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The B Street Residence Biophilic Design and the Colorado Home

Colin E. Fanning

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“Live in rooms full of light.”

Aulus Cornelius Celsus

introduction

The B Street Residence is many things. Ready? It is: part travelogue, part design manifesto, part argument for urban revitalization, part methodological experimentation, part homage to Colorado, part imagining of what home can be, part culmination of four years of interior design education, part preparation for a future in the architectural and design industry. It must be a talented building, to be so many things.

But let me back up: I have wanted for some time to experiment with a particular design methodology I've encountered during the course of my studies. Biophilic design deals with the innate biological and psychological connection between humans and the natural world, and is concerned with finding ways to reconcile the built environment—which has, in many ways, actively denied this very connection for a long time—with the patterns and processes of nature to which we are inherently attracted. The ultimate goal is to create buildings and spaces that actively engage their occupants, that serve not only the need for shelter, but also the need for health and relevance and beauty. I am by no means an expert in this field—this project represents a process of experimentation with biophilic design, a self-education effort to build my own skills. This dovetails well with my long-running passion for sustainable design—the two methodologies are distinct but closely related, and when used in concert they represent a progressive vision for responsible, ecologically-sensitive design.

To that end, I searched for an appropriate framework for the design, a context that would be simple enough to allow for creativity and generative experimentation, but substantial enough to yield a final product with designerly merit. Residential design represents a good balance of these criteria, and a single-family home in particular is of a scale that designing an entire building envelope and the interior

would be achievable by a single person. But in order to complicate the framework further, I chose a particularly challenging site located in the downtown area of Pueblo, Colorado—my hometown, a small city, not known for its urban life. In this way, the project embodies a subtle argument for urban revitalization as well, perhaps introducing a new model (a mixed-use single-family home?) for thinking about the way we build, and why.

A large part of biophilic design, too, is fostering the connection between the built environment and its specific geographic and cultural location. To that end, I am drawing together various cultural threads—downtown Pueblo’s 19th-century “Main Street” aesthetic; the local Southwestern vernacular; the inspiring architecture I encountered on a particularly memorable trip to Istanbul; a love of good, clean modern design—weaving them carefully into each other, seeing what happens when they intersect. Or perhaps it’s more like they’re make up the palette from which I am painting, stroke by stroke, until a design emerges from their colors. Pick your metaphor—either way, the point is that in this project, I am testing my abilities to tease out the possibilities for cross-pollination between cultural traditions, finding the common ground that leads to a successful design that is entirely neither one thing nor the other, but a (hopefully) beautiful hybrid of the two. Or twelve. This is an especially important ability for the designer—or any creative artist—in a postmodern (or are we on post-postmodern now?) world, where blending and abstracting traditions can result in something that pleases no one (and may offend quite a few). In this Capstone, I am attempting to reclaim this kind of designerly abandon, redirect it towards cohesion and functional beauty—while, of course, simultaneously incorporating the theories mentioned above. It’s good practice for the constant juggling act of the professional world, and allows me to push the envelope of my own design abilities.

A note on the format of this thesis: I am, with the permission of the Honors Pro-

gram, integrating the reflective essay component (required of any Capstone designated a “creative project”) with the written presentation of my design. The ultimate goal of a reflective essay is to provide the reader with a greater understanding of the theories and processes behind an artist’s work—a glimpse of the operations of a creative mind, intended to provide a richer experience of its creations. I had originally planned to construct, as part of this project, a narrative telling of the conceptual and theoretical grounding of this design; since that dovetails so well with the impetus behind the reflective essay, I decided that unifying the two would make for a more cohesive experience for you, the reader.

This document, then, not only serves as the explanation of my project itself, but also an exploration of the creative process that generated it, a self-reflexive journey detailing how this Capstone came to be. It is my sincerest hope that you discover as much enjoyment in the result of this design as I found in its creation.

the site

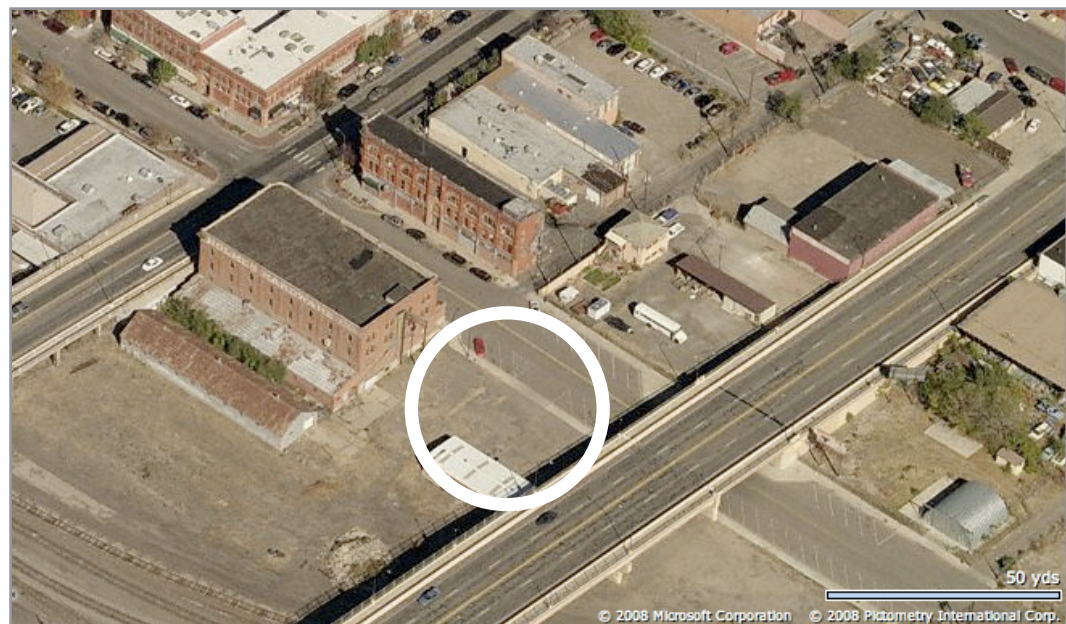
In the same way that a designer must always have particular client in mind, the location of any building design is an important thing to know beforehand. The specific geographical context of a project informs every decision, from those on a large, ecological scale (the challenges presented by particular climates and landscapes), to those with regional significance (local culture, area history, vernacular architecture), to those of a very specific nature (the unique oddities of any given site).

I decided that choosing a location in my hometown of Pueblo, Colorado would be most appropriate—since I’m so familiar with the area, both ecologically and culturally speaking, it’d give me the best opportunity to design in response to the character of a particular place. Pueblo’s an odd animal—too populous to be considered a town, too spread-out and low-density to really be considered a city. A diverse

set of ethnic communities—predominantly Latino, but with strong representation from the Italian, Polish, Irish, and German communities—lends a unique cultural atmosphere to the place. It’s a city in the process of reconciling its past (the dominant steel-producing town in the state) with what it imagines for its future (a community that provides an attractive alternative to big-city living, a city with a real commitment to sustainability, the economic anchor of southern Colorado).

Downtown Pueblo itself has some very charming historical buildings, and with the progression of the Historical Arkansas Riverwalk Project has come a good deal of revitalization for the area—sorely needed after a particularly bleak period in the 90s. There are many stirrings within the Chamber of Commerce and the City of Pueblo, and by private investors and developers—a lot of interest in continuing the upward trend. But there are still awkward corners of the area, vacant lots and abandoned buildings, rubbing shoulders with the “nice” parts of downtown.

The site for this residence is one of these, just a block off Union Avenue, the main drag through the historical district. It’s a challenging site, long and very narrow, beset on all sides by the kinds of “features” that make real estate agents cringe. To the southeast is the busy Main Street bridge; to the southwest, a vegetated bluff



Proposed site. Image courtesy of Microsoft Live Earth

and the beautiful Pueblo library lie across the Arkansas river canal...and across a rail line frequented by freight trains. The northwestern edge butts against a city right-of-way and faces one of the less-attractive sides of the McCarthy Block, an historical downtown building. The northeast offers a lovely view out over downtown Pueblo, but immediately across the street is a vacant dirt lot that hosts a rusting vehicle shed and all manner of urban detritus. The whole area, this dead section of B Street, is dusty and parched-looking, surrounded by the noises of traffic and industry. Add to that the typical concerns of any kind of urban (although I use the word loosely for Pueblo's miniscule downtown) living—privacy, parking, other people—you might well ask why on earth someone would choose this neglected corner of the city as the site for a residence. Why invite such hassles?

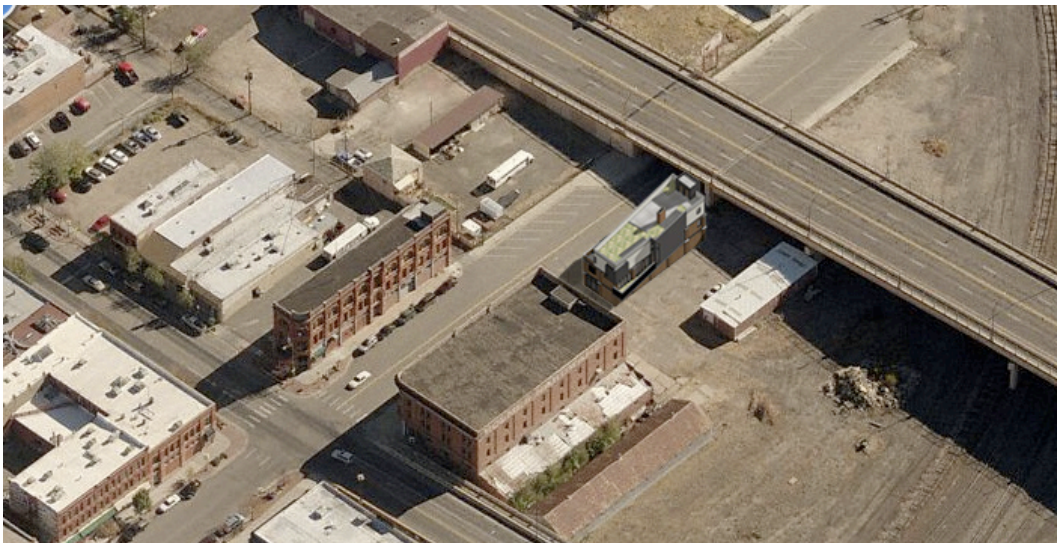
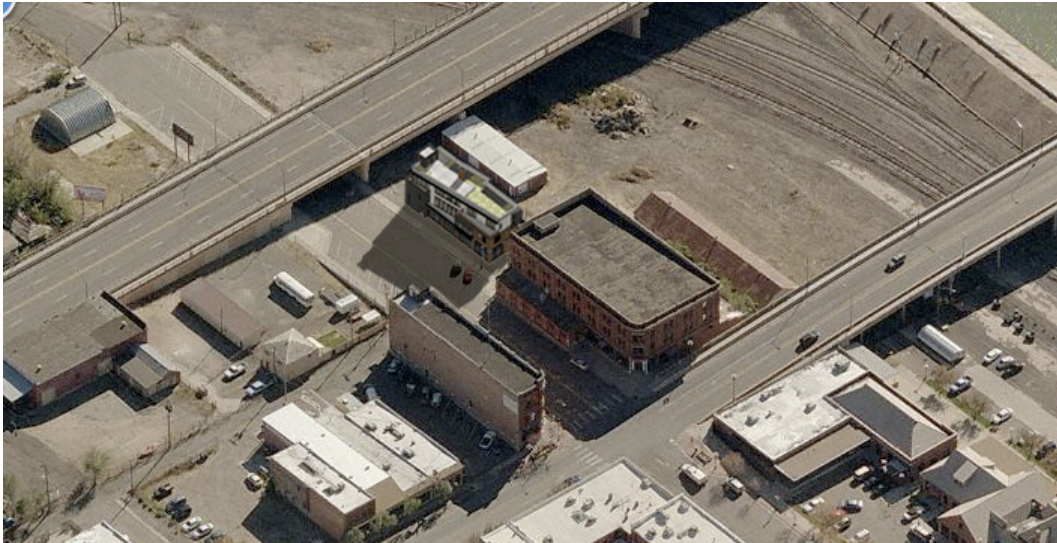
Because someone has to be first.

