an expanding experimental housing project called Prickly Mountain. Milne called this "The Prickly Mountain Phenomenon". [125]

Relating to Milne's concerns, Charles Moore, Paul Rudolph's successor, felt compelled do something about the student's growing interest in getting hands-on experience. In 1971, Moore and Yale professor Kent Bloomer created the Yale Building Project (formerly known as the First Year Building Project). This program, still running, is a requirement for all first year graduate students. Like Prickly Mountain, the goal of the program was to provide students with the opportunity to gain an understanding of the process of building: "Moore and Bloomer encouraged students to get out of the studio in order to develop talents other than drafting ability. According to Bloomer, Moore was opposed to students spending too much time in the drafting room if it led to sealing themselves off from actual experience."[126]

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currently running a campaign to raise money to restore the buildings to working order. For more information see " The Design Buildings Renovation Project," http://goddard.edu/community-arts/design-build.

[125] Milne A. Murray, "Environmental Control Curriculum at Yale" (presentation at the The University of New Mexico, Albuquerque, April 1967).

[126] Experiments with the studio would soon become a trend in architectural education at Yale. In 1968, Robert Venturi and Denise Scott Brown initiated a radical Vegas-based studio and subsequent publication called "Learning from Las Vegas," which introduced a new way to consider the built environment in America. Like the Yale project, Venturi and Brown challenged students to get out of

The author of "40 Years of the Yale Building Project" recognizes that inspiration for the project came in part from David Sellers and the projects at Prickly Mountain. Unlike Prickly Mountain, however, the Yale program focused on addressing social needs, because in the 1970s, students became increasingly concerned with economic and social problems and wanted to use their education to address these issues. "Moore seized on these initiatives and directed them in a socially responsive direction."[127] The students, Moore found, were eager to make something which responded to their surroundings.

The Yale Building Project also differed conceptually from Prickly Mountain in that the buildings were carefully planned. In the first ever Yale Building Project year, the students worked with community members from New Zion, a small town in Eastern Kentucky (Fig. 12). Addressing the concerns and wants of the people who would be using the building, the students created a clean, square shaped structure. The plans were drafted in the first half of the year, and over spring break, students went out in teams to undergo construction. The Yale project focused less on the process itself and more on the larger goal of community service and group development.

Countless other programs have since followed, including the Rural Studio and what are now known as design/build programs at universities across the United States.[128] Steve Badanes went on to start a design/build firm called Jersey Devil in 1972 and currently teaches courses in this vein at Washington University. In Warren, Vermont, John Connell started Yestermorrow in 1980, a school designed to educate students on the fundamentals

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the studio and gain first-hand experience, not in building, but by engaging critically with what was already there.

[127] Richard W. Hayes, *The Yale Building Project: The First 40 Years*, (New Haven, Connecticut: Yale School of Architecture, 2007), 15.

[128] Such programs include Washington University and Design Bridge at the University of Oregon.

of design and building, which has since evolved into a school for learning to build and live sustainably.

In the 1970s, the idea of process again became a trend of inquiry in architecture. In 1972, Charles Jencks and Nathan Silver published *Adhocism: The Case for Improvisation*. Adchocism, they explain, means "for this specific need or purpose," and the idea behind it is to immediately fulfill a need.[129] Much like the Prickly Mountain process, Jencks and Silver argue for responsive rather than pre-determined design, not just in architecture but also in the realm of technology, city planning and many other fields.  Though not directly inspired by Prickly Mountain, it is clear that the Prickly Mountain builders were on the forefront of a budding discourse in process-oriented design. Jencks and Silver have recently updated this publication, arguing for the relevance of ad hoc approaches to design in today's technologically advanced society. [130]

## Dear Joe

Sellers, much like the ad hoc authors, also continued to believe in the lasting relevance of the process approach to building and design that he developed as a young architect. In 1981, after years of practicing and teaching architecture, Sellers published his educational manifesto. Keeping Sellers' experiences and educational influences in mind, one can see that Prickly Mountain played a significant role in solidifying his beliefs about the process of education in architecture. It is also not surprising that there is an echo of Engman and Argyris throughout. In the essay entitled "Dear Joe," Sellers summarized his philosophies on the world of architectural education.

