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# A Didactic Architecture for Rural Early Education

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A Capstone Project Submitted in Partial Fulfillment of the Requirements of the Renée Crown University Honors Program at Syracuse University

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Honors Capstone Project in _____Architecture_____

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ABSTRACT

*CONTENTION*
It is possible to create a physical environment which will serve as a didactic tool for both pupils and educators. The tectonic language will be didactic on three levels: that of explicatively detailed timber framing, that of participatory and reconfigurable play modules, and that of demonstrative sustainable resource management. It will merge playground and classroom space, both modulated within a timber frame and allowing reconfiguration of physically and intellectually educational partitions.

*DESIGN PROBLEM*
The kindergarten is to be sited in Saranac Lake, NY, at the Jackrabbit Trailhead, near Moody Pond. The building will merge playground and classroom programs for the kindergarten level and use a didactic architectural language. A timber frame module will be used for both programs, with the playground elements freely reconfigurable and existing as subdivisions of the larger 'classroom-sized' module. The tectonics of timber frame assembly will be expressed and highlighted, as they represent a higher order of didactic toys. The kindergarten building will also serve as a didactic tool for demonstrating sustainable resource management, including water collection as well as passive heating, cooling, and air quality control. This will reinforce the natural site as one of the 'teachers' of the progressive kindergarten.

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ACKNOWLEDGEMENTS

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**CAPSTONE PROJECT BODY**

The didactic aim of the project affects the program requirements and distribution via the design of the reconfigurable play/educational modules. While certain pieces of the program are fixed – including the bathrooms, kitchen, teacher's office, coat room, and storage – the bulk of the kindergarten's space is to be a freely re-arranged and interactive set of two-scale modules which will perform the roles of playground element, classroom partition, ecological learning station, and environmental exhibit framework. The modules are two-scaled [or of hierarchical scales] due to the fact that while the larger frame of each module is not intended in size or assembly to be moved or adjusted daily, this frame will include smaller infill modules which may be adjusted and rearranged at will. Thus, while the participatory nature of the larger modular kit is reliant on teacher-pupil communication as well as on significant shifts in program allotment over time, the kindergarteners will be able to manipulate the smaller play/learn modules freely and as often as desired.

The notion of a participatory architecture is not one historically associated with primary and secondary education, though in recent decades this trend has changed. This is partly due to influence from the design of environments for early education, something that is not at all surprising considering the progressive origins of the idea of 'kindergarten' itself as well as subsequent

explorations in interactive environments. While formal primary and secondary education has existed since ancient civilization in a diverse array of fairly rigid forms, the kindergarten began with Frobel. His idea of a sensory-propelled pre-primary education is -- as mentioned in the discussion of the Contention – very much invested in the didactic mutability of one's environment. Beginning with the small scale manipulation of Frobel Gifts and Occupations, the young mind is encouraged to learn through freely performed operations upon available surroundings. From the manual scale Gifts [whose rules are learned often in a sedentary fashion], Frobel devised larger scale games involving spatial, social, and mental exercises. In this way the 'String Game' [which involves winding and unwinding string from one's torso while reciting a rhyme about the opposing angular accelerations of 'winding' and 'wound'] takes a step up from the sedentary learning in coordinating physical action with conceptual lesson, as well as communicative play.

In Montessori's writing on her system we see something of a 'next step' in this sequence via her 'story of the bookshelf'. She mentions a book shelf in the Casa dei Bambini to which children would come after completing the morning's greetings and the first period of manual exercises. The shelf was old and unstable and would almost invariably tip over whenever a casual effort was made to remove any of its books. For some time, Maria Montessori and the Casa's staff neglected to fix or replace the shelf as it was not a pressing concern.

Within a span of three weeks, however, it was observed that the children had come to accept the structural fault of the shelf and had adjusted their behavior to accommodate their environment. In this short amount of time, considering the frequency of the shelf's use, each child had learned to the point of muscle memory to take extra care in taking and replacing books on this shelf. While Montessori's account can be read on the spectrum ranging from basic physical dexterity to metaphorical life lesson, her text intended this parable to serve as an example of free play's potential in shaping the child's assertive attitude toward her/his environment. The morning's lesson progresses seamlessly: from social greeting and recognition, to manual dexterity with geometric and spatial implications, to the manipulation of larger-than-self environments, to an interactive experience with the written word.

Curiously, while Frobel's origins of the kindergarten as well as subsequent pedagogies of early and primary education spoke unanimously for learning environments to interact with their users, the design of kindergarten spaces was not seriously affected by this basic tenet. In fact, even the two educational complexes designed by Steiner himself [as well as several later reinterpretations] found their innovation only in formal experiments. It was not until the second half of the twentieth century that the broader movement for participatory architecture began to influence educational facility design from the outside.

With such proponents as Lucien Kroll, Ralph Erskine, and Christopher Alexander working against the grain of both High Modernism and fledgling Post-Modernism of their contemporaries, the cause of community-based rational participatory architecture began to gain ground. In some of its manifestations the current was associated with the 1960s and early '70s Counterculture through both ideological precedent and resulting 'aesthetic'. At this time, the general notion of increased participation in the architectural process was spread along a spectrum from Erskine to Vermont's Prickly Mountain Group. While the former was heavily invested in community survey and individualized-though-unifying design, the latter propelled the cause of residential scale design/build to the level of a refined regionalist aesthetic. While the Byker Wall and the work of David Sellers stand opposite from each other, their aims found synthesis in Kroll's projects such as La Meme and Alexander's residential projects, some of which are discussed and prefaced by the 'Center for Environmental Structure' trilogy. It is in this climate of forward-looking and somewhat rebellious additions to discourse and practice that K-12 architecture began to be infused with the 'participatory' component. In the 1970s and early '80s this approach became culturally popular in Northern Europe [mostly England, Germany, and the Netherlands] but by the late 1980s had lost steam due to lack of widespread appreciation and funding.

This project aims to learn from the above movement for participatory architecture, though only insofar as to channel its potential for the didacticism of the proposed kindergarten architecture. In other words, this kindergarten project does not make participation its aim for participation's sake, but only as a means to achieving a truly didactic learning environment which [as has been argued] is in line with the desires of leading theorists on progressive early education. Here, the ideal of interactive mutability is not at all related to Archigram's architectural fantasy [from the anatomical to the urban scale] of endless and free reconfiguration whose end is unclear but whose emphasis lies on the wonder of being in complete control of one's living parameters. If anything, this project is more like Montessori's 'rickety shelf' than the 'cushicle' or 'Plug-in City'. The transformability of the play/learn modules is not designed to merely allow a high degree of flexibility and leave tangible results to fate. Instead, the interactive modules are a means to the end of meaningful learning through carefully judged action.

Concerning the 'ecological' or 'sustainable' didacticism, for example, the 'Site' discussion points out that the project does not pretend to teach student, teachers, and community members about the wilderness reserve merely by placing itself within that environment. Just as Montessori' pupils did not leap directly from playing with geometric learning aides to gracefully choreographing their own bodies' motions within a geometrically analyzable space, so is the

kindergartener or hiker not expected to become fully aware of the ecosystem hosting him merely by finding himself in it. Between the sedentary activities and the careful pulling of a book from the shelf lay the intermediary prerequisites of performing a basic motion while reciting a poem deconstructing it and learning through error with the shelf. Conversely, the child will experiment with growing plants and sprouting germs with the aid of a module fitting after hearing a lesson on photosynthesis but before going on a nature walk to examine several species of low shrub on the trail. The day hiker from Syracuse will peruse the exhibit which outlines the pressures and circumstances bearing on the fragile Alpine vegetation at Mount Baker's summit after having read the trail description in his guide book but before being expected to respect endangered members of the ecosystem he is about to pass through.

An understanding of these intermediate steps in both early and public education is important so as to correctly design the play-learn modules and their capabilities. One question that readily arises from the formulation of this project's contention and its further exploration of progressive pedagogies is "Is the aim here 'Kindergarten as Gift'?" This point must be clarified in order to further solidify the role of the modular environment [building frame] and sub-environment [play/learn /partition modules] as a connector between the individual and greater lessons of ecological and social sustainability. As illustrated in the anecdotal discussion of Frobelian and Montessori concepts

above, the scale of didactic operations is critical to their educational value and reception. In the progression from geometric Gift play to light calisthenics to use of larger and more complex instruments, the scale of the learning tool used has a direct impact on the richness and conceptual content of the lesson.

Gifts, Occupations, and Trinomial cubes, for example, are of a scale to be manipulated freely by a child's hands with no specified relation to either the rest of the body or the rest of the room. Their properties are all visible on the palm of one's hand and their lessons are contained in their combination and juxtaposition to reveal axioms and equations, all on the surface of a small desk. The lessons learned here are microcosmic representations of visual and spatial phenomena, though it can hardly be said that they fully prepare one to adequately experience or modulate residential or institutional scale spaces.