It's far easier to roll out the sustainable-urbanity living-above-the-store anti-sprawl rhetoric than it is to actually take the risk of implementing the changes those ideas require, especially in an situation that such responsible development would be seen as a risky choice. Successful mixed-use developments aren't a pipe dream by any means; they've been implemented in locations across the county. But they're typically very well-funded and backed by a cadre of developers and investors and banks that



Photo by Paul Fanning

all have a keen interest in seeing them succeed, and most are located in areas that possess an established urban culture. It makes sense, of course—no one's looking to build that multi-million dollar



The proposed building shown on its site.

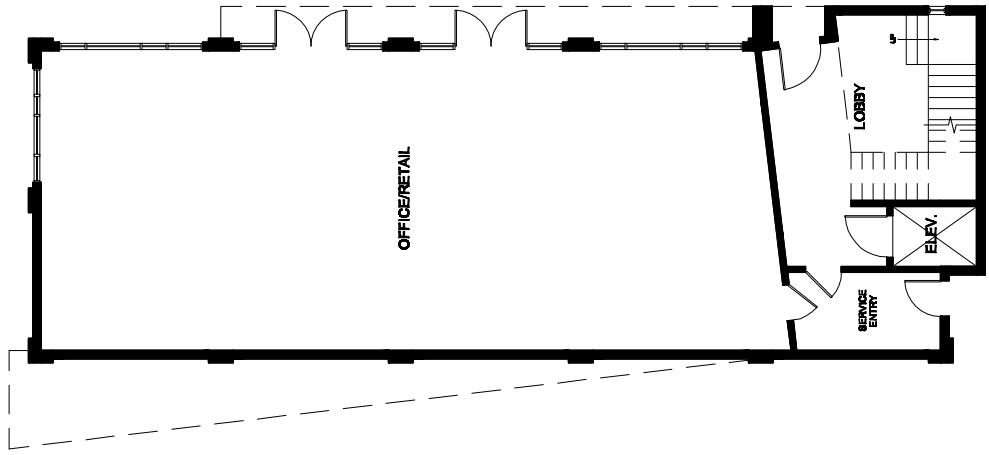
complex in Pueblo because Pueblo can't yet support that multi-million dollar complex, economically or culturally or, perhaps, even politically. But might it possible, then, for an advanced guard of intrepid individuals and families to take upon themselves the first small-scale forays into the revitalization of their neighborhoods and cities?

This is, of course, all speculation. I'm certainly no expert in urban planning and design, and most of what I know about the topic I learned from the SimCity computer game franchise; I'm not professing to have The Answer, the new model that will Save Our Cities. But within the scope of this project, I am imagining what a new kind of urban revitalization—grassroots, almost—might look like.

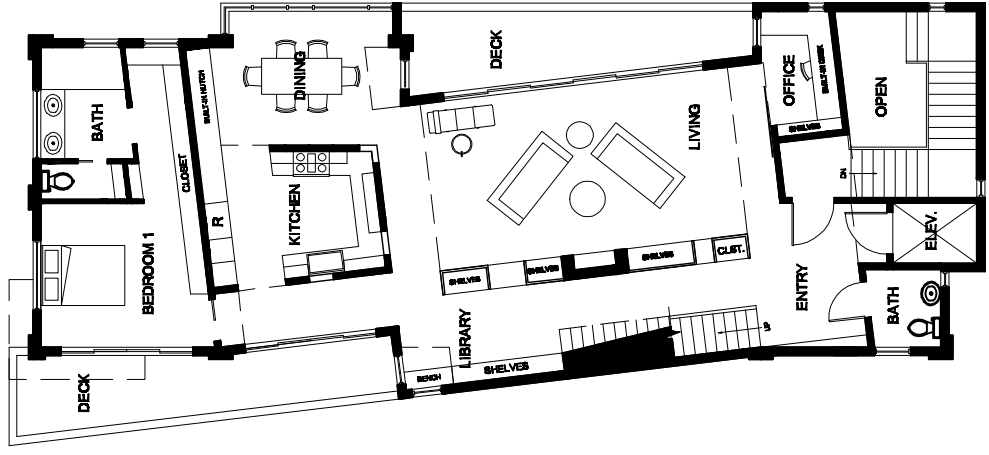
Also, in choosing the site, I wanted to give myself a good challenge. I have an at-times annoyingly idealistic personality, and I suspect this manifests itself in my design work. I have little patience for such inconvenient elements of design reality like budgets and zoning ordinances and ugly views—I just want everything to work out like it is in my head. Is that so much to ask? I'm being facetious, a bit, but it's true that I have little experience working with these sorts of things parameters, with (for example) a site that will fight the design every step of the way—preventing you from placing a window where you'd like it, forcing you to account for traffic noise and privacy issues. By giving myself these kinds of demands for the project, I was requiring myself to generate a design that was that much more complex and careful.

the floor plan

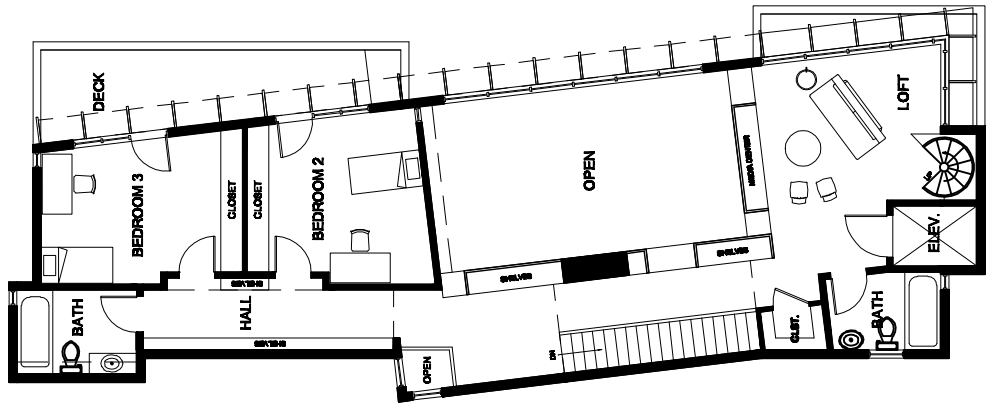
The ground floor of the building consists of rentable office or retail space, designed on a simple grid to mimic much of the existing architecture of downtown Pueblo. This public area is important for the building to become an active participant of the urban landscape, instead of presenting a closed, private façade at street-



First Floor



Second Floor



Third Floor

level. Mixing the uses within a single building allows it to straddle the line between functions, hopefully increasing its beneficial effects on its surroundings. But, as in any urban context, the transition between public and private space is crucial. The residence itself begins at the private entry tower on the southern corner of the building, containing a staircase that leads to the second floor and the front door proper. These upper two floors are where the brunt of my focus lay for this project, and where my exploration with biophilic design is most evident.

Achieving biophilic architectural space is much more complicated than including some natural materials and calling it a day; biophilic design principles must be integrated into the very structure of the space. That's what the methodology is all about: designing in a way that taps into the human psychological (and, often, physiological) affinity for nature. A space need not be filled with wood and pictures of nature to qualify as biophilic—if the underlying spatial logic of a design is structured in a way that mimics the patterns in nature to which we are innately drawn, the surface-level treatments matter somewhat less. (That said, maintaining a visual and tactile connection to the natural world is very important, and this is often best accomplished through naturally-derived materials). So in the course of creating the floor plan for the residence, I kept close to mind the core principles of the human-nature relationships that characterize biophilic design.

Prospect and refuge: The theory goes that humans still retain our love of safe-feeling spaces—refuges—from our mammoth-hunting days, where the protection afforded by certain spaces (caves, for example) was literally a matter of life and death. The same goes for bright, open spaces that afford panoramic views—prospects—the better to see approaching danger (although these days, it's less likely to be a saber-toothed tiger). In the plan, these spatial dynamics are created through ceiling heights, the amount of light allowed in, and the overall degree of enclosure for any given space. This progression of push-and-pull between wide-open spaces and their more



Prospect and refuge: shading indicates areas of refuge

intimate counterparts creates a psychologically engaging experience for the occupant.

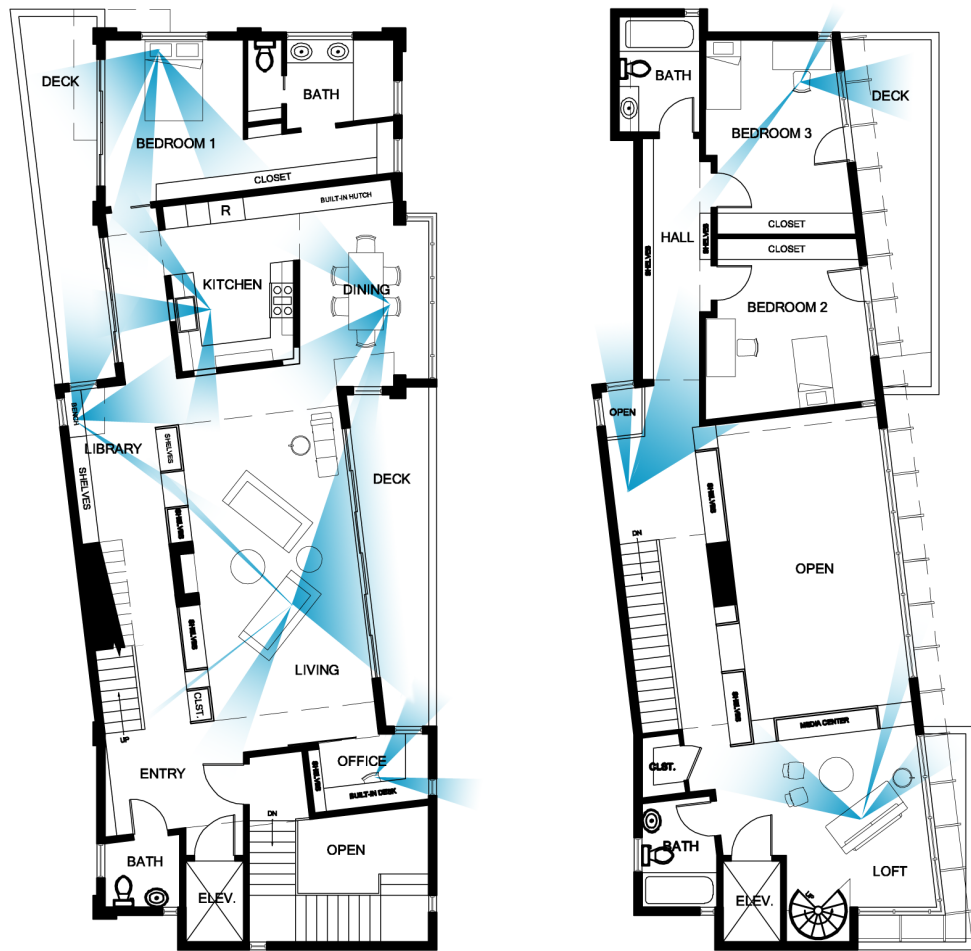
Complex Order: The human brain is hardwired to seek and appreciate ordered structures in the world; this extends to the environments we inhabit, and millennia of architectural history indicate that order and symmetry are consistent human obsessions. But true symmetry is more manufactured than natural; organic order is grounded in the idea of repetition without sameness, fractal patterning that resists rigid uniformity. The original grid upon which the plan was founded represents man-made order (boring); complexity is found in the way that grid is subtly deconstructed by the angling of elements, in the various axes around which the space is structured (far more dynamic).