> The purpose and skill I'm proposing is to learn to see the seeds of fresh relationships and concepts as they emerge from the collage of the attempts of

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[129] Charles Jencks and Nathan Silver, *Adhocism; the case for improvisation* (New York: Doubleday, 1972), 15.

[130] Charles Jencks and Nathan Silver, *Adhocism: the case for improvisation,* (New York: Doubleday, 2012).

collecting and piling up ideas into form. It's similar to nurturing a garden or making soup. You test, explore, test, experiment, test, etc., etc....The state of mind in the output stage is different from that of the input stage. In one you are assembling information into form and in the other you are reading the meaning, values, implications and potentials of the forms you just made to give you the tools and directions for the next output stage...After a length of time the designed element begins to speak as if it had a life of its own. And your job is to allow it to stretch its muscles and expand and become. John Lennon said it is "let it be" and Luis Kahn said it in "what does it want to be?" the joy perception of the world and of your spirit...At each assembly point you stop and release your mind from problem solving and change to "reading and seeing".

One of the factors of assumptions necessary for creative work is an understanding of failure, of the value of failure, of the relation between failure and evolution of ideas...It is well-documented fact that learning is proportional to risk-taking, Also that the longer one can remain comfortable with irresolution the more likely there will be a correct, creative or appropriate solution.

Values and information offered as truths by experts without confirmation by some experience only create dependence on the faculty by the students...Experimentation should be encouraged as necessary to open experience options.

My approach, therefore, to architectural education is one where the prime goal is that of creating experiences where the student is able to develop a strong foundation of personal knowledge and direction independent of current styles of faculty preference.[131]

Sellers' educational manifesto illustrates the amalgamation of both his Yale education and experience at Prickly Mountain. He speaks to the challenges of teaching and being wary of creating a setting whereby the student becomes dependent on the teacher. He explained that his approach to education, like Argyris', is to allow the student to develop his or her own knowledge and preferences. Echoing Engman, he speaks of the value of failure and the importance of encouraging students to take risks.

Sellers continues to teach this philosophy today. As a frequent instructor at Yestermorrow, he brings his experience to students who seek, much as he once did, to get their hands dirty and experiment with design outside of the traditional architecture school.

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[131] David Sellers, "Dear Joe", *JAE* 34.3 (1981), 14-15.

Currently, Sellers is teaching a *Fundamentals of Design* course. The description for the class summarizes Seller's foundations:

> Creativity is a quality but also a process that can be developed, expanded, and strengthened. In the first half of the 20th century, Josef Albers joined the Bauhaus school, as an artist and a teacher, to instruct design students from an array of disciplines about the creative design process. One of Albers' students, Robert Engman went on to become a renowned design teacher himself, inspiring the creativity behind now-groundbreaking architect Dave Sellers' work. As inspired by the Bauhaus methods he learned from Engman, Sellers leads class participants through a series of exercises to challenge the mind and the eye as they investigate the limits of simple materials and the essence of form. Drawings, sketches, and models utilizing a variety of conventional and unconventional materials will be used as vehicles for exploration, as students develop the ability to think intuitively and creatively and, ultimately, open the avenues of invention necessary to see connections and relationships that lead to the development of creative design solutions.[132]

Seller's course directly references his own education. Throughout his experiences, he finds that the Engman, Albers and Argyris (though not mentioned here) are still relevant to today's architectural practices.

