

ABSTRACT

Title of Thesis: BALTIMORE CENTER FOR MAKING: A PUBLIC
INTERFACE FOR CREATIVE CULTURE

Kira A. Canon, Master of Architecture, 2010

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Our modern society depends on consumerism in order to match products and services with the people who need them; however, in its current form this process often comes at great expense to the finite resources of the environment. In addition, the global economy has created work places where workers are physically very distant from their peers, causing the individual to lose the empathetic face-to-face connections that are necessary for emotional fulfillment. Moreover, the work products of this information age are often ethereal, depriving workers of the satisfaction inherent in seeing the physical result of their hours of labor. This thesis imagines a civic institution that encourages different groups of people to share resources and empowers them to use their hands to make things in the material world.

Hybrid site and program conditions create a palimpsest architectural proposal that seeks to galvanize the community of Baltimore around design and making.

BALTIMORE CENTER FOR MAKING: A PUBLIC INTERFACE FOR CREATIVE CULTURE

by

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introduction

Cultural Ideas

Making things with the hands is an intrinsic part of the human experience, therefore it should be an integral part of contemporary life. This is difficult in the twenty-first century as cultural trends have tended towards increased consumerism. The lack of physical products as a result of work creates a society that lacks personal agency. (Crawford) From early childhood to adult life, learning is a function that requires the engagement of the body as well as the intellect. “The hand is the window on to the mind” remarked German Philosopher Immanuel Kant in the eighteenth century. Today, *making* has significant cultural contributions in its ability to engage people physically and intellectually around work products that can be seen.

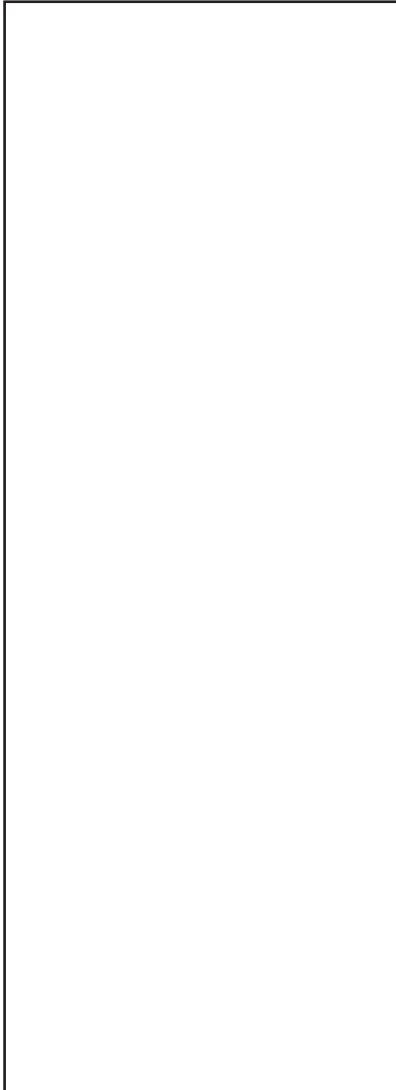


Figure 1_ Clips from a time lapse video of photographs taken every 10 seconds inside a 24-hour Walmart showing that consumerism never sleeps. source: Stephen Wilkes for Fortune magazine, April 2010

Agency, the power to act on behalf of someone else, or on one's own behalf, is a prerogative of certain kinds of freedom. It assumes that one has the right to pursue what can be imagined, what can be undertaken... power operates through the control of agency.

_Lisa Findley “Building Change: Architecture, Politics and Cultural Agency”

Making is a critical part of the learning process. In public education, teaching and

playing with building blocks is important to the development of cognitive and physical abilities of children. The disappearance of these tools for learning at a certain age reflect a culture that values intellectual competence over manual competence. Richard Sennett attributes learning disabilities to a lack of bodily engagement in the teaching process. In "The Craftsman" he argues that students are often asked to concentrate mentally, but engaging in learning happens when the student finds a simultaneous internal rhythm of the body and the mind. Doug Stowe, a high-school shop teacher says that "without the opportunity to learn through the hands, the world remains abstract, and distant, and ... learning will not be engaged." Heidegger has posed the question "How does one get to know a hammer? Not by staring at it but by using it." From high school teachers to philosophers, it is understood that there is a mental connection to manual work.