The free exploratory play sessions with the ball and the string [with the accompanying rhymes as prescribed by Frobel] is on a different scale and involves different 'tools', thus cardinally different from the Gifts and Occupations. The ball and string, though of easily defined geometric parameters, are not at all the same type of learning implement as [for example] the ball on the looped string which comprises the First Frobel Gift. Nor are these learning tools similar to the other conceptual didactic instruments. The way in which the child interacts with these objects is now dictated by properties of the human

body, as well as by the now-absorbed lesson of coupling descriptive narrative [the rhyme] with an easily codified action. As the child winds and unwinds the string from his torso while the other end is held by a friend, he recites a statement of the string pulling in the direction opposite from which he himself is spinning. Thus, he is made fully conscious of his body's movement as well as its relationship to the movement of object in contact with him. The poem – used similarly in geometric block play scenarios – is in this case a common learning method carried over from previous exercises and solidifies the child's confidence in the absorbed material. Likewise with the bouncing ball: its arc is mentioned in the rhyme, drawing attention to its slower and faster motions. Even more so than the string, the ball bounced against the floor or wall draws immediate attention to one's highly variable influence over foreign objects.

In the two preceding stages of didactic play, the cause and effect of the performed operations are of a neutral character, meaning that their outcome demonstrates a lesson and does not pass judgment as to the quality of the operations' performance. A set of 'Equivalent Shapes' instruments can yield a wide array of lessons regardless of how they are manipulated. There is no 'right' or 'wrong' way to use them; not even a preferable order of play. The same is true for the bouncing ball and the String Game. The next step is to design an activity where the child's actions are not merely shown to have an effect on objects of self-referential [Gifts] and applied [ball, string] potential, but are put in

context of problem-solving. The mentioned ‘rickety shelf’ was just such a scenario. There manual dexterity and an understanding of one’s sway over physical objects in a precise way were challenged by giving one the opportunity to channel what had previously been ‘free play’ into a concerted problem-solving effort. This is not to say the highest step in any learning sequence is to weed out the ‘useless’ results of experimentation in order to choose one correct answer for a pragmatic dilemma. Instead, the aim is to develop the process of experimentation in such a way as to make one aware that each foray into the unknown will yield a solution to an as-yet-not-posed question. This resonates with Montessori’s and Steiner’s beliefs that all education – whether scientific, humanistic, or vocational – holds as its final aim an independent arrival at an unscripted and experimentally tested high morality.

The specific program calculations for this project must first begin with an estimation of students, teachers, parents, and environmental center visitors. As mentioned in the ‘Site’ section of the text, the kindergarten age population of Saranac Lake is approximately ninety persons between the Bloomingdale School and the Lake Colby School. This project’s kindergarten is hypothetically a private one not within the Saranac Lake Central School District. Thus, it may draw upon attendants from nearby Lake Placid and Tupper Lake, as well as Harrietstown, North Elba, and several other hamlets. For the purpose of this program calculation, the total number of students will be fixed at forty. According to

student-teacher ratio now expected in both standard and progressive schools, the kindergarten will hypothetically accommodate two full-time kindergarten instructors and an aide. Considering parent involvement and visitation, the average estimate [according to Fielding Nair Intl. and DesignShare] for a kindergarten is 1.5 relatives per child for whom space should be readily available. Thus, the kindergarten program, which includes faculty offices, bathrooms, kitchens, coat rooms, and storage, will be required to serve a total of sixty-three adults and forty children.

The environmental center's use is more difficult to speculate upon, as current trail use patterns would be of little indications of the proposed eco-learning and community center. For the summer of 2010, the average registered use of the Jackrabbit Trail has been twenty-six persons per day. No data is available on winter use. For a safe margin of error, program calculation will presume a doubling of patronage. This brings the total of visiting community members to fifty persons per day and – considering the ample space allotted in the re-configurable space for children, teachers, and students – this estimate should not prove too low. Though the specific logistics of re-programmability will be handled in the design phase of the project, it could be said that roughly a third of the kindergarten program is expected to be displaced by the 'visiting' environmental center at the latter's greatest extent.

In terms of spatial and occupancy requirements, this project looks to be in the ideal range for the didactic participatory modularization to be undertaken. The projects of this type attempted in previous decades [as mentioned earlier] all housed between sixty and one-hundred-and fifty persons and covered between three thousand and forty-five hundred square feet, depending on specialization. The failure of participatory and critically interactive design to gain hold in primary education could be partially attributed to most well-funded elementary schools having upwards of eight hundred students. Once again, this project's program's efficacy is inextricably linked to its scale. It is illogical to produce an environment that envelops up to a hundred people in hopes of reproducing exactly the lessons of a pocket-sized toy. Similarly it would not be possible to create a modular didactic landscape, designed to operate at a much smaller scale, within an enclosure that will accommodate a thousand students and tens of faculty, no matter its formal composition.

The richness of possibilities of the modular system described, conceived and tentatively pre-designed here lies in its geometric regularity. When addressing the didactic responsibilities of the play modules, the project relies on research conducted by developmental psychologists as well as sociologists specializing in the educational benefits of playgrounds, as illustrated in the several adjoining diagrams, the 'play-experience' is very much affected by the positioning of play areas with respect to each other, not merely the rules of the game or the

number of participants. Though this research was entirely quantitative in nature and did not aim to parallel any specific theory on early education, its findings can be tied to this text's categorization of forms of play.

The diagrammed manipulation of a hypothetical 'hopscotch module' within the larger modular timber frame grid can be clarified through chess analogy. A well known area of interest – from the mathematical/computational standpoint – among masters of the game is the 'Knight's Tour'. It can be charted as the continuous path of the Knight Piece all over the board and is peculiar due to the knight's having the only asymmetrical move in the game. The results of this mapping vary depending on iteration and hypothetical board size. Of interest is not merely the pattern of movement, but also the increase/decrease in move potential depending on location. These observations can be understood graphically in the next three pages.

The modular play program showcases a similar logic of mutability with varying results for future permutation. From any given square, the knight has a maximum of four distinct moves. However, if future moves are taken into account, not all squares of the board are equal. A knight on b2 is the same figure with the same moves as a knight on d4. These two knights have entirely potentials – in the relevant subsequent turns – so they may be considered highly dissimilar pieces. In the same way, a game of hopscotch played in the corner of a

three-by-three module differs from one in the center of a five-by-five field, or one in the midst of a herringboned module mesh. This is due to the additional and directional social properties of ‘sociodramatic’ games as influenced by neighboring games.

And so we arrive at a definition of the role played by the project’s participatory modules in their playground and physical exercise manifestations. In much the same way that modules used for testing germination of plants and exposition of natural artifacts are an intermediary between a base written/oral presentation on local ecologies and the actual experience of nature, so is the freely re-configurable playground a step between the performance of game-directed bodily movements and self-directed exploratory play which will later be applied on the trail walk. Just as the ‘rickety shelf’ elevates bodily coordination from a reserve skill to an active problem-solver, so does the option of forming one’s own playground environment elevate negotiation of diverse spatial arrangements into a tool to pursue further learning.

Through the sequences of didactic exercises and implements described above, this kindergarten project positions itself as one of the intermediate steps between the child’s exploration of hand-held objects and the all-encapsulating natural environment. The programmatic definition of this project and the success of the contention rely largely on the proper use of the project’s scale as

a method to transition from abstracted simulations of spatial, scientific, and social principles to the fruitful exploration of the 'real world'. The kindergarten is not 'a Gift', as its scale with relation to the human body does not allow the same lessons to be taught. Conversely, it is also not along the lines of a planetarium, which teaches by representing actual nature by showing it at an enveloping, though indoor, scale. Instead, this project relies on its inherent qualities due to scale and site to deliver lessons in physical education, geometric/spatial concepts, and environmentalism before presenting the child, teacher, parent, or visitor with the Adirondack Park which exists with no aim of codifying its lessons.

The play module takes the child from random play through rule-based play and role-based play to a keen perception of the physical environment's mutability, later to be used on the trail. The growing/shading/measurement module allows the pupil to observe natural phenomena through the lens of human-conceived science before observing these purely and in tandem on the nature walk. The expression of the kindergarten's sustainable features makes all aware of the resources borrowed from the ecosystem to which they owe their shelter, comfort, and learning experiences.