In 2012, Joan Ockman published *Architecture School: Three Centuries of Educating Architects in North America*. In this book she asserts that "the rise and fall of architecture schools in relation to the personalities that pass through them requires a special kind of historical mapping, one sensitive to the network of personal and power relationships among protagonists and to the mobility of teachers and students".[133] By investigating the history of Prickly Mountain and its influences, one begins to see the buildings and the work of these architects as an important and innovative part of educational history. They cultivated a method of process through hybridizing lessons that were pertinent not only to architecture, but also for understanding how people behave. With these tools, Sellers,

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[132] Yestermorrow, Fundamentals of Design, http://www.yestermorrow.org/workshops/detail/fundamentals-of-design.

[133] Joan Ockman. *Architecture School: three Centuries of Educating Architects in North America* (Cambridge: MIT Press, 2012), 27.

Reineke, Mackall, Sanford, and countless others transformed the way that architecture could be approached and ultimately ushered a new method of education into the field.

In the 1970s, after Prickly Mountain was well underway, there seemed to be a split in design discourse. One line followed the physicality of building ushered in by the Yale Building Project, and the other followed the line of process itself, exploring the value of the principles of leaving things undone, deciding as you go and doing things "ad hoc".

Design-build is well recognized today as a mode of architectural practice, and Prickly Mountain has begun to find its place in this discourse. However, the process that was practiced at Prickly Mountain and an understanding of its foundations has in a sense been lost in today's design-build practices. Sellers stated that the most important thing that he got from Yale was the sense of how to see and experience the world: "The more you have a basic understanding of what it is to be alive, the more you have a solid foundation on which to live [...] The real content of the Yale experience for me wasn't form or design or structure, but being. Cherymayeff, Engman, Millard, Chris Argyris, Paul Weiss, Kahn, Scully, Woody, all talked about this."[134]

The design process at Prickly Mountain combined the theories of the seemingly separate areas of study presented by Engman and Argyris, Sculpture and Administrative Sciences, into a method of designing- while you build. Through this they learned how to make decisions, how to be perceptive and how to respond to the fact that things can and should change. The Wild Beams were lessons for living and interacting with the surrounding environment, built, natural and social. The failures were the places for growth and the approach at Prickly Mountain allowed the space to make mistakes.  They learned from the moment and made changes in the moment. And it was always changing. Sanford explained that living in a "finished" building was like "living in an old idea".

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[134] Stern, "Yale", 55.

Through an examination of the impact of the work of Engman and Argyris on Sellers and his fellow architects in the Mad River Valley, one may begin to gain a better understanding of the experiments of process that were explored at Prickly Mountain, and thus uncover a lost (and wild) beam in the structure of architectural discourse.