Complex order: lines indicate the deconstructed grid and spatial axes.

Peril: Somewhat misleadingly-named, peril embodies the idea of pleasurable fear, a sort of constructive danger we seek out from positions of safety. Think of rollercoaster rides, our fascination with speed, the whole category of extreme sports—many of us love the thrill of adrenaline that comes with perceived peril. In terms of architectural space, the overlooks into the living room can be considered a form of peril, or some of the cantilevered architectural features (the main stair, the deck on the back of the house). The introduction of this sort of tension the occupants of a space to be active participants when navigating it.

Enticement: We are innately curious creatures, and are drawn towards situations that have a sense of mystery to them—they allow us to explore and discover,



Enticement: shading indicates critical arcs of view from key positions in space.

to actively engage the world with our senses. This applies in the natural world (easily evident in the way children go about exploring their backyards as if it were a full-time job), and is equally important in the spaces we live in. Creating a dynamic plan that allows for these moments of discovery—interesting intersections of volumes, perforations that allow views through and around space, and the inclusion of light as an active design element that draws the eye and sculpts spaces—ensures that the occupants will feel, even unconsciously, psychologically engaged with the residence.

the exterior



View from the east.

The exterior of the residence is perhaps the most easily-recognizable example of the various cultural traditions mingled together in the design. The street-level retail space represents a distillation of the predominant architectural

style of downtown: that particular breed of 19th-century brick building, industrial steel structures wrapped in Victorian ornament. The square columns and capitals directly reference nearby buildings, but the horizontal banding is left as exposed metal—a modernization of the tradition, grounding the building in the culture of the place without resorting to outright historicism.

This same style creeps upward to the second floor of the building, but from this point it begins to be deconstructed by other volumes. The copper-clad entry tower and dining room provide a contemporary counterpoint to the more traditional brick. This material references the nearby Pueblo library, parts of which are covered in similar cladding, and plays upon Pueblo's history as a steel town. The contrast between copper and brick creates an interesting architectural dynamic, but the materials are unified by the warm character of each—the tension would not be nearly as successful if the copper, which weathers beautifully and has a variegated texture, were replaced by something too modern, sleek stainless steel or crisp glass.

Added to this mix is the large volume clad in stucco—a material with considerable local history—which, although highly textural in its own right, appears as a



View from the north.



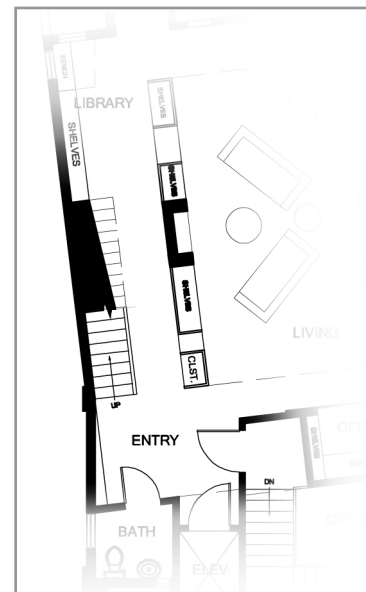
View from the south.

smooth surface next to the brick and copper. The lightness of the stucco alleviates the heaviness of the other materials, and ties the building very explicitly to the traditions of Southwestern architecture. That connection is furthered by the perforated-copper awning (which casts complex and interesting shadows on the faces of the building), and the wood-framed windows and doors avoid a hard-edged modernity that would clash with this mix of warm, textural materials.

the entry

In the spring of 2008, I spent a semester abroad in London; it happened to be the best decision I ever made, for a variety of reasons, but the telling of that whole experience belongs elsewhere. One part of the semester, though, has particular significance to this project.

In late March, the program offered a chaperoned weekend trip to Istanbul, Turkey. Now, going to London was my first true experience with another country, and it was intimidating enough without a language barrier—the thought of navigating a country that spoke Turkish was completely foreign to me (pun intended), even as excited as I was at the prospect of visiting the home of one of my favorite architectural styles. But the fact that we’d have “grown-ups” with us to act as guides and translators and snack-providers helped considerably, and so it was somewhat bemusedly that I found myself sitting on a British Airways flight headed for the Istanbul International Ataturk Airport. That trip to Istanbul will remain one of the most incredible things I’ve ever done—even though the airline misplaced my luggage and I didn’t get it back until two weeks after



our return to London.

One of the scheduled visits during the trip was to Topkapi Palace, a 15th-century complex showcasing imperial Turkish architecture at its very finest. Perched on a hill overlooking the Bosphorus, the palace is everything you'd expect something so grandly-named to be: gold leaf on column capitals, richly-patterned tilework (something I've been in love with since I wrote a term paper on it several years ago), and elaborately-constructed domes were in abundance. The tour was a complete field day for an architecture nerd like me. And as impressive as the buildings of the palace themselves were, I was struck by the way nature was incorporated throughout the man-made environment—courtyards and gardens at every turn provided cool, verdant moments among the volumes of marble and brick. Plentiful windows—some shuttered, some filled with stained glass—made for bright, airy interiors. Our group moved through the buildings like most tourists, pausing briefly to admire a space then moving on, and I kept falling behind, entranced for minutes at a time by small details—the carving on a door, the particular way light fell through a high bank of windows. I took a lot of pictures.

We came, eventually, to the Harem, which would have housed the private quarters for the Sultan's family during the palace's life as a functioning center of state. Although the name of this complex-within-a-complex prompted a lot of giggling, because we were apparently five years old, as we entered the space a noticeable sense of reverence came over the group: it was evident that we were being provided with a glimpse of a domain that was historically as private and secure as any modern-day home of royalty. The feeling of history in there was overwhelming, even though I'm personally not culturally connected to Turkey's past. And there was something about the quality of the spaces, something meditative and ancient—while many of the rooms in the palace were, of course, lavishly finished with tilework and carving, I was struck by how simple the majority of it was. In all of the corridors and vesti-

bules, any of the transitional spaces, the walls were simply white, the floors covered in simple hexagonal tiles. This was the face of the palace seen daily by its occupants, humble and beautiful in its simplicity. There was a lovely duality to the spaces, as well: the thick walls gave the architecture a sense of mass, while the abundant natural light lent it a weightless quality.



Stairway in the Golden Road of Topkapi Palace

One space in particular moved me deeply, has stuck in my mind ever since: the long corridor known as the Golden Road, the central axis of the complex. Despite its grand-sounding name, it was designed as simply as the rest of the corridors. At one point along its length, a concrete stair seemed to grow out of the white wall, and climbed up into a double-height space lit softly from above by perforations in the roof. The composition of the space and the

intersection of the materials were so beautiful, so surprisingly modern, and I knew immediately that I would someday design something that took this beautiful architectural moment—so small, in the grand scheme of the whole palace!—as its chief inspiration.

I got the chance to do so when I began imagining how this residence would translate into three dimensions. The shape of the site had dictated that the plan be similarly long and narrow; the linearity of it made me think almost immediately of the Golden Road, how it formed a spine for the whole building. And thus was born

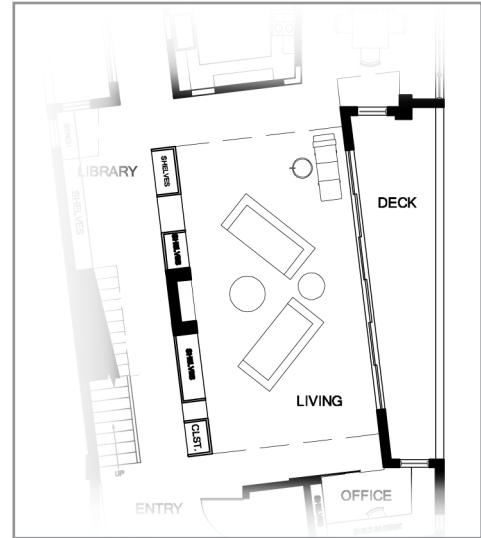


The entry and its focal point, the concrete stair.

the design for the entry of the residence: it's not an exact replica of the stairway in Istanbul, of course, but the forms—a stair of concrete, distilled down to its most basic shapes; the bright open space above; the clean white walls—all embody that same simplicity and echo that meditative ambience. The flooring even takes its cue from the palace: plain hexagonal pavers, commonplace perhaps in Istanbul, are an interesting twist on the brick floor I had originally planned to include. Brick is both a beautiful and practical choice: in keeping with the sustainable mission of the design, the pavers could be made with local clay, act as a thermal mass for passive solar strategies, and accommodate radiant-floor heating well. But employing the hexagonal shape, rather than the typical rectangle, highlights the cross-cultural possibilities between Middle Eastern design and the more familiar Southwestern.

the living room

A few years ago, an aunt and uncle of mine built a wonderful straw-bale home on 200-some acres in the prairie west of Pueblo. To this day, it is one of my favorite houses, and it represented one of my earliest experiences with sustainable design. Canyon Heights (as the house has come to be known in our family, named for the red clay road that gives it its address) operates on solar



power, employs radiant-heat flooring, and takes advantage of the straw bales' insulation value—but, more importantly, it's a beautiful home. The walls are thick and comfortingly massive, painted a clean white; the floors are an earthy stamped-and-stained concrete; the windows and doors are all framed in rough red wood. High ceilings and clerestory windows cast light softly over the graciously-proportioned rooms, and small details (a display niche here, a built-in seat there) provide small discoveries as one explores that house.

I didn't even realize how much the aesthetic of Canyon Heights had informed my design decisions for this residence until very late in the process—testament, I suppose, to the power of spaces to imprint themselves upon our psyches! The connection is particularly evident in the living room, with its heavy beams placed in counterpoint to the white walls and abundant light. This space is, fittingly, both the conceptual and physical heart of the residence, providing a gathering place for the house's occupants and their guests.. Visible from the entry, the double-height room (perhaps I have an innate bias towards high ceilings; I have never lived in a house in which the public spaces didn't have a vaulted ceiling) draws the attention immediately



The living room, with plentiful sightlines through to adjacent spaces.

with its promise of dramatic prospect.

The most distinctive element of the living room is the two-story focal wall. This is the spine upon which the whole of the residence rests—it provides architectural definition, flexible and plentiful storage, and a great deal of dynamic visual and spatial interest. A fireplace at the center of the wall narrows the focus of the space even further, with other functions radiating from that point. The wall's cladding—natural pine, responsibly harvested—makes an explicit connection to the geographic situation of the home, and creates a warm quality within the space. Openings in the wall on both floors allow for interesting snippets of views from one space to another, letting the space unfold as the occupant moves through it.