**REFLECTIVE ESSAY**

The Adirondack region of New York State – though rather roughly defined in cultural terms and in popular consciousness – can be outlined as the sum of the Adirondack State Park and several adjoining towns. This park is the largest State Park in the forty-eight mainland states and is the largest National Historic Landmark. It includes the Adirondack Mountains, though most of its area is occupied by lower hills and scattered lakes and ponds. It covers 6.1 million acres and while 2.6 million acres of this area are protected by the New York State Forest Preserve, more than half of the total is privately owned by citizens of the many towns, villages, and hamlets. The most highly developed area of the Adirondack Park is also its most densely wooded. This area in the northeast quadrant of the Adirondack Mountains is known as the High Peaks Wilderness Area, which includes the 'Sara-Placid' region, host to this project's chosen site.

The Adirondack Mountains are by area the largest 'branch' of the northeast Appalachians, with the Taconic, Green, and White Mountains lying to the east in that order. The High Peaks include New York State's highest elevation – Mt. Marcy at 5,344 feet – as well as the other forty-five peaks above four thousand feet. The site in Saranac Lake is just to the west of the westernmost High Peaks, though surrounded by a fair amount of high elevations. The Village of Saranac Lake is nestled in the valley between Mount Baker, Mount Pisgah, and Dewey

Mountain, with the site proper lying at the foot of Baker. The conquer of many Adirondack Peaks – though not comparable to Alpine or Rocky Mountain expeditions – occurred primarily in the mid-nineteenth century and [like more serious climbing challenges] was undertaken for sport and geological survey.

By this time in the Eastern United States' development such activity had more to do early preservation and environmentalist efforts than with foraying into the wilderness for the cause of civilization. Most peaks and bodies of water were subsequently named for early settlers, climbers, geologists, and native tribes. It is curious, therefore, considering Nash's analysis of Easterners' tendencies in their expeditions to clear the wilds, that a large hill overlooking Saranac Lake would be named Mount Pisgah. Pisgah was the Biblical mountain from which Moses was commanded to look in all directions and observe the Promised Land. While such a choice would have been in line with much earlier Puritan settlers of New England, Pisgah was given its name in 1948 following a boom in its popularity for downhill skiing, before which it was known as Trudeau Hill after the regionally famous physician and researcher. From this one may infer that while the settlement, founding, and eventual flourishing of the area had little to do with intentional Christian communities, a strand of religious and cultural conservatism can be traced through the Tri-Lakes region's distant and recent past.

Facing Mount Pisgah to the east, Mount Baker is by contrast not a developed peak and rises to an elevation of 2,457 feet. Its southern face features a bare stone ledge offering 210 degree views roughly centered South, while the summit just fifty feet higher is shrouded in boreal canopies. Named after the head of Saranac Lake's third family, Colonel Milote Baker, the mountain has always held value primarily for sport hiking, hunting, and trapping, though later protected under the Mackenzie Mountain Wilderness Area. Its southern and western descents contribute to the formation of Moody Pond, Mackenzie Pond, and a portion of the Saranac River. The faces of Mount Baker have over their history maintained varying amounts, densities, distributions, and species of vegetal growth. The early period of settlement took a significant – though ecologically sustainable – toll primarily on the deciduous [though coniferous to some extent as well] ground cover of the mountain's lower third. This was due to the needs of both Lake Placid and external lumber destinations as near as Lake Placid and as far as Keene.

As Saranac's outward growth leveled out and the tourism and fresh-air-cure industries became increasingly vital to local finances, the re-wooding [whether passive or active] of this region began as it did in dozens of similar towns across the Adirondack, Green, and White Mountains. In this vein, a notable event in Baker's groundcover is the wildfire that in the summer of 1915 ravaged nearly a quarter of the northwestern face. Since the fire's cessation, and since the

instatement of the Mackenzie Mountain Wilderness Area's protection over Mt. Baker, there has been a steady increase in density and diversity of groundcover on all faces. Following the devastation of the wildfire, a numerous crew of students from Saranac Lake High School planted 15,000 Scotch Pines on the damaged slopes. The one notable and [to this project] significant exception is the swath cut from Route 3's section tangential to the Saranac River to Route 86 near Wolf Pond for the installation of telephone poles. The segment of this cut through dense wood that runs just north of Moody Pond provides the relatively level ground as well as the low easily-removable brush to be used as the specific physical site of the project. The Jackrabbit Trail, at whose intersection with the clear cut the site is located, accesses Mt Baker and several other peaks, but runs solely along stream paths and bared stone, thus not disturbing the groundcover.

On the southern edge of the site lies Moody Pond, named of course after Saranac's first settler Jacob Moody originally of Keene, New Hampshire. Covering twenty acres, it was part of Moody's original property and has since played several notable roles for its surrounding residential neighborhood and the Village of Saranac Lake. In the warmer seasons the pond offers a quieter section of town with Forest Hill Avenue looping around the water's edge.

In the winter, Moody Pond has and to this day does host a variety of ice and snow related communal activities. Robert Louis Stevenson, whose winter cottage

was located just west of the pond, wrote of ice skating on its frozen surface, an activity widely enjoyed in the cold months. In 1920, notable citizen Phil Adler originated horse trotting races held weekly on the pond, and soon after a Moody Pond Sliding club was founded. Later this establishment would a house skating, curling, and toboggan clubs eventually to fall under the umbrella of the famous Pines Club. This grew into a social center for Saranac Lake and during Prohibition served as a speakeasy. The complex grew in the mid-twentieth century to include the rink home to a semi-professional hockey team.

Since 1897 Saranac Lake has hosted the Winter Carnival – the oldest continuously running event of this type in the United States. While most of the festivities [including the ice palace] took place along Lake Flower and parts of the Saranac River, a portion was conducted on Moody Pond's ice. The carnival's popularity swelled as its occurrence coincided with the most popular time of year for tuberculosis patients to 'take the cure' at the Trudeau Sanatorium. In recent years the Carnival has been held consistently in early February. One of the aims of this project arises from the fact that decreased use of Moody Pond for Carnival purposes and the long-ceased existence of the Pines Club and Moody Pond Sports Club has left the neighborhood void of a social node or recreational community center. While the trailhead of the Jackrabbit Trail at the northern extent of the pond draws some visitors, the hike log box reveals most hikers of Mount Baker to be non-residents. The project's primary program of kindergarten

lends itself to off-season programming of its spaces. The pond's and trail's community role is to be reclaimed through non-schoolyear occupancy as an environmental education center. The center's lessons will be aimed not only at the regional ecosystems and wildlife but will also augment the didactic effects of the project's expressive use of sustainable resource management techniques. In this way, the sustainable component of the kindergarten's didacticism will be experienced by a wide age range of building occupants.

The site proper is an area of roughly 120 by 300 feet, sloping gently downward to the north and northwest. It is accessed along its southern edge by the beginnings of the Jackrabbit Trail and toward its northern end is visually though not physically open to Forest Hill Avenue and the water's edge. At its southwest corner stands a decommissioned electric pole along with the hiking log box for the trail. A small stream running down across the trail skims the site's eastern edge. The wooded area surrounding the site proper is coniferous on the southwestern edge and deciduous on all other sides with the northwestern corner containing the least foliage, as connected with the mentioned views offered there. The soil is relatively unobstructed by stones or other features.

The site can be judged to be just far enough behind dense canopies to south, west, and east directions so that summer shading is not a major concern. Watershed drainage patterns to Moody Pond from Baker's western ridge makes

heavy use of the northern portion of the site, so a building design strategy affected by this will be implemented. In addition to learning from cited building precedents concerned with  minimizing the project's effect on the landscape's surface [including SmithGroup's Merrill Center and Murcut's Magney House] the didactic sustainability of the kindergarten will lie partially in its leaving the host ecosystem exposed underfoot. Though permanently shading the portion of the side falling under the project's footprint would certainly alter its environmental and ecological properties, this strategy is meant to provide the limited available relief to a landscape which would otherwise be distressed by a traditional foundation-based or slab-on-grade intervention.

Forest Hill Avenue, as well as Labrador Lane, Mount Baker Road, and Moody Way which branch off from it, all access residential buildings most of which are single family homes. Since the closing of the Moody Pond Sports Club, no other typology has occupied space along these roads. While this neighborhood is readily accessible via Pine Street to the south and River Road to the west, it itself does not host any commercial or institutional buildings. The environmental education center would make use of its key position to serve community functions. At the northern 'point' of the pond it commands all of Forest Hill Ave. Lying at the northeastern edge of Saranac Lake, it faces the village, but relies on Mount Baker as a visual, topographic, and symbolic backdrop. In many ways it is the threshold between the compact, historic, tourist-oriented Village of Saranac

Lake and the State Forest Preserve. Its ideal positioning endows the environmental center with the capability of being more than merely a valve between developed and natural land.