Fig. 1. Tack House, David Sellers, William Reineke and Ed Owre, 1965, Warren, Vermont.
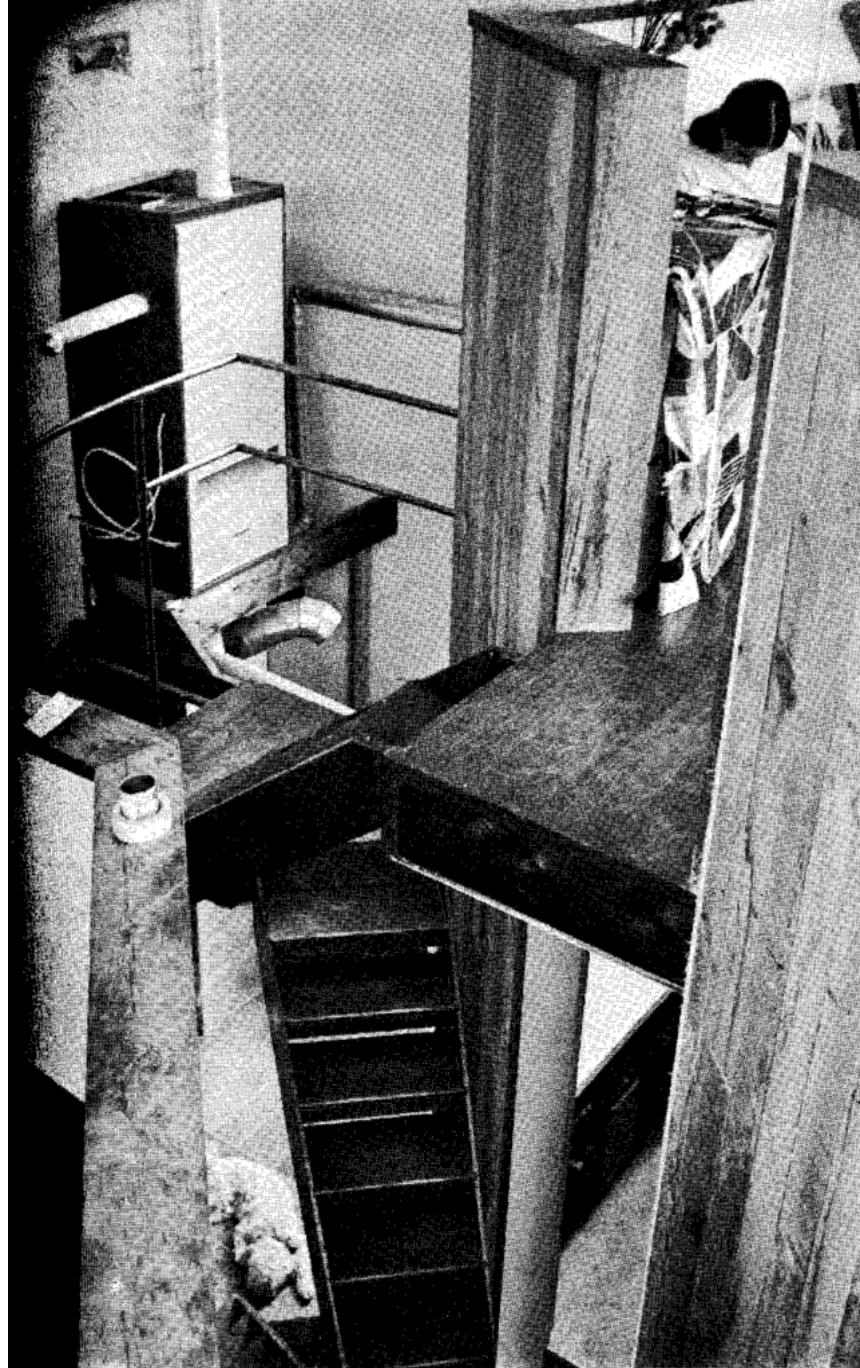
Fig. 2. Tack House Interior, 1965.