A wall of sliding glass doors allows the living room to become as much an

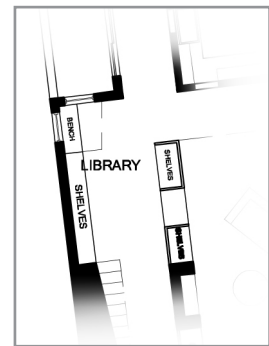
outdoor living space as an indoor one—and in Colorado’s dry, usually fairly insect-free climate, this is a wonderful asset in the warmer months (which vary according to the whims of Colorado’s fickle weather systems, but can begin as early as February and last until as late as November). A bank of clerestory windows above the doors almost doubles the amount of natural light in the space; bringing the light in high allows it to penetrate the interior of the residence more deeply. Daylighting has long been considered a sustainable design feature—more natural light means less dependence on electrical light, thus reducing the energy consumption of a building—but it’s also incredibly important for the way we respond metabolically to a space. The natural rhythms of the sun’s movement allow our bodies to regulate themselves (most of us are familiar with the concept of Circadian rhythms) and making that cycle evident within a building is only in its occupants’ best interests. And, perhaps most importantly, daylight is beautiful: there’s such a simple pleasure in a wall washed with light, in those parallelogram patches of sunlight on the floor, in the way the quality of a space changes as a day wears on. The interaction of light and space has been a subject of fascination to architects and designers throughout the entire history of the profession; we human beings are simply drawn to it.

Daylight can be a double-edged sword, though—greater window area usually means lower insulation efficiency (a problem, when one is attempting to lower the environmental impact of one’s design), and glare can render the most beautiful, naturally-lit space unlivable. But all of these challenges can be addressed by design: many manufacturers offer high-efficiency windows of various types (double-glazed or argon-filled, for example), and anti-glare film can be applied to the exterior of the glass. In the case of this residence, the orientation of the building also proves valuable: the clerestory wall faces northeast, and receives direct sunlight for only a few hours in the morning. For the majority of the day, the light will be of the much softer northern variety, cutting down on the risk of glare.

Another challenge of large, public areas like this one is the possibility of competing activities occurring simultaneously: if one occupant wants to read a book and another wants to watch a movie, a single great-room style living area won't be able to accommodate both. The key, then, is flexibility, and choice. The open plan is adaptable to fit groups of people large and small, to accommodate a wide range of activities—and this space works in concert with others in the residence to provide the kind of variety any family needs.

the library

Back on the other side of the “spine” from the living room, there's a small space lined with shelves, furnished with a built-in window seat—a library, of sorts. A transitional space between the stairwell corridor, the kitchen, and the private master bedroom, this nook serves as both a literal and metaphorical resting place as an occupant moves through the



house; its placement at a critical junction in the floor plan turns this humble bit of square footage into a sort of focal point on which several axes converge.

The double-height windows by the seat draw light into the space, creating an enticing glow visible from the front door or the other adjacent spaces. In the evenings, the sun sends spears of light deep into the living room, even through the openings in the central wall. The way the architecture becomes aligned, for just a moment, with the greater movement of natural cycles reinforces the connection between the built environment and its context. The serendipity of such events can turn a building into an ever-evolving entity rather than a cold object.

Most houses built today, concerned as they are with economy, have been purged of these sorts of architectural moments—niches in the wall, subtle touches

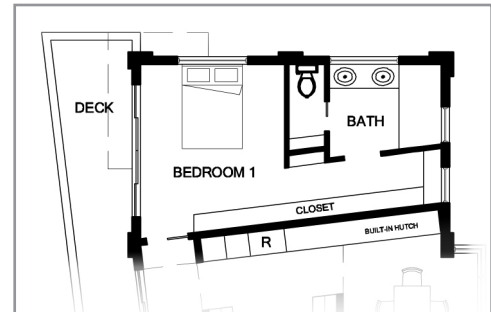


Looking back through the library towards the stair and entry.

of ornament in unexpected places, all manner of odd nooks and quirks, the things that tie a space to the human hands that built it. Providing this layer of subtle detail can engage the occupant's curiosity, turn the experience of architecture into an active process of discovery instead of a passive state of being—and, just as importantly, it lends a space uniqueness, lets the occupant know that they are in this very place and nowhere else. Much of this is the impetus behind designing space around biophilic principles: we are far more likely to form a healthy psychological bond with our architecture if we can engage with it on multiple levels. Thus, the library is not intended to act as a full-service room with armchairs and shelves upon shelves of books; rather, it's meant to offer a small, contained experience that feels special, somehow subtly different.

the master bedroom

Located at the opposite end of the residence from the entry (for a bit of privacy), the master bedroom is accessible from a short, bright corridor adjacent to the kitchen. Both spaces open up—with sliding-glass systems similar to the one in the living



room—to a deck cantilevered off the southwestern face of the building. This is the side of the house that faces the freight rail line, so it might seem like an odd place for setting up the deck chairs and enjoying the sunset, but the challenges of the site can be met with just a little design thinking. The need for privacy and sound control here is addressed by a patterned copper screen (employing the same cut-out design seen elsewhere in the building) that rises high enough to disguise unsightly train traffic, but still affords plenty of light and air to the rooms opening onto the deck.

The deck is built with the same construction as a living roof, and the screen is intended to act as a trellis for climbing plants; once plantings are established, this small deck will become a beautiful courtyard that blocks mitigates the industrial activity happening beyond its perforated walls. The deck's proximity to the kitchen makes it an ideal place to plant herbs and container crops—so, in the right season, it will become a fragrant feature of the residence. The movement of the plants in a breeze, the cycles of life acted out by bees and other pollinators, the scent of basil in late summer—the sensory richness offered by the deck makes it a key biophilic element within the design, and creates countless opportunities for the serendipitous moments of beauty found in the natural world.

The bedroom itself is a simple, meditative space, designed specifically to prevent the clutter that seems to grow weekly, like some fungus of envelopes, spare



The bedroom, from the hallway outside.

change, discarded clothing. Bedrooms are quite literally our last refuge from the hectic world, the spaces to which we retreat when we're in need of rest—why interfere with that simple mission by bringing in reminders of all that we're trying to forget? The biophilic concept of prospect and refuge is especially applicable to the bedroom; the space should cradle its occupant, feel safe and secure.

Here, a wall of plentiful—and flexible—built-in storage keeps clothing and other items organized, pre-empting the various drawbacks of walk-in-closets and dresser tops (prime sites for clutter). The focal wall is highlighted with a natural jute wallcovering, which lends texture and color to the space without overwhelming it. Furniture in the space is limited to a bed and its accompanying nightstands; in a bedroom at its most essential, is anything else really necessary? This is a room for sleep, and rest, and maybe reading—quiet activities, renewing ones. In our overworked society, we all deserve at least one place we can be at absolute peace.

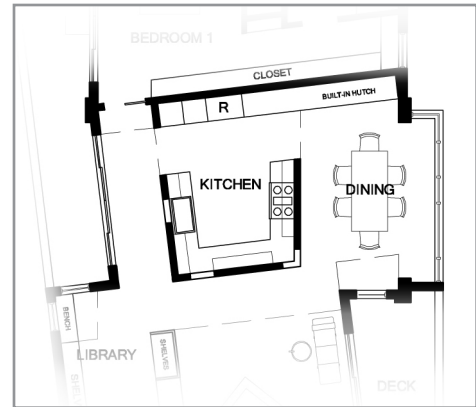
This space in particular raises a question of design ethics, for me. It's evident, here, that I've infused the master suite with my own ideas about what function

the bedroom should fulfill in the home; it's by no means the only answer to that question, nor can there be said to be one "right answer." Is it then a form of...design activism, as it were, to create spaces that reflect the designer's own theories and opinions? This bedroom represents an argument, in a way—one that many people would probably find attractive, and if presented with this design they would approve it without hesitation. But if the clients for this residence had requested, for example, three televisions, a home office, and a minibar within the master suite, this design would certainly not be an acceptable solution to their requirements—and I would have serious misgivings about the likely success of such a space. How much power does the designer have, should the designer have, to suggest alternatives and steer the clients in another direction more compatible with his vision? When is this appropriate, and when does it cross the line from improving the function of a space for a particular client to embodying the designer's own ego?

There is certainly no shortage of historical precedent for designers putting their ideas—however genius they might be—before the needs of their clients. A number of Frank Lloyd Wright's houses come to mind, or Frank Gehry's beautiful and impractical buildings. In many cases, the resultant designs are examples of true artistry—but are they successful in their original mission? The obvious answer is that the client's needs always come first, and if it's a matter of differing aesthetic tastes, the designer should just suck it up and cover those chairs in leopard print. But in cases where ecological responsibility or the wellness of a building's end users are at stake, it becomes much more complicated, ethically speaking. I don't know the answer, really, and every case will be different; the trick, I think, is to maintain open communication between all parties, constantly defining and refining the expectations and parameters of a given project.

the kitchen & dining room

The kitchen, in juxtaposition to the bright corridor adjacent to it and the large, open living room, is another space of refuge: lower-ceilinged and more enclosed. The materials are in keeping with those found in the rest of the residence—the same hexagonal pavers and natural pine millwork tie it into



the overall design aesthetic. But this kitchen feels like a secret: a volume wrapped cleanly in white when viewed from the adjacent spaces, its interior walls are clad in a richly-patterned tile inspired by the designs of Turkish tilework. Normally such patterned tiles—here, an abstracted design of tulips—are no larger than four or five inches, creating a dense visual texture on the wall. But these tiles take the same pattern and enlarge it; this slight twist on the tradition creates an interesting conversation between past and present, lending a very modern aesthetic to an ancient form of ornamentation. This keeps it from feeling fussy or decadent while tying into the biophilic need for intricacy and pattern.

The layout of the kitchen itself is efficient and fairly compact, without any of the gratuitous wasted space common in many homes today (especially those in affluent communities). Quantity seems often to be conflated with quality when it comes to counter space and appliances, but a small, smartly-design workspace will perform better than any cavernous McMansion kitchen. One wall holds the refrigerator, microwave, and pantry storage in full-height cabinetry; the sink and stove, the two main work areas, are placed opposite each other to allow multiple occupants to be working in the space (but they're close enough that one person won't have to make a significant trek to boil a pot of water). Cutouts in the walls facing the living



The kitchen, looking through to the dining area beyond.

room and the southwestern deck provide a good balance of separation and views between the spaces, and the wall of full-height cabinetry continues into the dining room, helping unifying the two.

The dining room is another one of those spaces that's in an awkward transition within the American conception of the home. Formal dining rooms have become obsolete for the way a vast majority of us live, but I've always found something so spatially unsatisfying about the ambiguous kitchen/dining spaces that modern housing seems content to provide us with. Here, the same balance of view and partition between the kitchen and living room serves to distinguish dining space from cooking area, while fostering an easy flow between the two.

In order to take advantage of the room's solar orientation and views northward over downtown Pueblo, one wall of the dining area is all glass. The lower portion of the windows, though, is treated with a sandblasted pattern—more than decorative, this pattern provides privacy from passers-by on the street below and (ever an imperative consideration) casts dynamic shadows onto the dining room's floor. The



The dining area, showing the patterned glass on the hutch and windows.