Figure 2_ At the ETH in Zurich first year students are put through a "ruthless acceleration of production" using various media and methods. source: "InChoate: An Experiment in Architectural Education" by Marc Angelil

Matthew Crawford sees contemporary culture as hustling students off to college

High-school shop-class programs were widely dismantled in the 1990s as educators prepared students to become "knowledge workers." The imperative of the last 20 years to round up every warm body and send it to college, then to the cubicle, was tied to a vision of the future in which we somehow take leave of material reality and glide about in pure information economy. This has not come to pass... More fundamentally, now as ever, somebody has to actually do things: fix our cars, unclog our toilets, build our houses.

_Matthew Crawford "The Case for Working With Your Hands"

and then to the cubicle where increased globalization has distanced workers and consumerism has lengthened work weeks with repetitive tasks. Additionally, as products and trades become more specialized there is a loss of knowledge of simple manual tasks and people become estranged from the material world. Increased specialization, globalization and consumerism have resulted in a struggle for individual agency in modern life. Crawford offers the empowering effects of manual competence and craftsmanship as a solution.

This thesis imagines a public center for tools and training that could shift these trends. Through action and engagement in physical acts, people can strengthen their independence and sense of self worth. Through a social agenda that brings different groups of people together, the value of *making* can permeate a community.

Social Agenda

Architecture is about problem solving. In its purest form, architecture is an optimistic, action-oriented endeavor. (Findley 35) As architecture is action-oriented, this new institution seeks to

create a place of action, of social change for the city. Inspiration is drawn from contemporary social models for business and education. The social agenda of the new institution aspires to create a place for interdisciplinary action and design thinking by valuing (1) shared space, (2) mixing uses and (3) nurturing a local culture.

The social agenda is inspired by Ideo, the design and innovation consulting firm. Tim Brown, CEO of Ideo, says that “Thinking like a designer can transform the way you develop products, services, processes- and even strategy.” “Design thinking” is a problem-solving methodology that uses the designer’s sensibility to match people’s needs with technology and viable business strategy. Employees work in interdisciplinary teams to solve complex problems. Prototyping, a methodology based in making, is fundamental to the company’s ethos: “its doing rather than thinking...doing as a way to think.”



Figure 3_ An example of prototyping. the caption of this image reads: “The surgeons described a new device for sinus surgery. One designer grabbed a marker, a film canister and a clothespin and taped them together. ‘Do you mean like this?’ he asked.” source: “Design Thinking” Harvard Business Review June 2008, page 86

The design process is best described metaphorically as a system of spaces rather than a predefined series of orderly steps. The spaces demarcate different sorts of related activities that together form the continuum of innovation.

_Tim Brown, CEO of Ideo, “Design Thinking”

At the Stanford Institute of Design, or d.school, “design thinking” is taught to a diverse group of students ranging from

kindergartners to senior executives at Fortune 500 companies. The design institute opened in 2005, with the belief that “great innovators and leaders need to be great design thinkers.” The courses and curriculum are based on the design thinking process. They have a multidisciplinary approach to learning that encompasses every school on campus. Finally, and perhaps most relevant to the conversation on social organization is their belief that collaborative communities create dynamic relationships that lead to breakthroughs. (dschool.stanford.edu) The interdisciplinary collaborations create a culture of innovation at the school. This is facilitated by flexible space planning and infrastructure for learning by making.