While located in somewhat of a valley, the Village of Saranac Lake is not very much sheltered by the three surrounding mountains and several lower hills. Its climate is relatively harsh for New York and New England in keeping with the rest of the northern Adirondacks. Summers are short and moderately warm, while autumns and winters are sharp, dry, and cold. With winter low temperatures occasionally reaching thirty degrees Fahrenheit below zero, insulation and efficient heating are priorities through a large portion of the year. Snowfall is fairly average for the Tri-Lakes Region coming to 3 inches in the winter months.

It is this seemingly inhospitable climate, however, that is responsible for Saranac's wild popularity as a dry air tuberculosis cure destination. With nearby Tupper Lake and Lake Placid hosting overly slight and overly drastic changes in elevation, respectively, Saranac Lake's topography accommodates the perfect balance of mountain winds to serve as a site for sanatoria and cure cottages. While the Trudeau Sanatorium's legacy to the village being a series of impressive architectural monuments now owned largely by Saranac Lake General Hospital and North Country Community College, the cure cottages have become a novel and lasting typology that has enriched the local architectural tradition. In fact,

many of Saranac Lake's downtown retail and office/housing blocks from the late nineteenth to early twentieth century include cure porches – an addendum not common to their typology. Though primarily of local influence, the Saranac Lake Cure Cottage had an effect on the general body of architectural style known as Adirondack Lodge. This would late be seen in the Great Camps built by New England's and New York's elite. This tradition of seamless and carefully orchestrated transitions from indoor to outdoor began as a profit optimization tool for owners of rentable cottages and sanatoria. It resulted, however, in a strategy that has become integral to Adirondack architecture of the twentieth century. Of course climatic pressures still take precedence over stylistic desires in Saranac Lake and the broader region, yielding both timber and light framed structures which focus primarily on the colder months' dictates regarding snow loading, super-insulation, and efficient [often off-the-grid] heating. This, of course, has formal implications on any project, including one of considerable are and considerable winter occupancy such as the proposed kindergarten. The passive environmental control strategies discussed in the 'Precedent' and 'Program' sections are especially of note when speaking about this site. The combination of a less developed municipal utilities system with its higher costs and a regional tradition of making the most use of natural phenomena to attain a livable year-round built environment will certainly yield a contemporary reinterpretation of what is commonly seen as a staid and conforming Adirondack architecture.

As at village of roughly 5,040 inhabitants over three square miles with an average household income of nearly $30,000, Saranac Lake may be noted as having above average educational prospects for its parameters. It has a single Central School District, comprised of Saranac Lake Senior High School, Petrova Middle School, Bloomingdale Elementary School, and The Lake Colby School which houses sixty K-1 and special needs students. This last is in a fluctuating state of being phased out in favor of a joint elementary school, however its building was meant to accommodate a full K-5 school. In addition to primary and secondary educational facilities, Saranac Lake is host to the head campus of North Country Community College, which offers programs in liberal arts as well as business, health, and technical vocational fields. The next closest institutions of post-secondary education are SUNY Plattsburg, SUNY Potsdam, Clarkson University, and Adirondack Community College. While this project is not meant to address the internal issues of the Saranac Lake Central School District or to study the feasibility of a private kindergarten on the designated site, it should be noted that the currently unresolved fate of SLCSD's lower grade distribution is of interest.

The Charles Dickert Memorial Wildlife Museum on Main Street in Saranac Lake contains a limited collection of natural history artifacts as well as material regarding local history and current preservation efforts. It is housed in an annex

of the Saranac Lake Free Library and is spatially configured as a researcher-oriented repository of exhibits of limited public engagement potential. Since being named and 'All-America City' in 2006, Saranac Lake's municipal forces have been to some extent applied toward propelling the village's public image in a more modern direction, including keeping with the rising trend of environmental awareness and education. Thus, this project finds itself well positioned to take on the environmentalist angle of community building. While the temporary and seasonal aspects of the environmental learning center program would prevent certain spatial arrangement in anticipation of long term exhibits or artifact storage, the mutable nature of this off-season occupancy may work to bolster the transformable nature of the modules discussed in the 'Program' section.

The insertion of the environmentally aware and community oriented program heightens the emphasis on the site's adjacency to the Jackrabbit Trail. The trail to the summit is 0.9 miles long and has a slightly higher than average slope for a non-High Peak. The first half mile leading to a brief ledge on Mount Baker's southern face is of a lower incline, while the remaining length of trail climbs rather sharply around to the eastern facets of the southern stone outcropping preceding the summit. Vegetation along the trail is primarily maple, with unpredictable patches of other species distributed on the southern and western faces which the trail encounters. Conceivably, this is due to the damage and subsequent remedy of the fire of 1915. While there is no available data on the

trail's users outside of number and origin as indicated in the hiking log, the short and relatively easy hike has been noted to be enjoyed by visitors of a wide age range. While the second half of the trail being more challenging to younger children, it is not unlikely that the educational functions of the project would benefit from a readily accessible nature walk. In this way the story of sustainable resource management – didactically expressed in the kindergarten – would not be limited to the ecological forces of the site proper, but would properly present the specific plot of natural land upon which it lies as an inextricable component of the larger system.

The project's relationship to the site can be formulated best as it relates to two goals. The first goal is to use the site as a setting for the lessons on sustainable development and resource management important to both the progressive kindergarten and to the all-age environmental learning center. The second goal is to fill a void in the Moody Pond neighborhood's and Saranac Lake's community functions, particularly in the spring and summer seasons. In these two ways, the site on all scales – of the Moody-Baker district, of Saranac Lake, and of the northern Adirondacks – creates a focus for both locals and visitors; for those who see the buildings as a daily destination and those to whom it is an occasional thoroughfare. Though the project does not aim to concern itself with the hypothetical urbanistic implications of its insertion, one might speculate on the demographic and other changes incurred upon Forest Hill Avenue which is

progressively becoming a collection of higher income second homes. It may be said that with regard to the community functions, this project takes inspiration from the Pines Club in its several manifestations throughout history.

Looking back upon Nash's views on wilderness's evolving role in the American collective mindset, this project's stance toward its 'wild' site can be deemed both a hybrid of historical types and a look forward into the future of sustainable architecture as a teaching tool. Certainly, the original expansive attitude of antagonism toward nature is no longer present or applicable here, though a desire to project man's environmental conceptions and measures upon the wilderness is present. If ecologies and their effects on habitation are to be studied and demonstrated through the project, it is through the lens of natural sciences [a human creation designed to understand the world] and translated into tectonic form. The very idea of creating an artificial learning tool to understand that which is not manmade implies that arbitrary [however much codified] standards are at play. Thus, while the general posture of the project is of stewardship of and increased unity with nature [as first seen in the early twentieth century], it uses sophisticated modern means to understand its surroundings. The environmental didacticism of the kindergarten is not limited to surrounding building users with the lesson they are meant to absorb. Instead, the project employ learning aides as intermediary between humans and the

wilderness that is meant envelope them and which they are meant to understand.

Saranac Lake was awarded the title of All-America city for its transparency on local government. Since then, it has made an effort to showcase its unique potential in the northern Adirondacks as a center for tourism, education, and regional culture. The project should address this desire by providing a forward-looking facility that combines advances in all three aspects and does so in keeping with the Village's and the Park's motives and concerns. While the social club – and later the speakeasy and sports club -- on Moody Pond served a unifying and representative function for Saranac Lake in the past, the communities current evolution may be supported through a delicate built intervention at the crossroads of education, tourism, and environmentalism.