Looking from the dining room into the kitchen and living room.

same pattern is incorporated into the built-in storage hutch, and can be found with a positive-negative inversion in the copper panels that make up the residence's exterior railings. This kind of fractal patterning—multiple iterations of the same pattern, each slightly different than the last; repetition without sameness—mimics the structures found in nature, and taps into our own deeply ingrained sense of order and desire for complexity.

the office

The idea of the home office is a fairly recent one— at least as we know it now, an informal center of technology and communications for the household, a place where Dad can catch up on work from the office and Mom can answer important e-mails. The ability to do work at home has be-



come almost a necessity in our culture, and some reimagined models for the workplace have even posited that telecommuting from home is the way of the future. But lately, we've been crying foul on this "great" idea—isn't the point of working outside the home so that you don't have to...do work...at home? Seems fairly obvious that that's just a healthy idea. Someone with more authority in psychology than I could tell you plenty about the (mostly damaging) implications of the home office—it's so wrapped up in our culture's obsession with 24/7 connectivity, and is indicative of our collective inability to allocate adequate time for both work and play, and is doing its part to stress us out even more. But, since it's pretty much an unavoidable element of residential design these days, the challenge then is to design a home office that allows its user to control exactly how much it infiltrates the home life.

The office in this residence, as is immediately evident, is small. It's not tiny—there's plenty of workspace for spreading out, enough floor area to roll back

from the keyboard and take a bit of a nap, and plentiful shelving and storage. But it doesn't dominate the floor plan, and the hierarchy here is clear: home first, work second. A sliding barn door can close the space off a lot or a little, depending on the needs of its occupant, and—most importantly—can be used to “put away” the office when necessary, both figuratively and literally refocusing the user towards the home and not the computer. The dynamic of the spatial transition between office and living area—the smaller, lower-ceilinged space to the open, airy living room—reinforces this effect. And when the occupant has no option but to sit down and get some serious work done—it happens to all of us—it's at least in a pleasant environment: clutter-controlling storage, jute-textured walls, and a well-placed window (perfect for those frequent daydreaming breaks) combine to create a more humane home-office experience.



The office, visible behind the large sliding barn door.

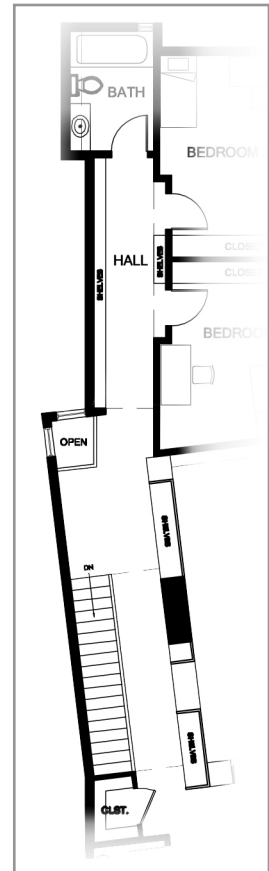
the upstairs hall

The stairway from the first floor of the residence continues the Istanbul-inspired aesthetic from below. The banks of small hexagonal perforations in the ceiling plane are a highlight of the space, directly inspired by the equivalents scattered throughout Topkapi Palace. The patterns of sun and shade they create lend a dynamic quality to the space, whose character will be greatly altered as the day progresses.

Although the hall is simply a transitional space, it deserves as wholesome a design treatment as the more occupancy-oriented spaces, simply because the experience of a hallway will color, in the mind of an occupant, the experience of the spaces at either end of the path. So much of the grace of historical buildings lies in the attention paid to the quality of vestibules and foyers, in the carefully controlled progression as

a person moves through the rooms. Beautiful transitional spaces are as central to the overall success of a design as any of the grand public rooms.

The second view shows the hall leading towards the auxiliary (kids') bedrooms. At the end of the hall, a door opens onto the kids' bathroom. The deep blue glass mosaic tile here plays off the tilework tradition of Middle-Eastern architecture. This color of blue carries connotations of the oasis, which in desert countries hold special significance. While that idea isn't



Skylights in Topkapi Palace, Istanbul



At the top of the stairs.

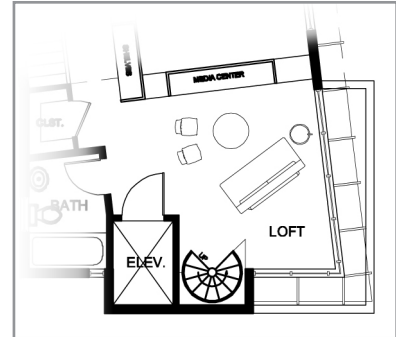


The hall leading to the kids' bedrooms and bathroom.

quite as applicable to the American West, the architectural dynamic is just as powerful: the bathroom is cool and inviting when juxtaposed against the simple white of the hall.

the loft

When I was a kid, my family lived in a one-story house (with no basement; smart move in a region as tornado-prone as Kansas) and, because of the lack of vertical circulation in my own home, I developed this...fascination, of sorts, with stairs. The idea of having stairs in your house—available



for climbing, or sitting on, or sending Slinkies cascading down—was, for whatever reason, such a desirable thing. I think there was something about the sense of height, the dynamic of a level change, that appealed to me; maybe it was just the fact that there was an upstairs you could escape to if downstairs got boring. And if I was fascinated by stairs, I was absolutely enamored with balconies, any area with a railing that overlooked a two-story space. It just seemed so grand, such a luxury, used as I was to our 1200 square feet of ranch house, and so I'd take whatever opportunity I could to visit the homes of friends whose parents obviously loved them enough to buy houses with two stories and a loft, hint hint. (Also when I was a kid, I had no idea exactly how much houses cost, and always kind of felt that my parents could have picked a better one. What can I say? I was young and stupid.)

Frequently in modern housing, the “loft” is the name given to those awkward semi-public spaces at the tops of stairways, often overlooking a great room or foyer, that provide little in the way of useful square footage; it's almost like a loft is the default option when an architect or design doesn't know what to do with a bit of excess space. Too often, these rooms—if you can even call them that—fail as functional elements of the home: they're too open to the other public spaces of the house for either quiet, solitary pursuits or the sorts of noisy activities relegated to basements and game rooms. At the same time, they're physically separate from the home's



The loft, with a “biophilic feature” already in progress.

public areas and can’t truly act as part of the gathering space. Sometimes, even, the loft is really just a glorified hallway with a nice view, stuck between the upper-floor bedrooms, populated only in the morning and at bedtime.

But the typical loft isn’t entirely without appeal: that “nice view” dovetails quite literally with the principle of prospect and refuge, and the elevated placement of these spaces can provide a constructive sense of peril (in the biophilic sense, of course). The idea of a public space that can straddle the line between living room and rec room also addresses the need for the zoning of space, providing a diversity of options and environments for the sheer variety of activities most households encompass. The problem is simply that the majority of lofts are included in the home by accident or necessity—awkward transitional area at the top of a staircase? Fix it with a loft!—instead of being designed with the intention of creating a functional space that adds something to the way a house works, that addresses the needs of its occupants.

This loft, then, attempts to avoid the various pitfalls named above while act-

ing in concert with the rest of the residence. Firstly, it is a destination, not simply a place to pass through on the way to something else; one must specifically travel to the loft in order to engage with the space. More importantly, it's a multifunctional room that provides a number of functions that don't exist elsewhere in the residence. A media center makes it a home theater; flexible furniture, open space, and lots of storage mean it can act as a kids' playroom or teens' hangout; the sleep sofa and adjacent bathroom let it become an impromptu guestroom. Large windows take advantage of the third-floor vantage point, giving occupants a view out across the city and mitigating the eyesores adjacent to the site.

This loft has a bit more privacy than is perhaps usual—instead of an open railing, the overlook to the living room is wrapped by the same pine millwork found throughout the house. The openings are placed to allow an interesting movement of light through the space, and to balance open views and the enclosure needed for the activities that take place here. The versatility of the room, and its focus on function, turn it into an active player in the residence instead of wasted space.

overview

Other spaces exist in this residence that I've not covered here—the auxiliary bedrooms and bathrooms, for example, or the outdoor living spaces. Their omission doesn't mean that they're unimportant elements of the design (really, very little can be said to be “unimportant” in a field as concerned with holistic practice as architecture and design), but I had to choose which spaces to allocate the most time and effort towards—I focused on those that would be most beneficial in illustrating the key concepts with which I was working.

Making those kinds of decisions—how best to showcase a design, how to communicate most easily the concept and execution of a project—is a never-ending



A view from the loft into the living room.

process for the designer, requiring constant evaluation of the soundness of presentation materials (be they floorplans or renderings). In many ways, the visual presentation of design is a rhetorical challenge: the designer has to analyze the context surrounding the design, assess the intended audience and its likely level of knowledge, and choose what sorts of visual rhetoric will do the job.

Floor plans, for example, are ubiquitous in the industry, and although they're incredibly useful, they often don't communicate well to audiences unfamiliar with the conventions of architectural drawings. In these sorts of situations, the rendered views of a design become absolutely crucial for a successful presentation—and it's no surprise that these are the images that usually require the most time and skill to create. Historically, all renderings were done by hand—measured out painstakingly to ensure an accurate perspective in the drawing, and built up line by line with straightedges and triangles. The advent of the computer, of course, changed that significantly, and now many designers are able to create renderings that look more real than the actual finished spaces do. While most of us are wowed by this kind of

technological wizardry (and rightly so—many computer-generated renderings are absolutely beautiful images!), there are many who decry the rise of computer rendering as the death knell for the hand-drawing tradition.

I find myself caught somewhere between these two camps. Both techniques have their strong points—computer rendering makes for highly accurate depictions of spaces, while hand-drawing can produce some of the most wonderfully expressive drawings, as much works of art as of design—and their weak ones. Computer rendering requires a high level of technical skill and extensive experience with the software; hand-drawing, in the meantime, is very time-consuming and employs a lot of specialized supplies (straightedge systems, vellum, expensive markers, et cetera). So when approaching the task of creating the renderings that would be responsible for communicating the whole of my design, I was understandably torn between techniques

I'll admit it: I'm no computer whiz. I certainly know my way around AutoCAD (the designer's bread-and-butter); I've become, in the course of my studies, fairly adept in SketchUp and Photoshop; I know some handy tricks, I'm a fast drafter, and I pick up software skills fairly quickly. But I'm nowhere near my studiomate Jerri, for example, who is fluent in at least five different programs and can tease out incredibly complex geometries from 3D-modeling software as seemingly rudimentary as SketchUp; or my studiomate Heather, who taught herself Revit and has produced some of the most photorealistic work I've seen in studio. Compared to these people, my computer skills are incredibly basic. It's far more intuitive for me to absorb the visual information of my environment—the way shadows gather where walls join ceilings, the texture of a hardwood floor, the tangle of mechanical systems in an exposed structure—and translate those into the hand movements that create a drawing (even one of a theoretical space) than it is to sit at a screen, staring at a space that doesn't actually exist, not even on paper, attempting to manipulate a

virtual image that operates by its own rules: rules not of light and line but of code and commands.