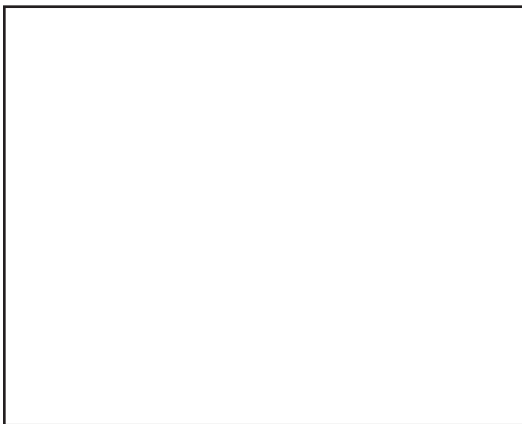
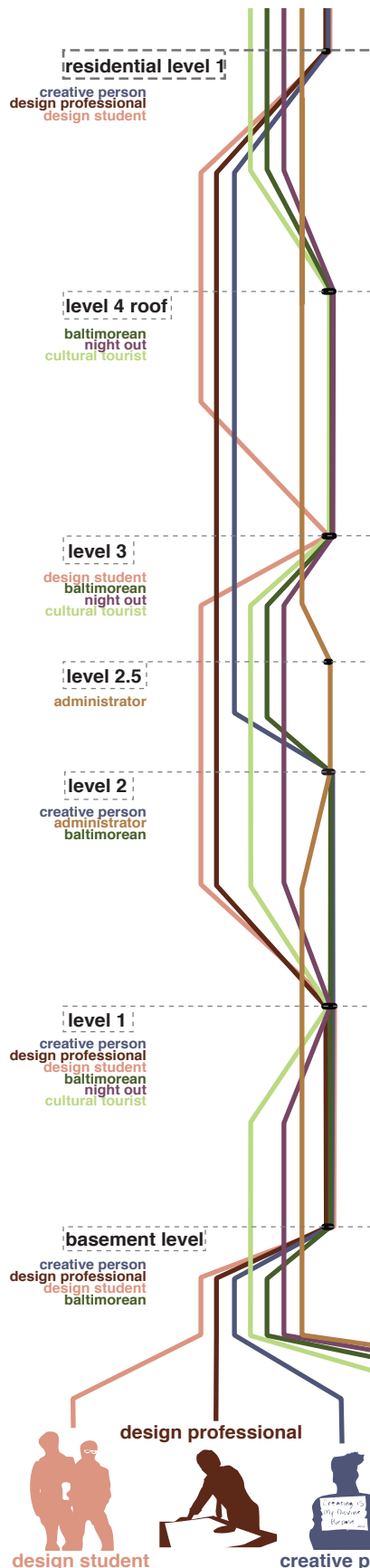


Figure 4_ Students at the d.school using design thinking and collaboration to solve problems. source: dschool.stanford.edu

The values inherent in the interdisciplinary, collaborative work approach of Ideo and the Stanford d.school help to create a culture of creativity. These ideas can be applied to the new public institution. The social agenda mixes community members, design professionals and design students together in one place to share resources, share space and share ideas to build a culture of making. A new live/work and student housing model is added to the mix. Vertically, space and



services are shared throughout the new institution to induce frequent interaction of diverse groups of users which may include: Baltimoreans, cultural tourists, design students, administrators, design professionals, creative people, and evening visitors. To facilitate a social agenda of shared space, mixed use and local culture, the architecture outwardly engages the city, welcoming diverse groups of people. The local community is activated with educational programming, retail uses and special events all related to the theme of making.

Figure 5_ Process drawing tracking diverse user groups with programming to visualize and analyze a vertical public promenade

on making

(Hand)-made

'[H]ands are a complicated organism, a delta in which life from the most distant sources flows together surging into the great current of action. Hands have histories; they even have their own culture and their own particular beauty. We grant them the right to have their own development, their own wishes, feelings, moods and occupations,' writes Rainer Maria Rilke in his essay on Auguste Rodin. The hands are the sculpture's eyes; but they are also organs for thought, as Heidegger suggests: '[the] hand's essence can grasp [...] Every motion of the hand in every one of its works carries itself through the element of thinking, every bearing of the hand bears itself in that element [...]