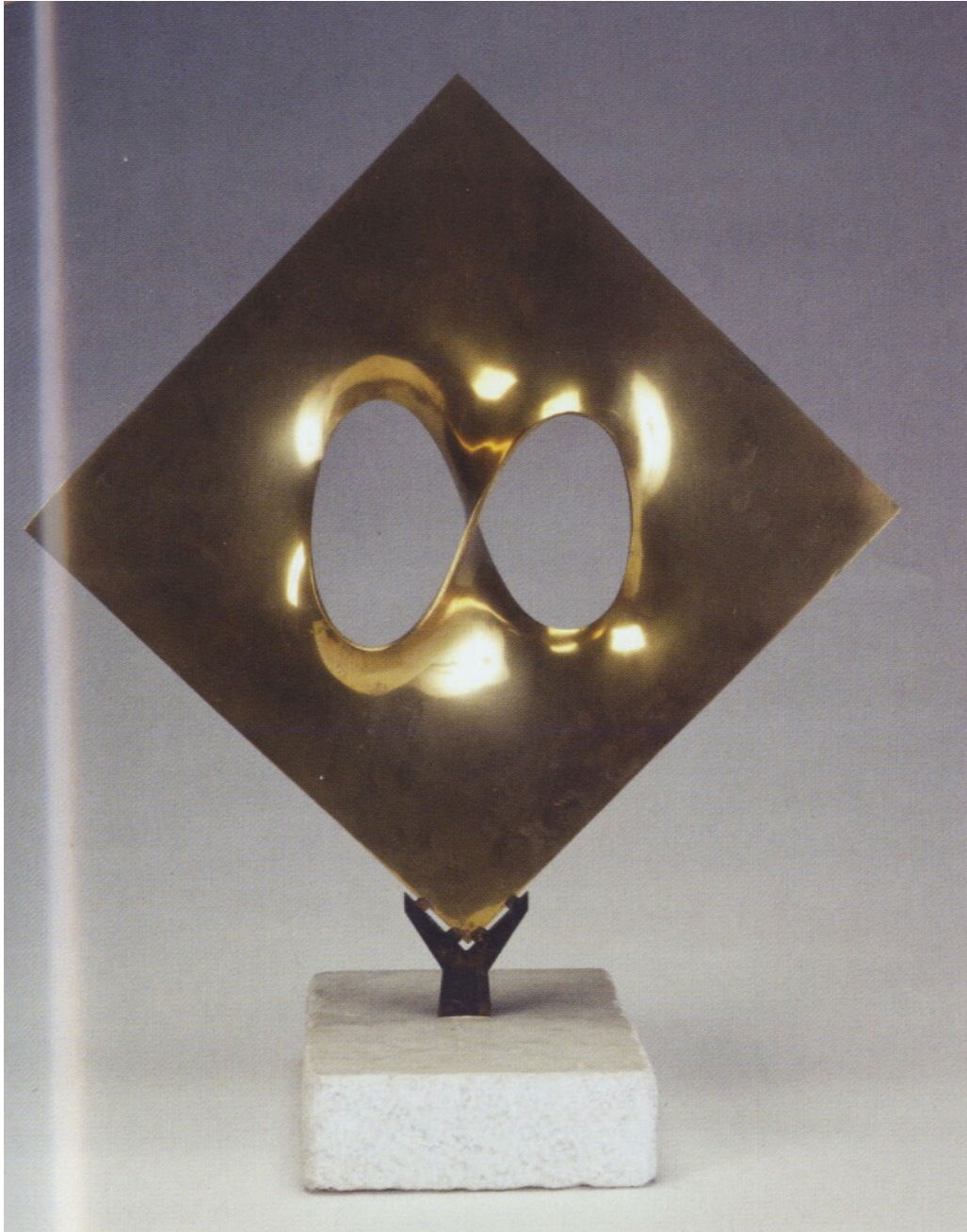Fig. 3. Mackall House Interior, Louis Mackall, 1967, Warren Vermont.

Fig. 4. *Construction No. 1*, Robert Engman, 1961-1962, Muntz metal. Hirshhorn Museum and Sculpture Garden, Smithsonian Institute. Photography by Lee Stalsworth.

Fig. 5. Tack House Additions, 2013, Warren, Vermont, photograph by author.

Fig. 6. Pinhead House Interior, David Sellers and Tom Luckey, 1967, Warren, Vermont, courtesy of Susan Randall.

Fig. 7. Cylinder Room, Pinhead House, David Sellers and Tom Luckey, 1967, Warren, Vermont.

Fig. 8. Dimetrodon, East and West Exterior, began in 1971 by Jim Sanford, William Maclay and Richard Travers, Warren, Vermont, photo by author.

Fig. 9. Wadsworth House, constructed by David Sellers, Warren, Vermont, photo by author.

Fig. 10. Design Center, Goddard College, Goddard Construction Program students with instructors David Sellers and John Mallery, 1971-1977, Plainfield, Vermont.