These modes of design drawing are languages like another, with their own syntax and colloquial nuances. Hand-drawing was my first language, in this case, and I suspect I'll always remain more fluent in that dialect than in the computer's bizarre vocabulary. But, like any student of a foreign language, I have built my skills through immersion and constant practice; I am finally reaching a point where I can have a fluid conversation.

Ultimately, my desire for accuracy took the upper hand, but I wasn't content to build the SketchUp model of my design, export some views, and leave it at that. For all its ease of use, the program has serious limitations in its range of visual expression—you can always tell that a SketchUp rendering is a SketchUp rendering. My usual process is to take whatever image SketchUp has provided me and tweak it with editing software (namely, Photoshop), to add a further layer of detail and



An exterior view.

expression to the renderings.

I don't know what, precisely, happened along the way during the creating of the renderings for this project, but somehow they've turned out to be some of the best images I've created in the course of my studies. One of the most difficult things to accomplish through computer rendering is the quality of light in a space, the way it falls across surfaces and creates subtle gradients everywhere: but with nothing more than my typical tools, SketchUp and Photoshop (faithful steeds, both), I managed to capture the light in each of these spaces more or less in the way I imagined it. One could easily edit a single image in Photoshop for a week straight and still never be quite finished; my renderings are, by no stretch of the imagination, photorealistic images. There are shadows that could be deeper, there are reflections I must have missed. But even so, I have rarely been as excited about the final products of a design as I have here.

If we continue with the language metaphor, I like to think that I've finally managed to make these computer programs sing.

conclusion

The point, I think, is that this isn't your grandmother's house.

Well, maybe it could be. Maybe she's cool like that. I don't know your grandmother, so I guess it's presumptuous of me to assume that she wouldn't live in a mixed-use urban-infill green-built postmodern-with-a-conscience free-range hormone-free house clad in recycled copper and travel nostalgia. If your grandmother rides her bike to work and indulges in a pretentious anti-corporate "I will patronize my local coffee shop, thank you" rant every once in a while (don't worry, we've all been there), this might be the house for her. Or maybe she has a thing for quiet, beautiful spaces, afternoon naps in a patch of sun, kitchen gardens, dinner with good

friends—this could be her house, too. She'd have to be a pretty hip grandmother, is the thing, because you won't find a lot of the typical grandmotherly affects (chintz, ceramic kittens, cool old lamps) (well, maybe the cool old lamps) (and not that I have anything against chintz or ceramic kittens; they're just not really my scene) in this house.

What you will have *hopefully* found is a design that I have had a tremendous amount of fun creating, but that has—most importantly—taught me a considerable amount about not only biophilic design, but about the way I theorize space; about my own design process; about my abilities and how much I am still developing them. It's typical of the design field—known for an at-times frustrating but never boring “yes, and?” attitude—that this Capstone serves to show how far I have to go as equally as it shows how far I've come.

Onward and upward.

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appendix 1: elevations



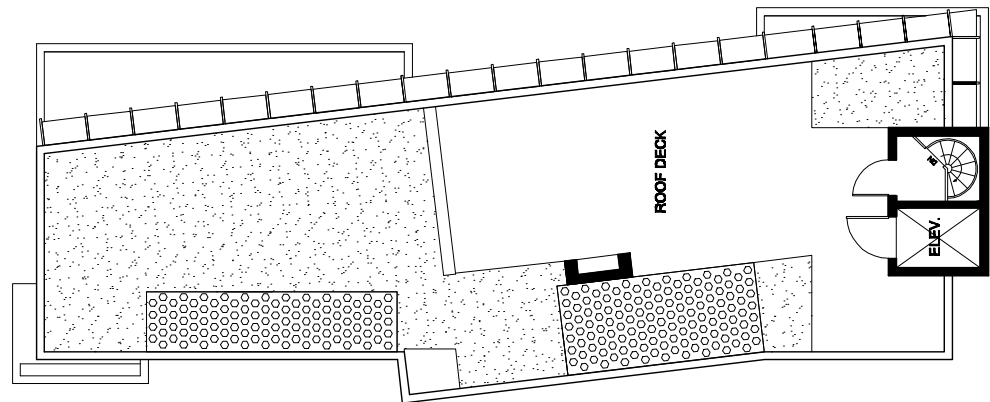
Southeast elevation



Southwest elevation

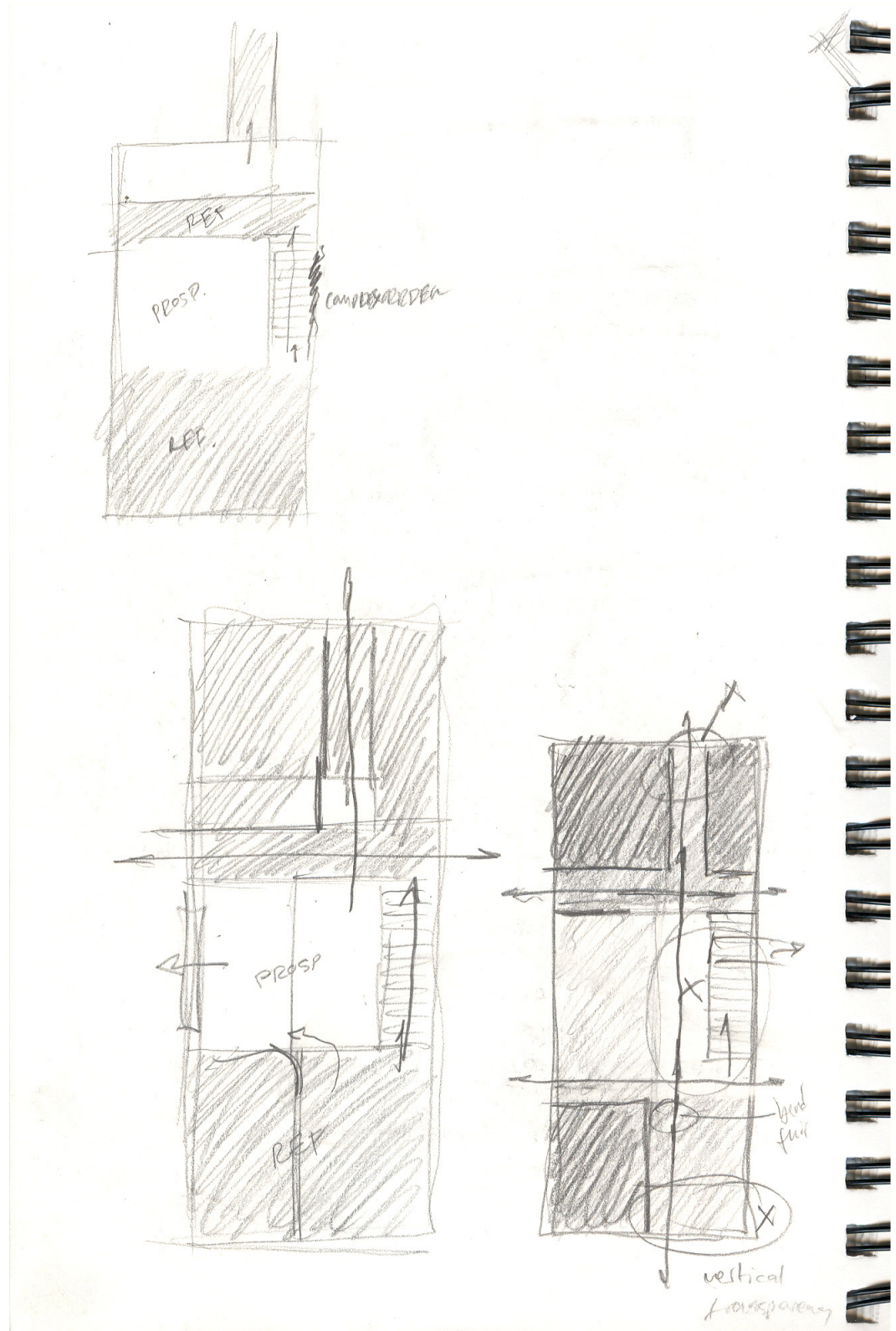


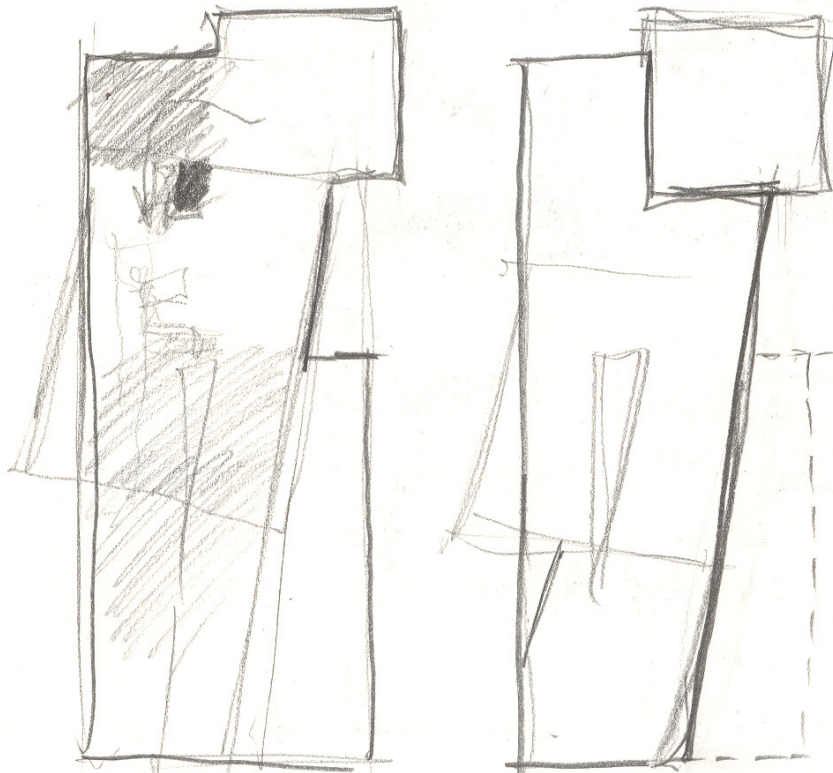
Northwest elevation



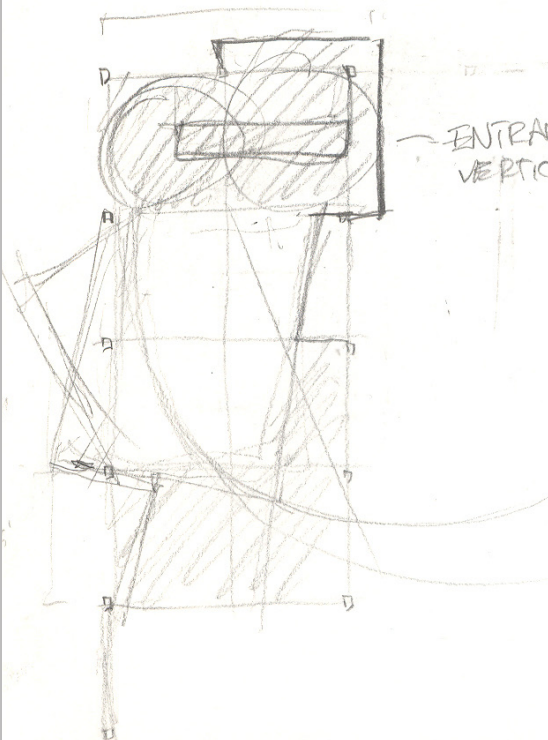
Roof plan

appendix 1: process





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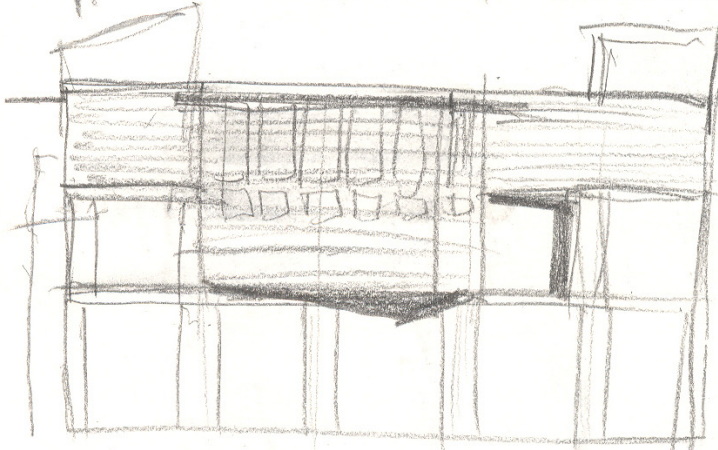


ENTRANCE & VERTICAL CIRC.