—Juhani Pallasmaa "The Eyes of the Skin"

Traditional Japanese packaging exemplifies elegance and refinement in a purely utilitarian function. Through centuries of refinement, this handiwork has balanced necessity with elegance of the crafted object. Three things characterize traditional Japanese packaging. First, the natural qualities of the packages reflect the culture's value of the environment and desire to be close to nature. Second, an aesthetic consciousness close attention is given to making everything beautiful. And finally, handicraft techniques are used to make the packages, which reflects the cultural value of working with the hands in the material world. "Today we often seem to think that consumption, not conservation, is the aim of life...The handicraft art of

packaging, for one, suggests again and again that maybe everything is not meant to be thrown away. May it not well be that we have finally reached the point where we must reexamine the bases of our modern value system?" (Hideyuki Oka, 10)

As the modern world of mass production continues to rush over the world, it is important to remember the potential for deep-seated cultural values to embody themselves in physical objects. Perhaps as we move forward people will be drawn to natural qualities and handmade craft. Perhaps as a way to get at the primacy of man and maybe, given time, a cultural aesthetic could develop.

FABrication

Tabletop mill, sign cutter, laser cutter, waterjet cutter, 3D printer, vacuum former. These are some of the tools equipping several Fab Labs around the world. The Fab Labs are a testing ground for the digitization of fabrication— personal fabricators (PF). Personal fabrication brings the capabilities of machine tools to the individual through the use of computers, enabling them to make almost

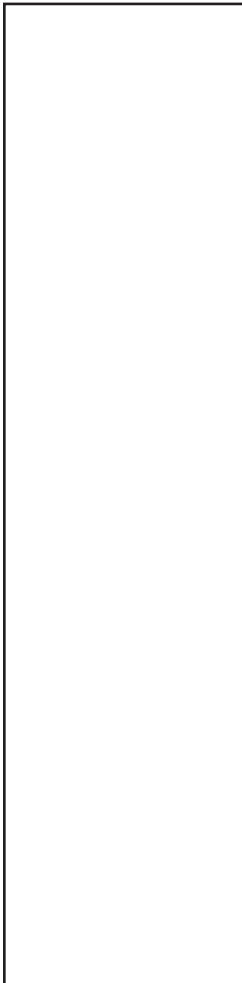


Figure 6_ Traditional packaging is beautiful and functional. eggs can be removed one at a time as needed. source: "How to wrap five eggs"

anything. Neil Gershenfeld, director of MIT's Center for Bits and Atoms, observed users of these laboratories and has found that there is "nearly universal pleasure in getting access to tools for technological development" and that this "cut[s] across



Figure 7_ Example of a "fab lab".
source: "Fab" page 25

ages and incomes, from tribal chiefs to MIT students to children coming in off the street. There's a shared childlike delight in invention." (Gershenfeld, 252) Empowering individuals with technology has led to economic, intellectual and even spiritual liberation of local communities.

The origin of the Fab Labs is a course at MIT entitled "How to Make (almost) Anything". Students are given creative freedom to design and make anything they wanted. Early projects ranged from

a scream bag that would silence and capture screams and save them for later release, to an alarm clock that one had to wrestle to turn off. The idea of personal fabrication led to local outreach programs in the greater Boston area aimed at empowering and exciting young people through technology. This led to the serious hands-on technological training of individuals of all ages in test labs all over the world. The training led to large-scale problem solving including communication, alternative energy and infrastructure improvements. Soon the Fab Labs were giving back to MIT, and ideas were exchanged. What Neil Gershenfeld had discovered from working around the world, as he later reflects in the February 2006 TED Talk, is that there is no technology divide, rather the problem is a fabrication and instrumentation divide. People don't only need to access information and read about it, but they need to modify and measure it.