Fig. 11. Top: Goddard College Design Center Interior, 2008.
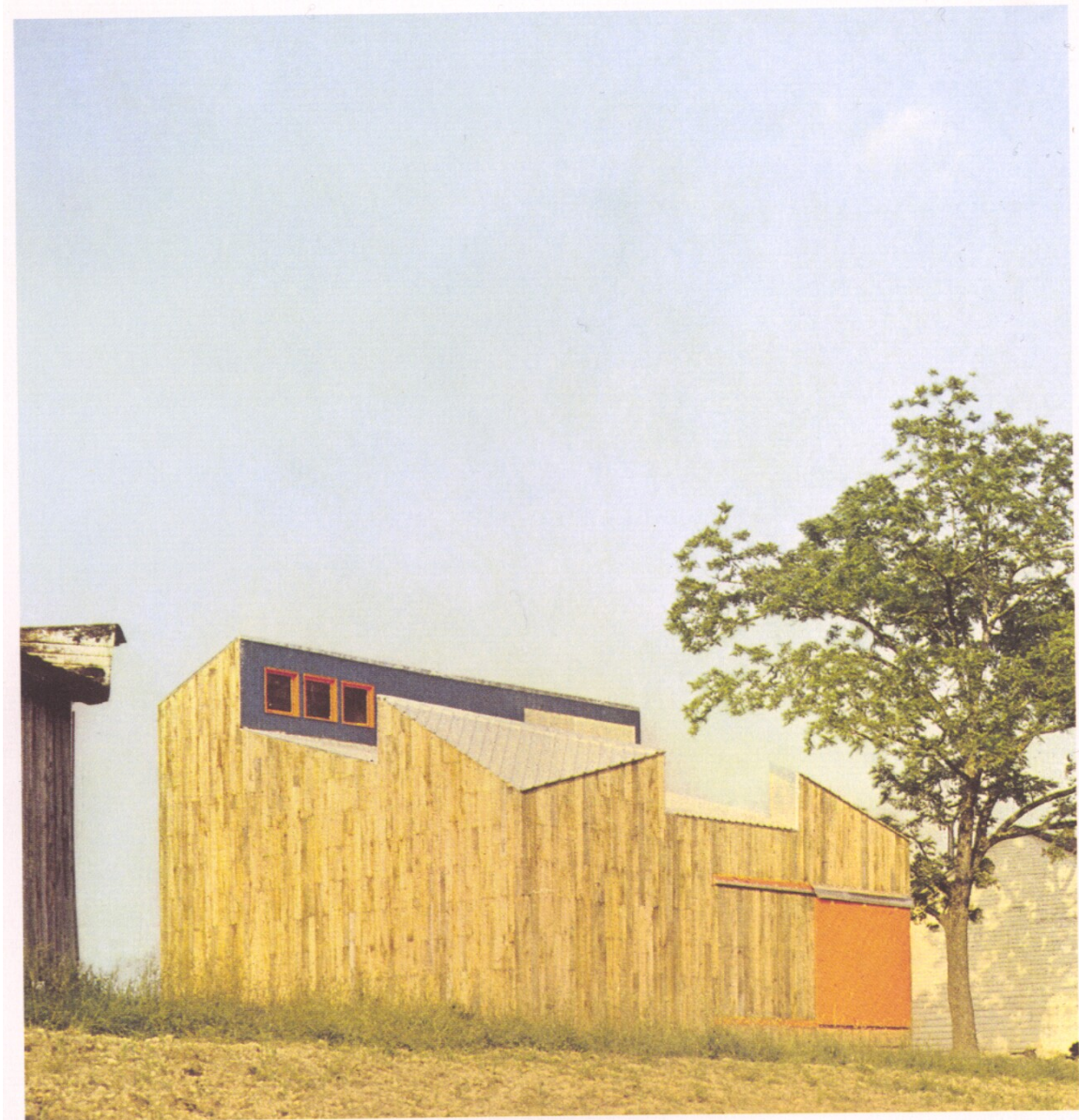Bottom: Goddard College Sculpture Center Interior, 2008.

Fig. 12. New Zion Community Center, 1st Year Yale Building Project Students, Jackson County, Kentucky, 1967.

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