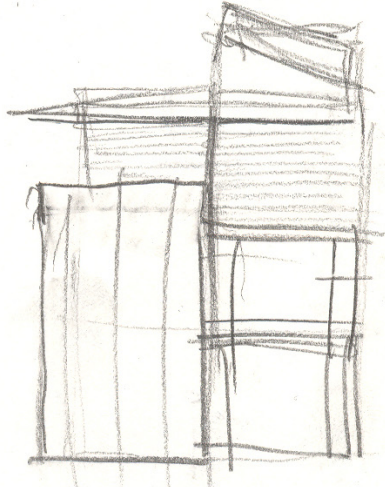
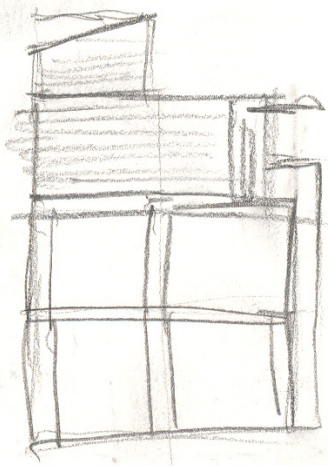
- * FIRE PLACE WALL
- * VERTICAL CIRC & ENTRY EXPERIENCE
- * BEDROOMS
- * WINDOWS - CREATIVE / CONSTRUCTIVE INTERFERENCE



whenever

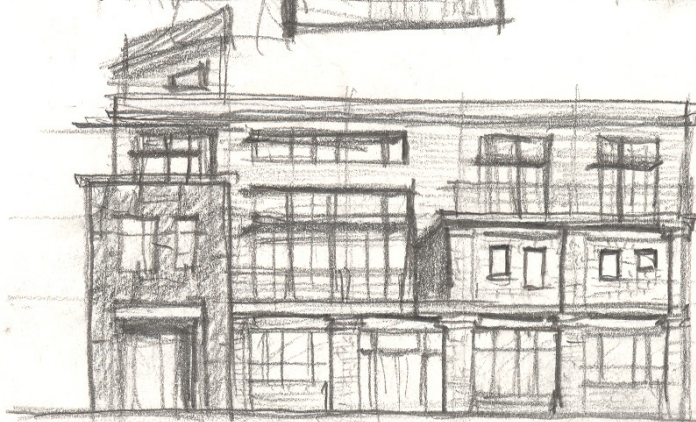
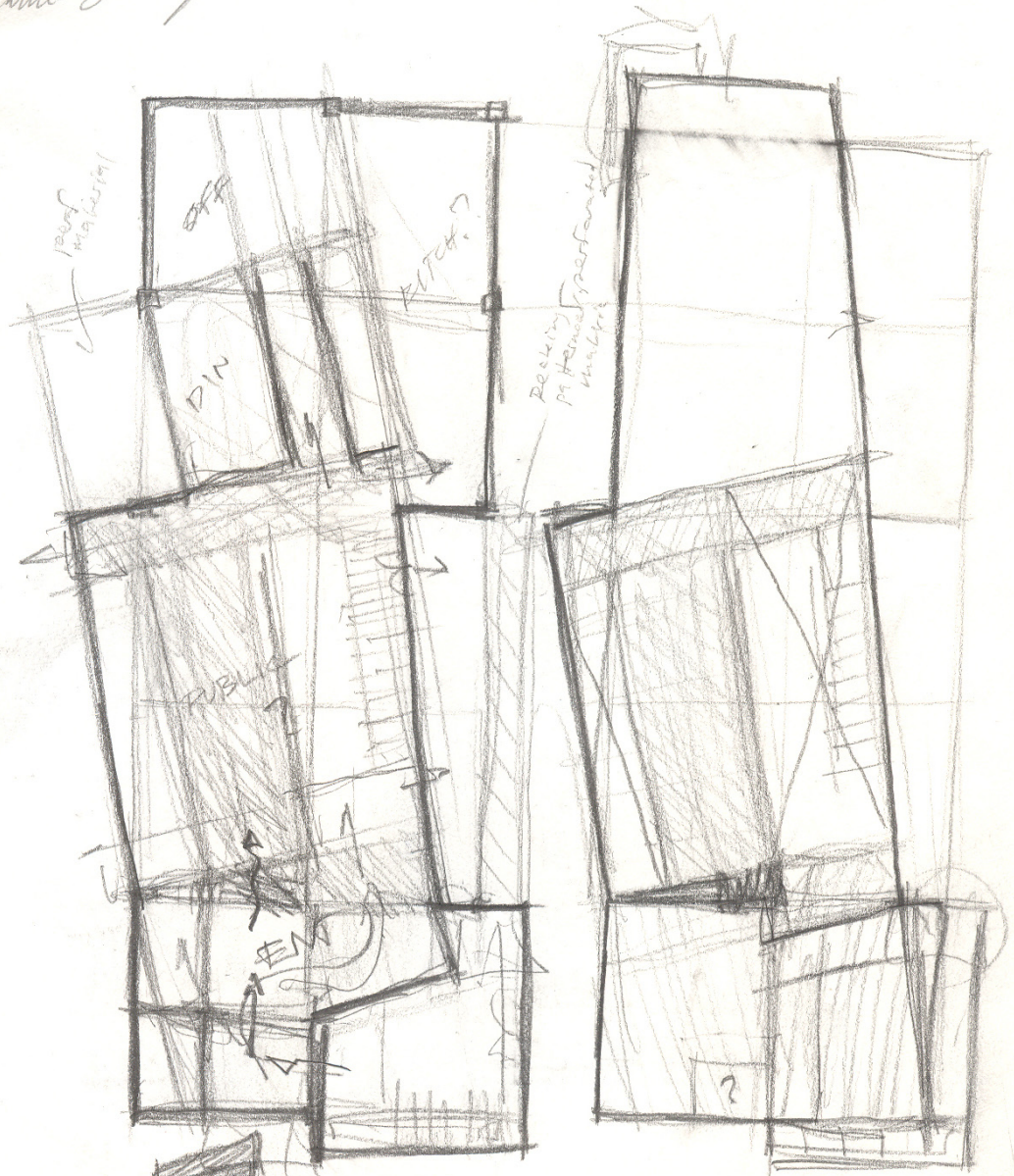


FLIP
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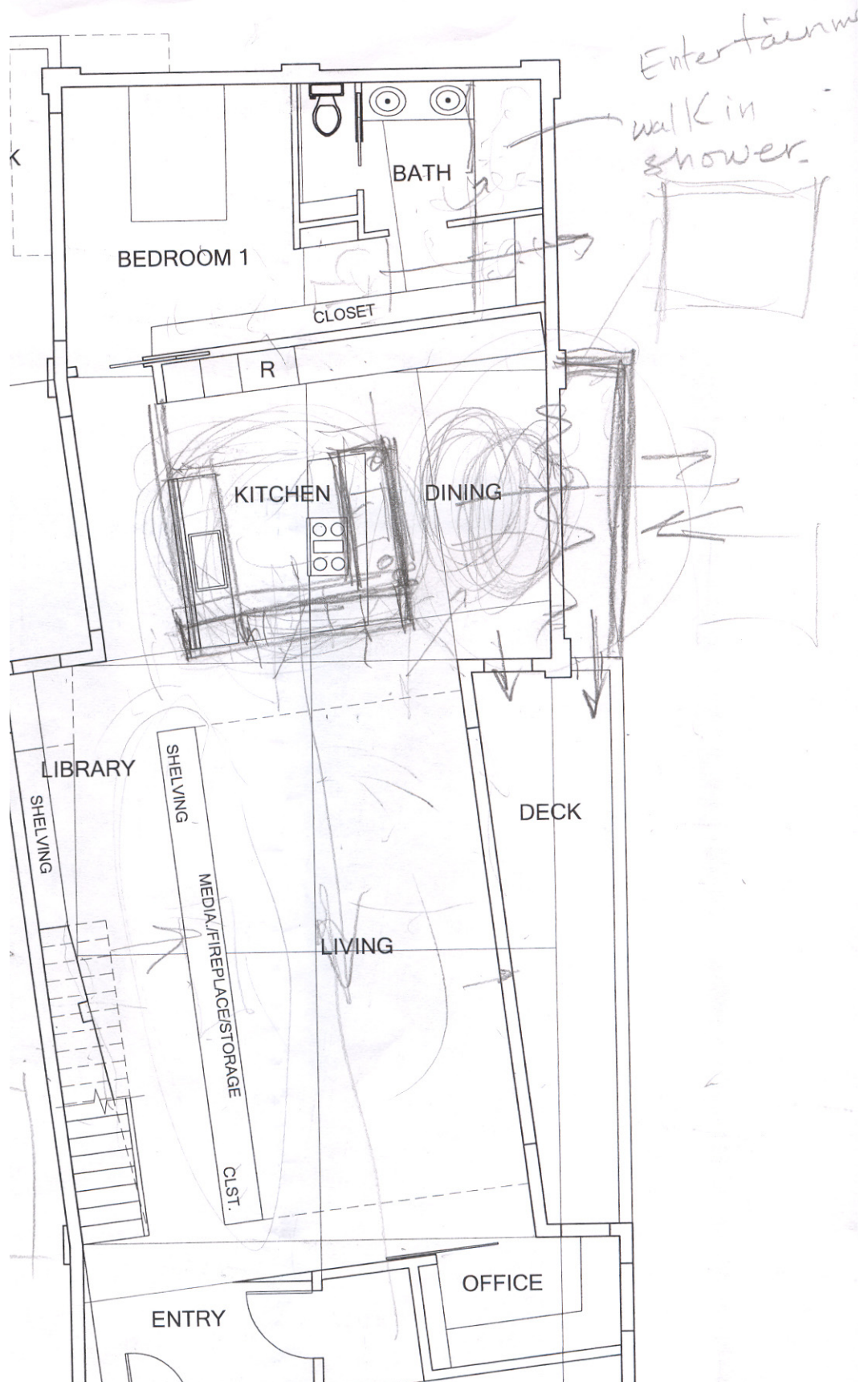