The spread of personal fabrication has some serious social challenges ahead. "It is illegal to equip ordinary people to create rather than consume technology." In addition, aid for technology has traditionally been a top down approach whereas other aid can have either a top

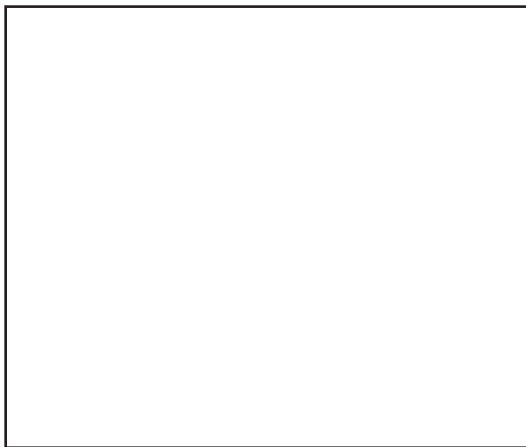


Figure 8_ Valentina Kofi, eight years old, with the first circuit board she made. source: "Fab" page 251

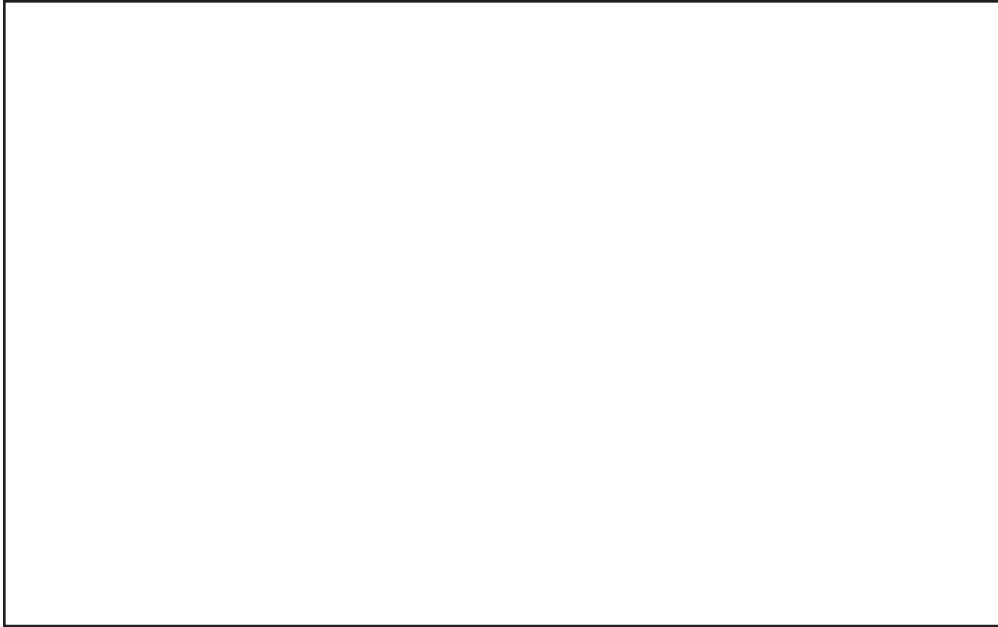


Figure 9_ Benjamin Aranda and Chris Lasch's architectural work exposes nested structures through layering and simultaneity to reveal potential for programmatic and structural organizations. Through a digital process, patterns emerge for the derivation of form and texture. ("Tooling" page 7)

According to Aranda and Lasch, weaving is "the synthesis of two different systems, interlocking in order to give self-supporting form to their combined whole." While alone, these materials would not support anything, together in a nested relationship, the pieces reinforce each other and make space. This is seen in the delicate handcrafted baskets made in Japan and in the digitally crafted and 3D fabricated baskets. both sets of objects have a cultural meaning as well as material and aesthetic concerns and both are to be considered.

down approach for large projects or a bottom up approach for grassroots and local projects that can help communities. Fab Labs are the bottom-up version. They continue to spread around the world most recently offering certificate programs. Fab Labs prove that technology can be harnessed around the world to solve problems.