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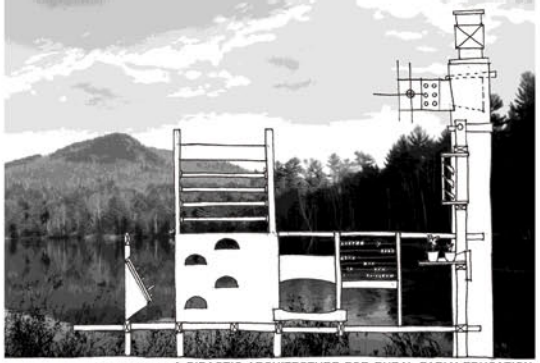

VASILIY LAKOBA
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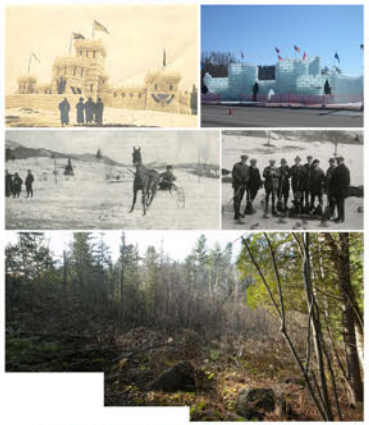
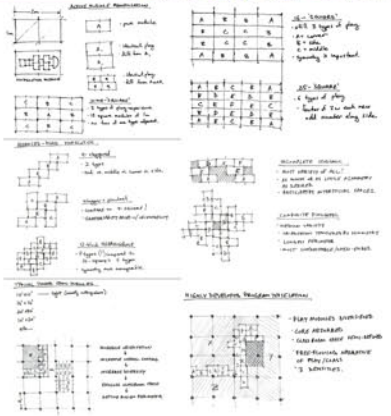
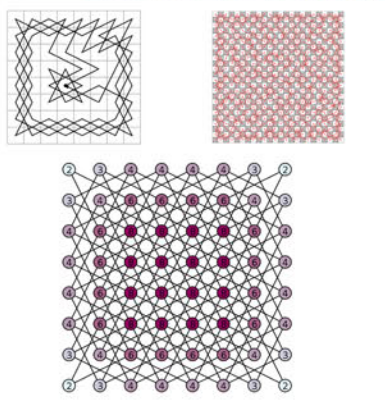
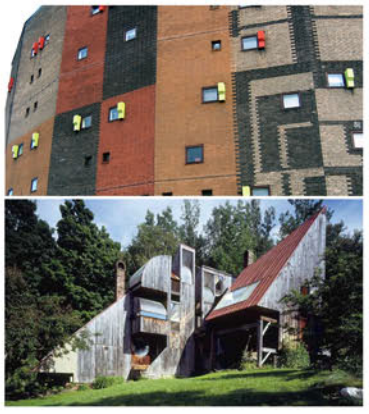
# A DIDACTIC ARCHITECTURE FOR RURAL EARLY EDUCATION