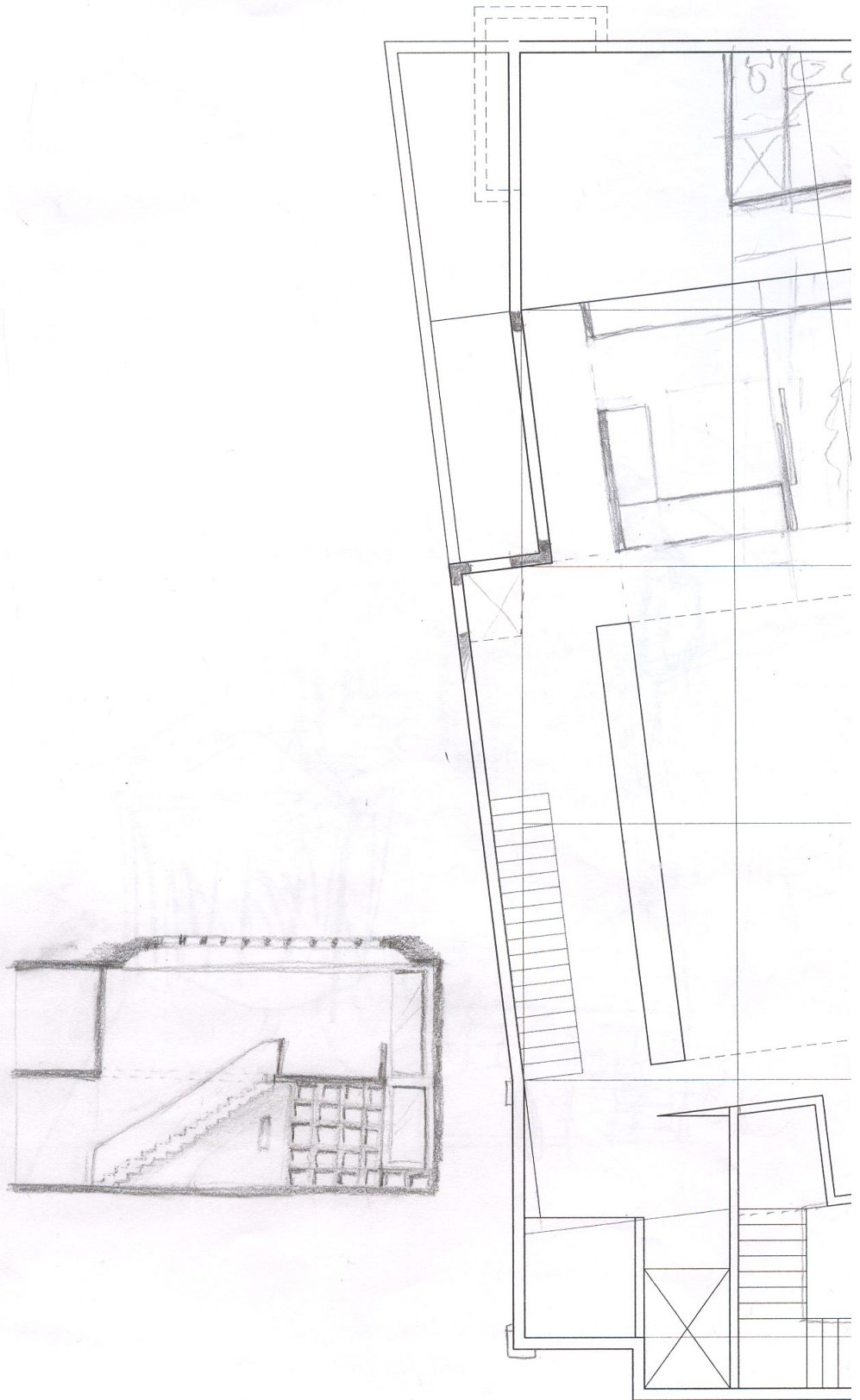
Cabin & Terrace



*windows
into private
gardens?
courtyards?*

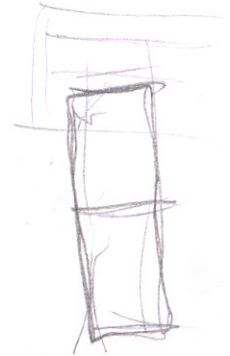
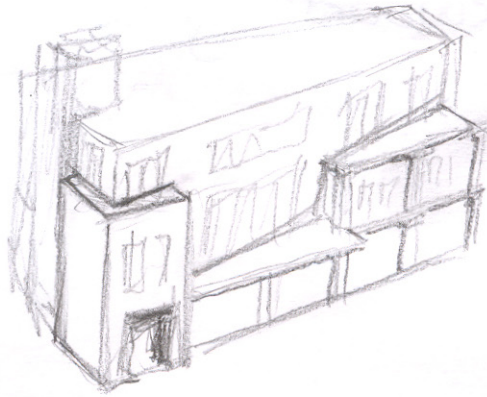
** introduce
cornices*





rusty
suite

EDEN



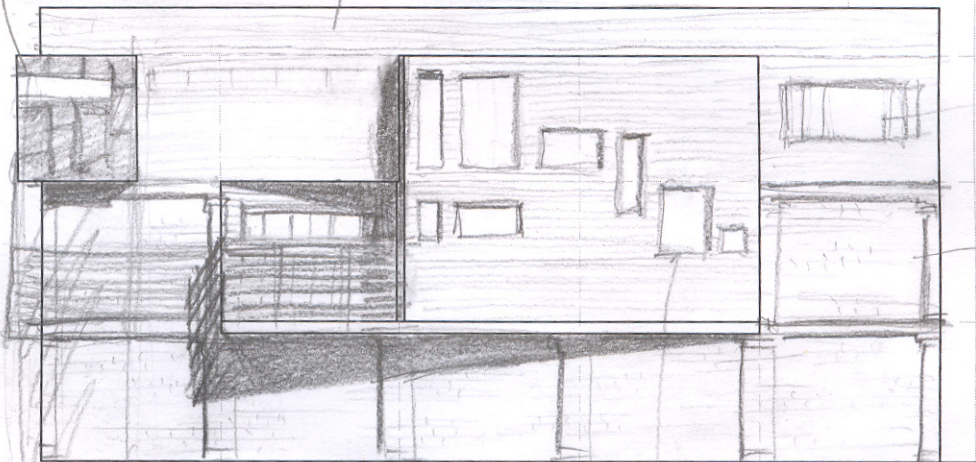
RESIDENCE
ENTRANCE

STOREFRONT

RECYCLED COPPER
OR STEEL PANELS

FIBER METAL CLADDING

BRICK



BRICK

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50



1

Renovate composition of lattice wall.

capstone summary

In the field of interior design, our guiding principle—our prime directive, our code of conduct, call it what you will—is the fact that we design always for PEOPLE. Spaces do not just sit there, prettily, by themselves; in order to be successful, they must meet the needs of the users who occupy them daily. Designers who lose track of this core mission—and it does happen—find themselves with spaces seemingly inexplicably deserted, or left improperly maintained; unhappy owners and a hasty renovation more often than not follow soon thereafter. It's simple, really: in order for us to love our spaces, they must love us back.

The methodology known as biophilic design, which served as my theoretical focus during the course of this Capstone, operates along very much the same lines, although it goes deeper: biophilia (literally, “life-loving”) describes the innate biological and psychology affinity human beings have for the natural world. We are creatures of nature, after all, no matter how much we try to deny it with our skyscrapers and airplanes and synthetic fibers, and we still respond in a very visceral fashion to the patterns and processes that can be found in nature. Biophilic *design*, then, is an attempt to replicate those same patterns and processes, to reconcile the built environment with the way the natural world works. The intent behind this is to create spaces that will not only provide the necessary shelter and the aesthetic enjoyment we've come to desire, but will also be actively nourishing for our psyches. This project, then, was an exploratory effort to educate myself in the use of biophilic design as an overarching methodology, to flex my designerly muscles and push my own abilities. I'm also deeply interested in sustainable, ecologically-responsible design, which dovetails nicely with the impetus behind biophilic design, and I wanted to try my hand at bringing together a few of the cultural threads that stuck out from this project. In all, this Capstone represents

my efforts to mine deeply into my own design process and see what kind of work I could produce out of that.

The typical design process progresses through a series of phases recognized throughout the industry as the “right way” of going about things. First is the programming phase: this is where the specific parameters of a project are laid out, exactly what kinds of spaces will be needed, how large they need to be, and so on. This requires a great deal of good communication with the client, this process of gradually narrowing down this amorphous thing called “design” into something that will serve the requirements of a particular project. Programming can begin as generally as “a residence for a family of three,” but before an architect or designer ever sets cursor to CAD drawing, the program for a building must be well-defined—“a four-bedroom, three-bathroom residence under 2,500 square feet designed for easy wheelchair use.” In the field of residential design, programming is typically straightforward because there is one primary function for the space: living. In larger public projects, where the demands of public and private space and traffic patterns and different uses can all intersect, the program must by necessity be much more carefully charted. In the case of this Capstone, the programming was somewhat less strict since the project is entirely theoretical; had there been an actual client for this residence, I would have generated a long list of criteria for the final design; as it is, I was able to define a program that would suit my purposes in exploring the methodology of biophilic design.

The next phase is known as schematic design, and this is what most people probably think of when they consider the design process. This is the brainstorming stage, the fun, loud part where every idea is a valid one and all comers are welcome, where freehand sketching abounds and the constraints of reality are partially suspended. This is the heart of the creative process of design, where the most generative work takes place. The designer is more concerned with

the overarching concept for a project, at this point, than the minutiae of walls or windows or plumbing. For this project, schematic design involved a lot of drawing—I carried my sketchbook with me for weeks, teasing out ideas in spare moments, meeting with my advisor to bounce them off her. The exact specifics of the floor plan didn't matter terribly, at this point; the main goal was to set up a sort of design logic by which the rest of the project could operate.

Those nit-picky, realistic considerations come to the fore in the next phase, design development, which—true to its name—is where the design is fully fleshed out to reconcile the creative product of the designer's genius, the concept, with the demands and limitations of a profession that ultimately is concerned with the health and safety of the people who use our designs. This, of course, is the stage where a design will be carefully evaluated and refined for structural integrity, code compliance, and overall coherence. It's where the meticulous nature of most designers is allowed to shine, and—if the designer is particularly careful throughout the process—it's amazing how much of the original creativity of the project is retained despite the scaling-back to reality. So this was when I sat down in front of AutoCAD and got serious; the goal, a finished floor plan that embodied my conceptual ideas and would be a practical, liveable design. Details like material choices come out of this process as well, as important as they are to both the experience of a space and its capacity to protect the health and safety of its occupants.

And for me, this is where the process stopped; from this point, I was concerned with creating the rendered perspectives that would communicate my design ideas. For real projects with real clients, the process then moves to construction documentation—the painstaking process of creating the drawings from which a whole building will be built—and then contract administration, the long journey of actually constructing a project. Since my design is theoretical only,

these real-world components are necessarily absent, but the bulk of the process thus far—the creative development, the careful evaluation of the design’s quality and practicality—mean that it could easily make the transition to these other phases with the right professional grounding.

The ultimate significance of this project, then, is not particularly global, in scope. I am not proposing a new model of design and society; I am not professing to have discovered the answer to sustainability. These are all efforts that no one person working alone can achieve. I had no desire to reinvent the wheel, in this Capstone: I was mainly interested in rolling the wheel around for a little while and seeing what might happen if I did.



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