Create(-ing) Community

The values of traditional bamboo wrapping in Japan and the empowering effects of a laser cutter in Ghana seem like two disparate ideas separated by thousands of miles, many centuries and different ideals. But the ideas of handicraft and fabrication today could not be more relevant. Society today is struggling with a loss of basic human needs: a connection to nature and to the material world. Yet modern technologies that effect everyday encounters with the world will not stop innovating and effecting culture values. The idea of a new institution for making proposes blending the values of handicraft with the empowering effects of fabrication to foster a community of makers. While this institution does not exist anywhere, there

are no parallel precedents to examine; however the mission and programming of two organizations that have contributed to their local community should be examined.

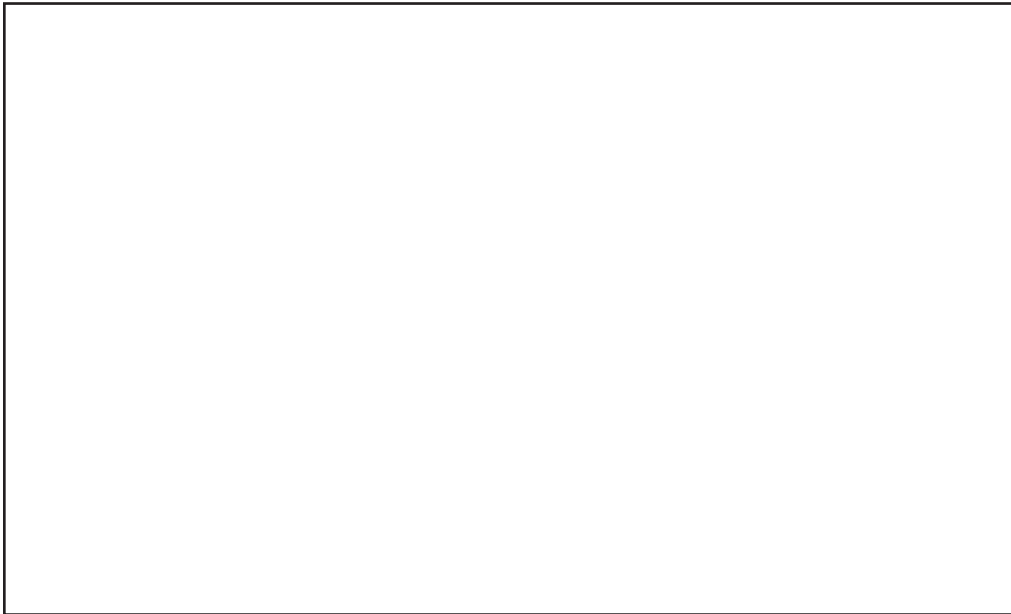


Figure 10_ Inside Open Book, cafe and stair to second floor. source: "The Inspired Workspace: Designs for Creativity and Productivity" by Marilyn Zelinsky

Open Book is a non-profit organization located in Minneapolis, Minnesota.

Open Book is "a space for everyone, a meeting place or quiet sanctuary, a destination for all who are interested in or inspired by the literary and book arts." (openbookmn.org) The adaptive reuse of contiguous warehouse buildings designed by Garth Rockcastle of Meyer Scherer and Rockcastle helped revitalize a neighborhood on the outskirts of downtown and provides a place for three literary arts tenants. This building is a model for shared non-profit organizations

across the country. In 55,311 square feet of space, Open Book accommodates The Loft Literary Center, offering courses in creative writing to the public, Milkweed Editions, a non-profit publishing company, and The Minnesota Center for the Book Arts, which offers hands on instruction in papermaking, typesetting, bookbinding and printing. Open Book offers a cafe, gallery and gift shop in support of these organization. In addition, room rentals are available and include space ranging from an individual writers studio to a 200-seat lecture and banquet hall. Architecturally, the space is imbued with the tactility of the historic structure with carefully designed and placed contemporary elements juxtaposed to create tactile comforting spaces.