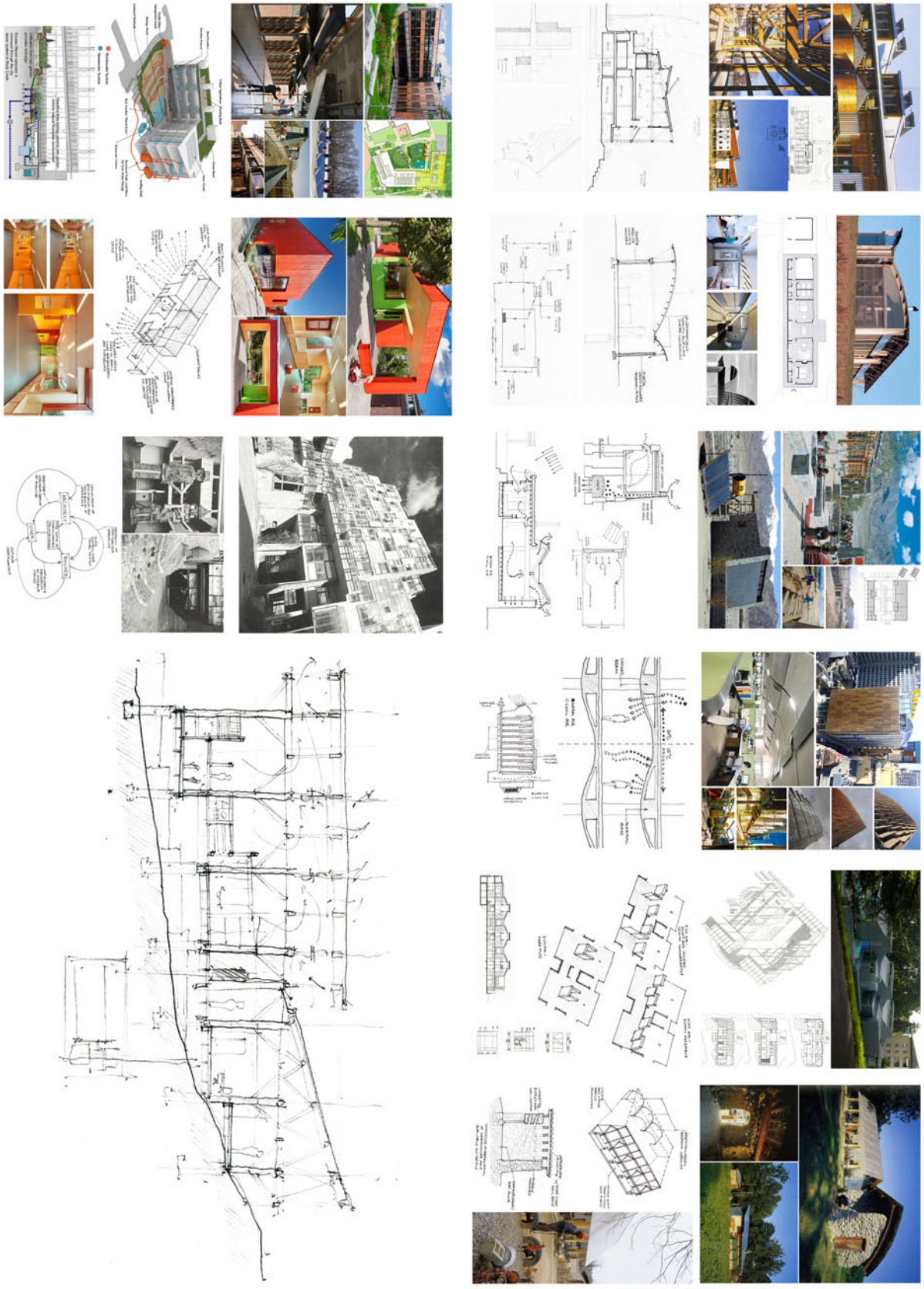


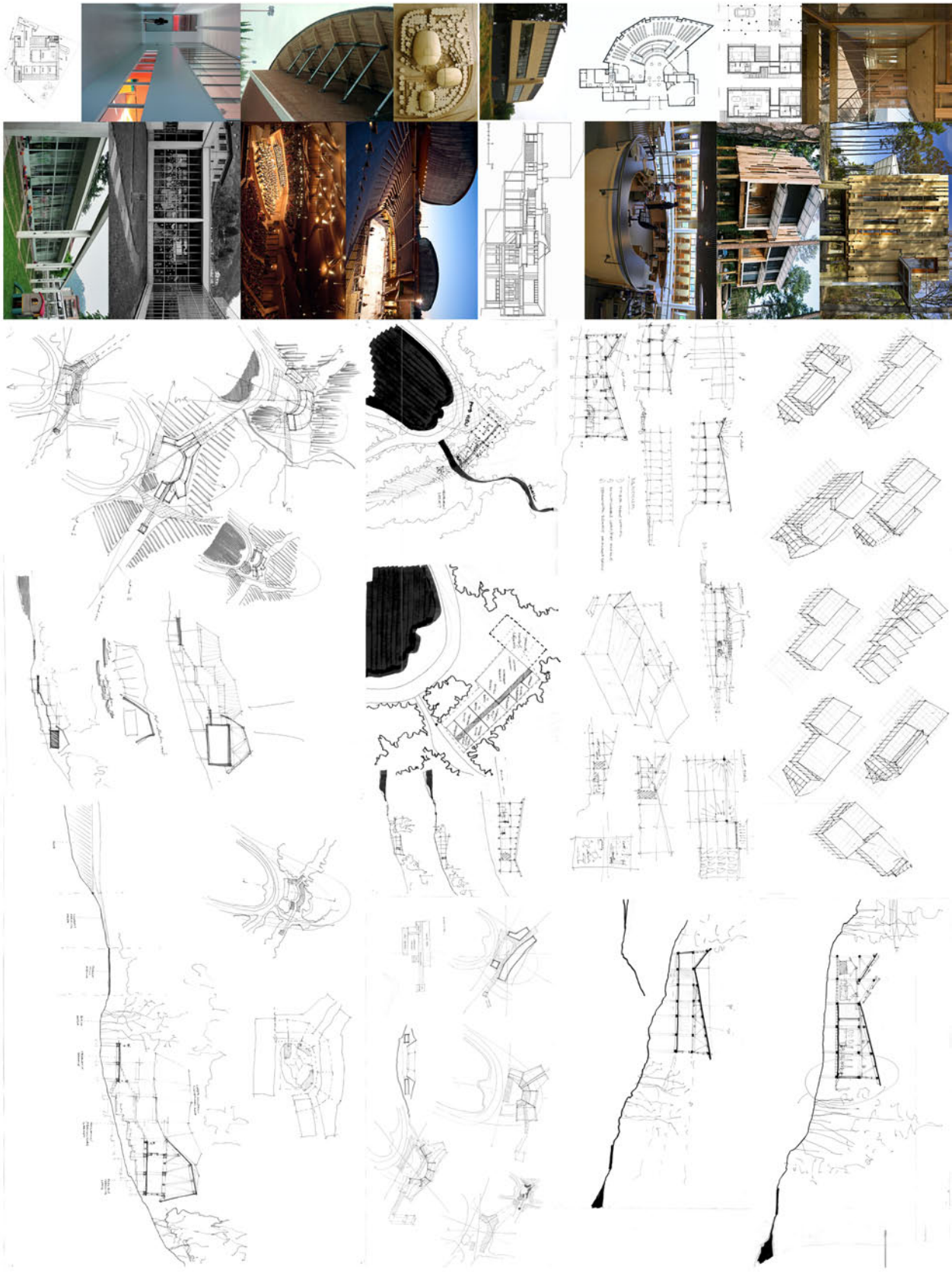


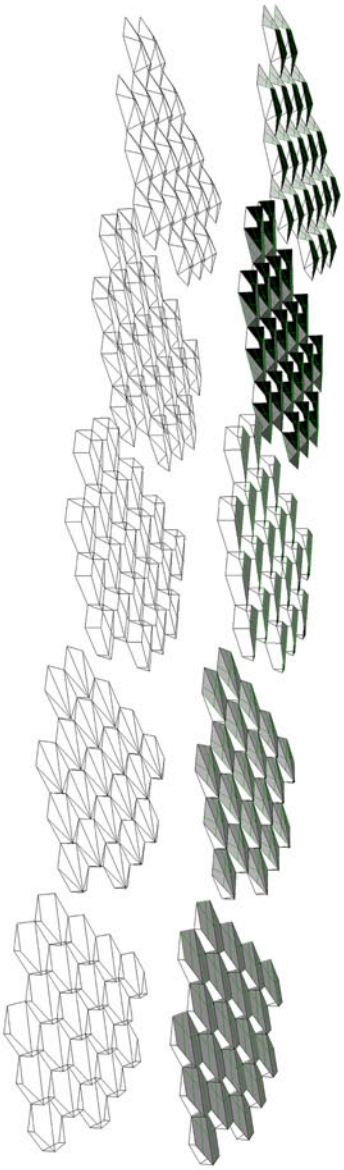


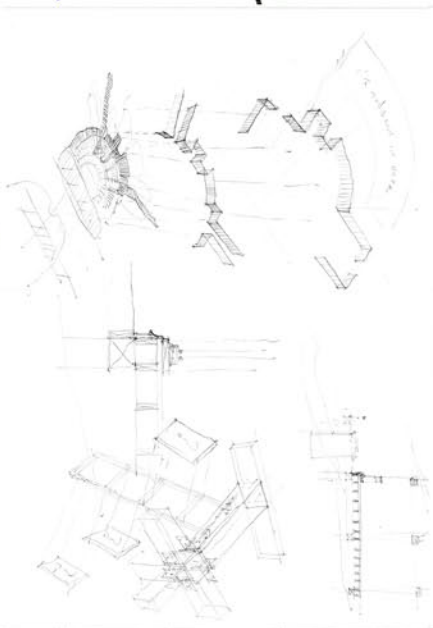


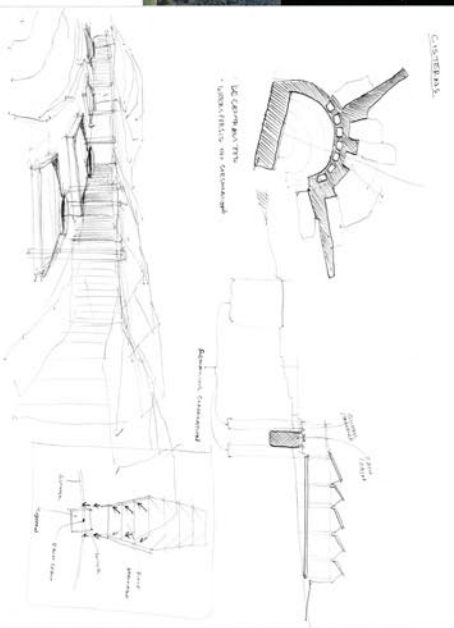


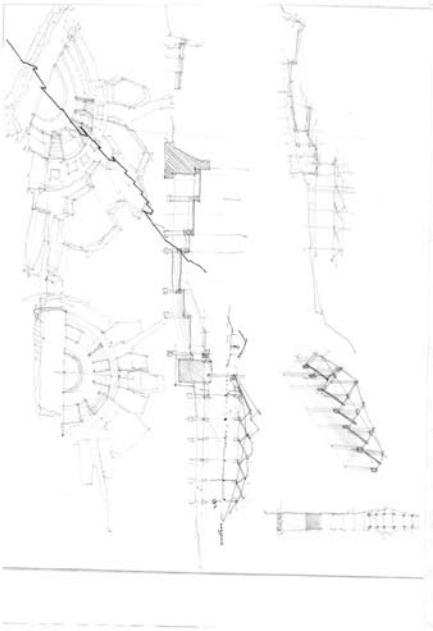


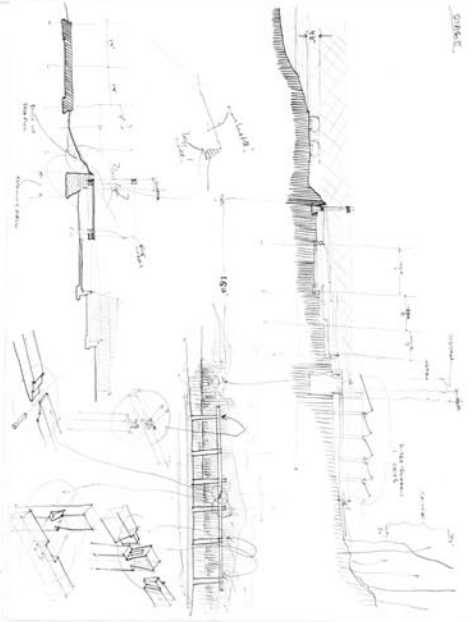


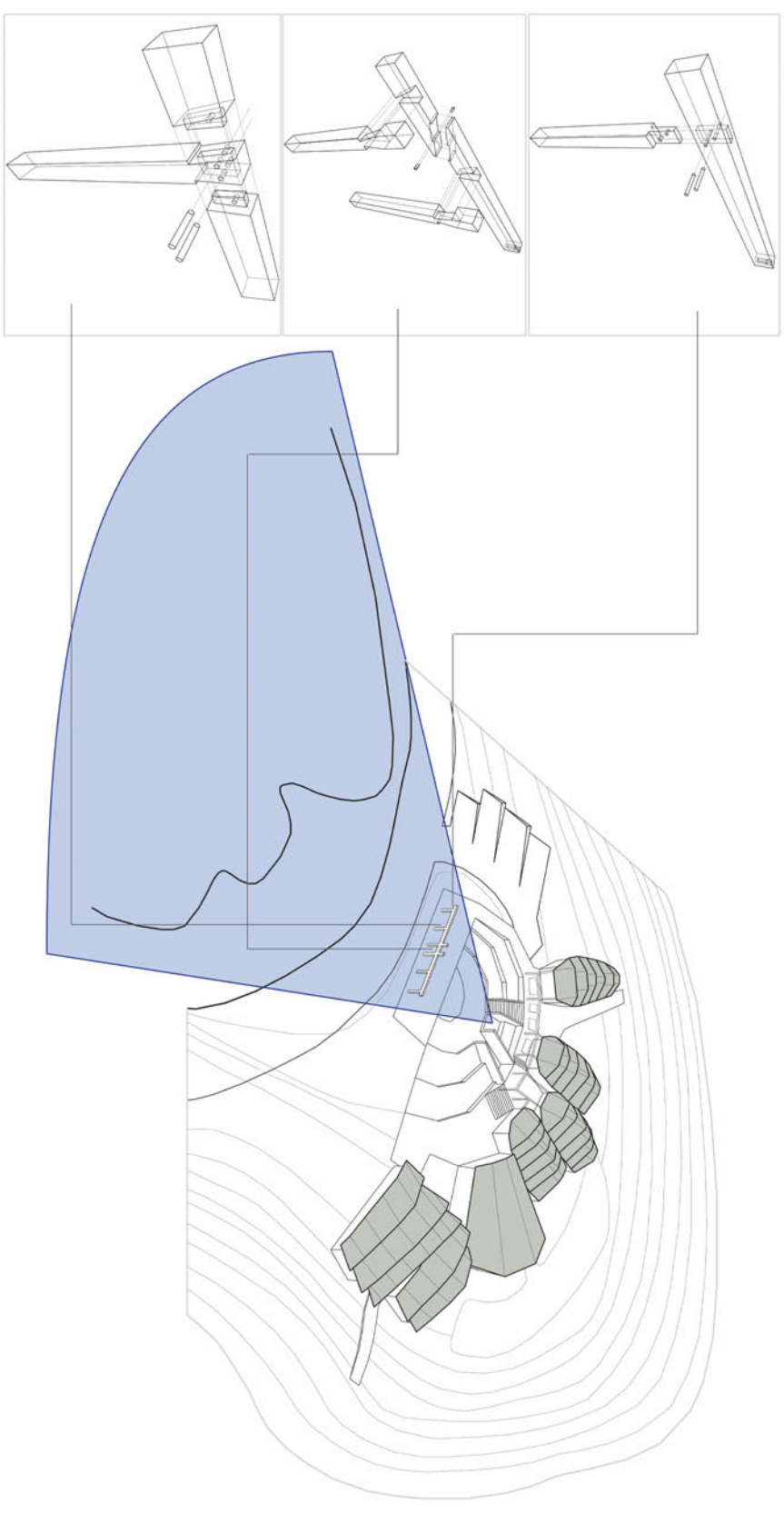


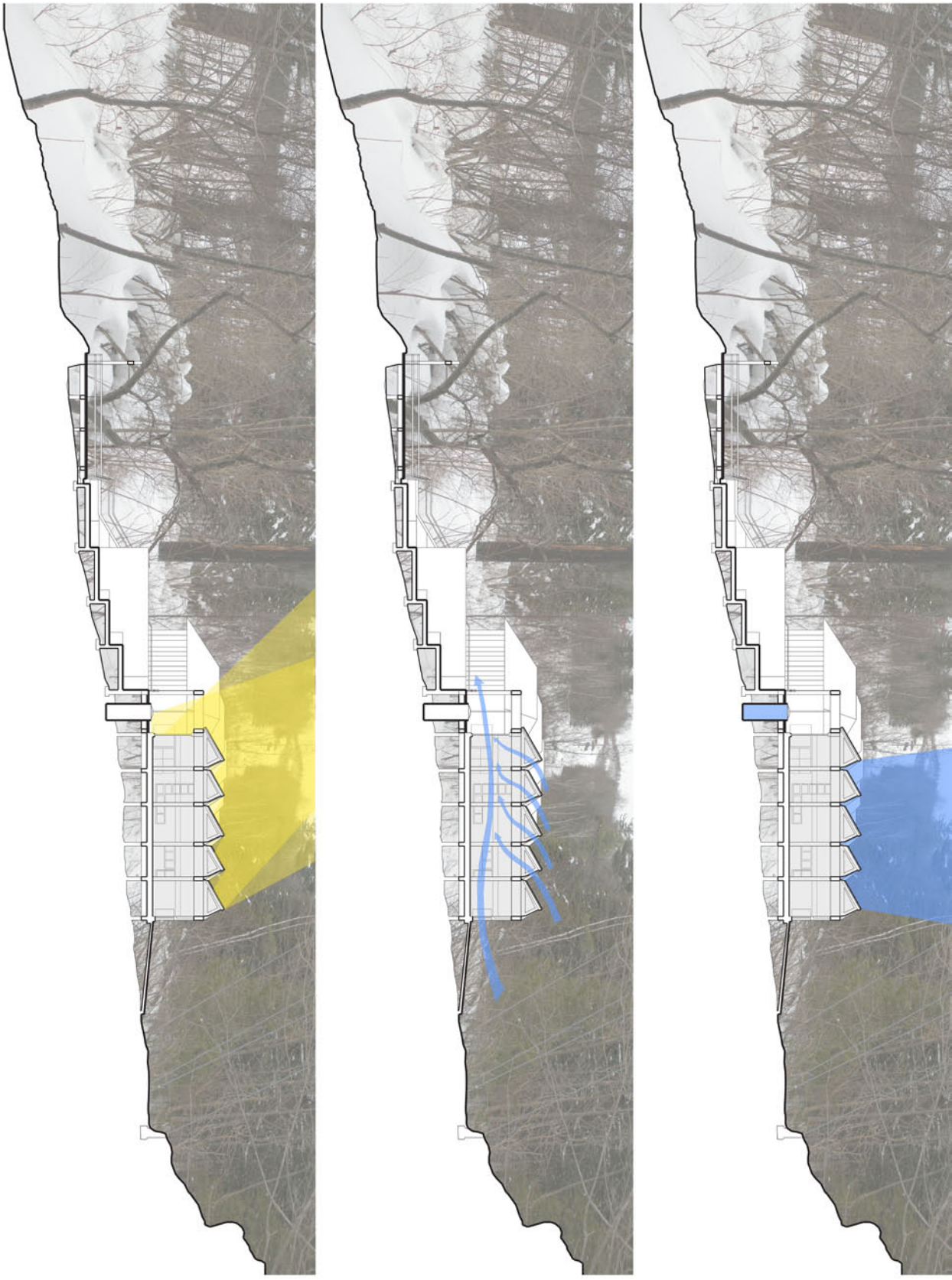


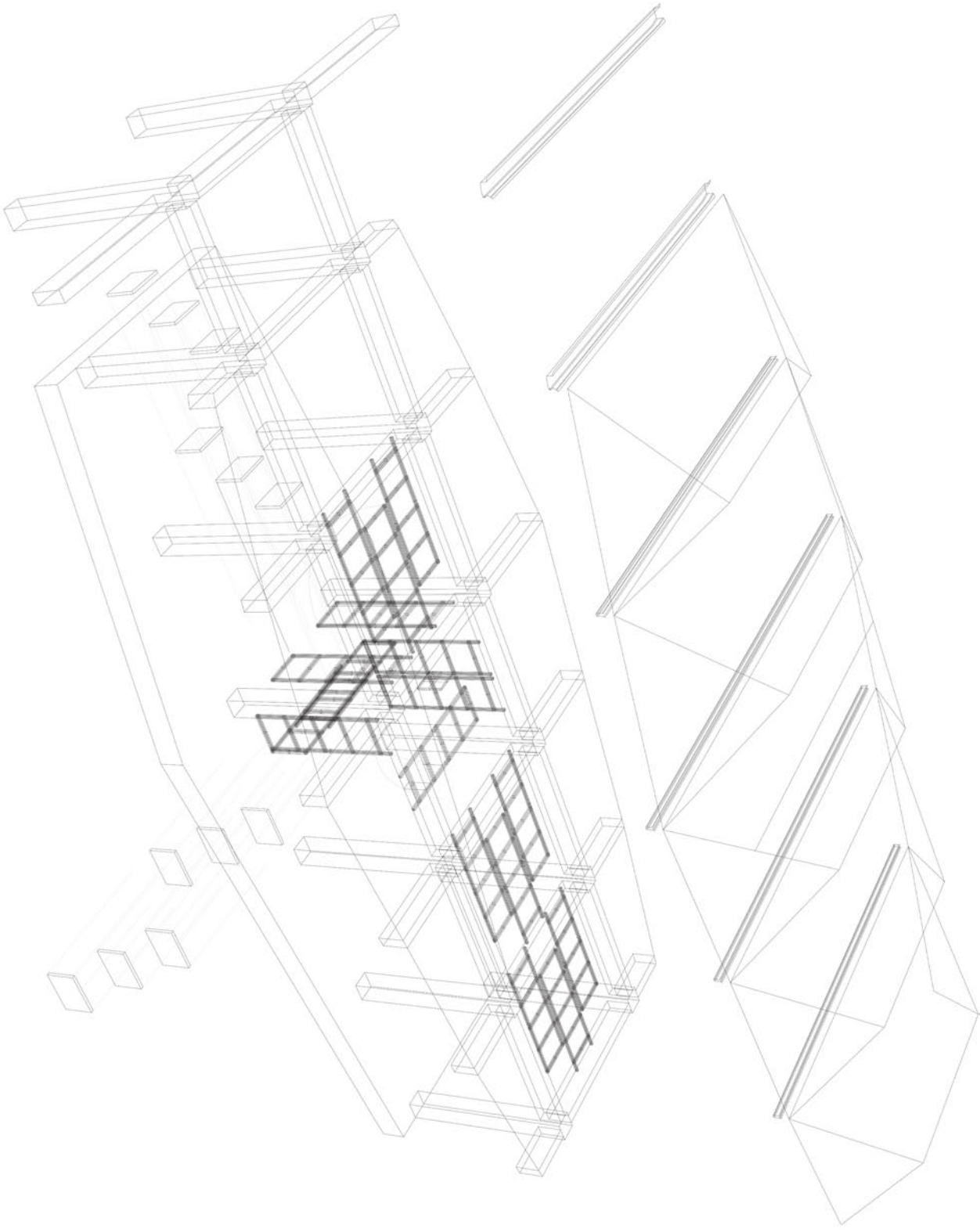


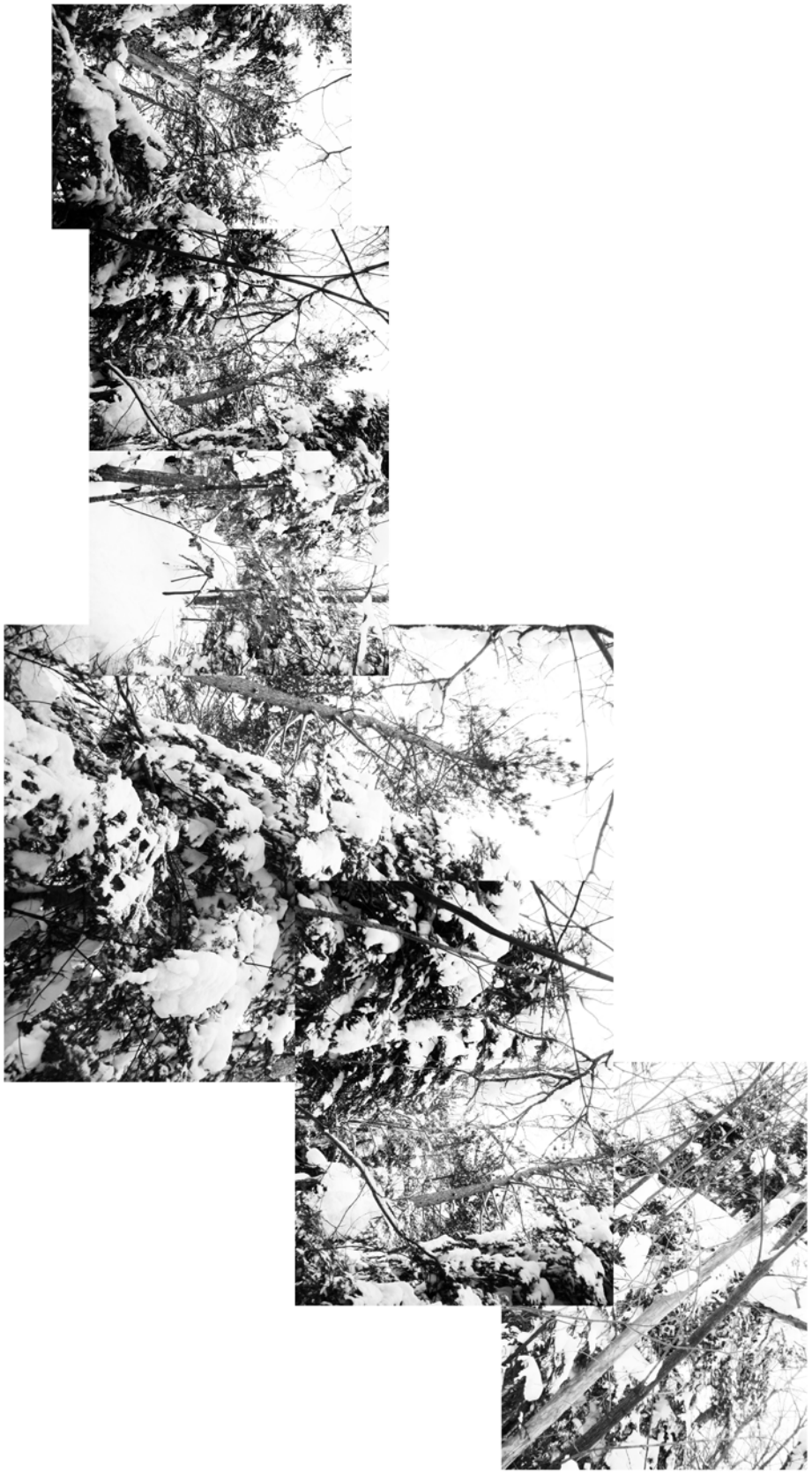












## CAPSTONE SUMMARY

It is a well-documented and researched occurrence in this country that public education [especially at the primary level] has become increasingly test-standard-driven, increasingly rigid in method, and increasingly poor in substance and valuable life preparation. While this thesis does not intend to find or explain the causes of this sociological and political phenomenon, it is interested in finding relevant pedagogical ideals – which can be manifested architecturally – and bringing them to bear on the design of space for early education.

Another foundational consideration of this thesis is the siting of the contention and the subsequent design project. Through early research in progressive educational theories of Montessori, Frobel, Piaget, and Steiner, a parallel has been noted between the tenets of these systems and the all-around education known to be offered by 'The Great Outdoors'. These major pedagogical movements see social education as being fostered through the intertwining of physical and intellectual education, which, when pursued in cohesive groups of individuals, gives rise to higher level 'social problem-solving'.

In most standard early education facilities one will encounter 'diversified' modes of education, aimed at developing well-rounded children. In the United States, schools for children between the ages of five and ten often have written lessons, hands-on lessons, 'playtime', meal breaks, indoor physical activity, and other developmental allotments. While appreciable, these are often compiled in curricula without much care to order, proportion or

composite meaning. Thus, while some level of developmental balance is attained, a codified system of holistic education is not applied or affected.

Kindergarten specifically, as formulated by Frobel, is meant to search out the natural educational urges within each individual. This explains his fascination with the power of unregulated play. His theories were in large part a reaction to the dominant pedagogical paradigms in Germany of the first half of the 1850s. These methods of early education and upbringing are still well known for their rigidity and insistence on conformity as well as a 'break down, build up' attitude. Frobel's own education at the hands of his father – an orthodox Lutheran pastor – served for him as an early example of what his mentor Pestalozzi had called 'the old order of decrepit, stammering, journeyman-teachers.'

Like Montessori and Steiner decades later, Frobel had seen his work as moving pedagogy closer to nature's way'. While the three mentioned systems took in-class experimentation to varying degree, they found their mission in establishing learning methods to be very similar to scientific research. The Enlightenment and subsequent scientific progress had instilled in them the belief that the human organism could guided through life with an understanding of its developmental tendencies and potentials, which only needed to be discovered through rational observation. While Steiner was largely concerned with pedagogy as but one piece of his Anthroposophy which led him to draw all possible connections between the body, mind, and soul, Montessori and Frobel were able to devote themselves to the detail of their methodologies.

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While today access to Montessori and Frobel materials in the United States is fairly common, the total design of facilities for this type of learning are not necessarily proscribed by their founders or later contributors. The thesis contention and design problem presented her aim to synthesize what can be gleaned from these pedagogues’ writings on spatial learning to form a cohesive strategy for an architecture which serves a holistic kindergarten level education. It is not the aim of this thesis to adopt any one of the methodologies as a ‘client’, nor does it take into account all tenets of said methodologies. It is assertively put forth, however, that an architectural design process can be devised which would endow the built environment with didactic capabilities in line with progressive-holistic ideals and practices.

The site chosen is a rural one, though by no means a cleared site, or lacking cultural context. It is this cultural context, in fact, which gives two precedents [physical and ideological] of great influence on the project's progress. Saranac Lake, NY – the municipality in which Moody Pond lies – was from the 1870s until the end of the Second World War the absolute center of tuberculosis treatment in the Western Hemisphere. Before the ubiquitous availability of pharmaceuticals for treating the ailment, fresh dry air was the common prescription for 'consumptives'. Many a celebrity and commoner traveled there for their health and the former mill town experienced a boom, spearheaded by a locally invented typology: the Saranac Cure Cottage. This will be discussed in greater depth elsewhere in the book.

The Adirondack region has to this day [like Northern New England and several other parts of the country] preserved the timber framing tradition brought from Central and Northern Europe. One might say that this construction method is sustainable by definition, as it has sustained itself, its supply chain, and the community built by and for it for over two centuries. Little has changed in this system save the advent of the automobile.

It is in this traditional building method that one finds two answers to the jump in scale from Frobel gift to all-encompassing built environment. Being one of the earliest forms of modular construction, timber framing offers the adaptability and reconfigurability desired by

all three mentioned major progressive pedagogies. The module can be manipulated ad infinitum to create within a generic grid the possibility for new adventures in play, collaboration, lecture, and socialization. While the Frobel Gift does not foresee the effects of increasing numbers of gift-users or any sort of combination of intellectual and social learning, architecture can surely take on this responsibility. The participatory potential of a timberbased modular architecture recalls the design process of Lucien Kroll, but in real time. Even the detailing of timber structures can be seen as an advanced level of Sensorial Material.

The natural site itself becomes a didactic material through the lens of the architectural project. Whether calibrated louver systems to chart solar patterns, transparent rainwater collection courses, or demonstrative passive air treatment installations, the kindergarten can become both an introverted and an extroverted tool for the child to explore their surroundings at several scales.