Open Book is relevant here for its success as a catalyst for a neglected part of the city (Washington Avenue) which has become revitalized as a cultural center drawing other arts tenants as well as entertainment and educational uses to the area. And secondly for its ability to synchronize like-minded organizations with an appropriate mix of uses in a single building that brings together a diverse community around the literary arts.



Figure 11_ Inside Open Book, collective reading and writing space. source: "The Inspired Workspace: Designs for Creativity and Productivity" by Marilyn Zelinsky

The second organization that this important to this discussion is the Torpedo Factory, located in Alexandria, Virginia. The Torpedo Factory is a cooperative of professional artists who share space for working, exhibiting and selling their art. It is located at the foot of the Potomac River in a historic ammunitions factory. The newly restored building opened in 1974 and is now home to over eighty artists in residency. Facilities include studio space that doubles as show rooms and retail outlets for the artists, several galleries open to the public daily and a shared space at the heart of the building for events and gathering. The Torpedo Factory is complimented by the Art League School which offers affordable art classes to people of all ages and skill levels. Many artists at the Torpedo factory teach classes here. Art education and commercial space for professional artists combine forces in Alexandria to make a home in the community for art.



Figure 12_ Torpedo factory exterior.
source: Greater Washington.org

This thesis investigation of a Center for Making in Baltimore draws on these successful institutional models in two ways. First, the Center for Making literally nestles itself into the fabric of the city to nurture the local culture. Adaptive reuse was a successful strategy for creating a place for these institutions

to flourish because it leveraged the history and embodied cultural wisdom of the local past in pursuit of a relevant future. Second, these institutions flourish because they share. Sharing resources creates a dense internal community that can draw outsiders, thereby growing the internal community. For example, a young person takes a class at the Art League, taught by an artist in residence at the Torpedo Factory. This person grows up, goes to art school and become an artists who may themselves become an artist in residence. Open Book may provide a place for a writer as they engage in creating their work, publishing it, and sharing it with readings, promotions and sales. The reciprocal benefits of sharing in these examples creates closed user groups that continue to benefit the community.

program

The new institution proposes a hybrid program organized in two parts: a community-educational partnership (the Center for Making) and a commercial and residential component. The commercial and residential component support and compliment the functions of the Center for Making with retail, gallery, café, office, and living space. The Center for Making proposes a partnership between educational and community functions where a free public tool lending library shares fabrication equipment and studio space with a consortium urban study center for interdisciplinary community design. The program mixes uses and shares space to investigate the idea of the building as a cultural incubator for making.

Remote Study Centers

Remote study centers are not uncommon to the design disciplines. They are important to this thesis for how they create a localized community away from their home institution. While the focus here is on remote design centers, there are many other disciplines that do this. Politics, for

example, are centered in Washington, DC drawing students from all over the country to the city. Here the discussion is based on the Virginia Tech's Washington Alexandria Architectural Center (WAAC), The American Academy in Rome and the Rural Studio in Newbern, Alabama.

The WAAC is the urban extension of Virginia Tech's Architecture program. It began in 1980 and currently hosts 220 students from a consortium of 10 universities worldwide. The center international consortium draws students from several other states and countries and augments its teaching resources yearly with faculty from these partner programs.

The American Academy in Rome awards the Rome Prize annually. The term of a fellowship prize is between 6 months to 2 years. Fellows are awarded a stipend, along with a private workspace and room and board at the Academy. The Academy's original building was designed by McKim, Mead and White in 1913 with a terraced entrance into an open central courtyard with shared public spaces on the ground floor including a common room, group dining room and double-height library. Fellows live and work in a

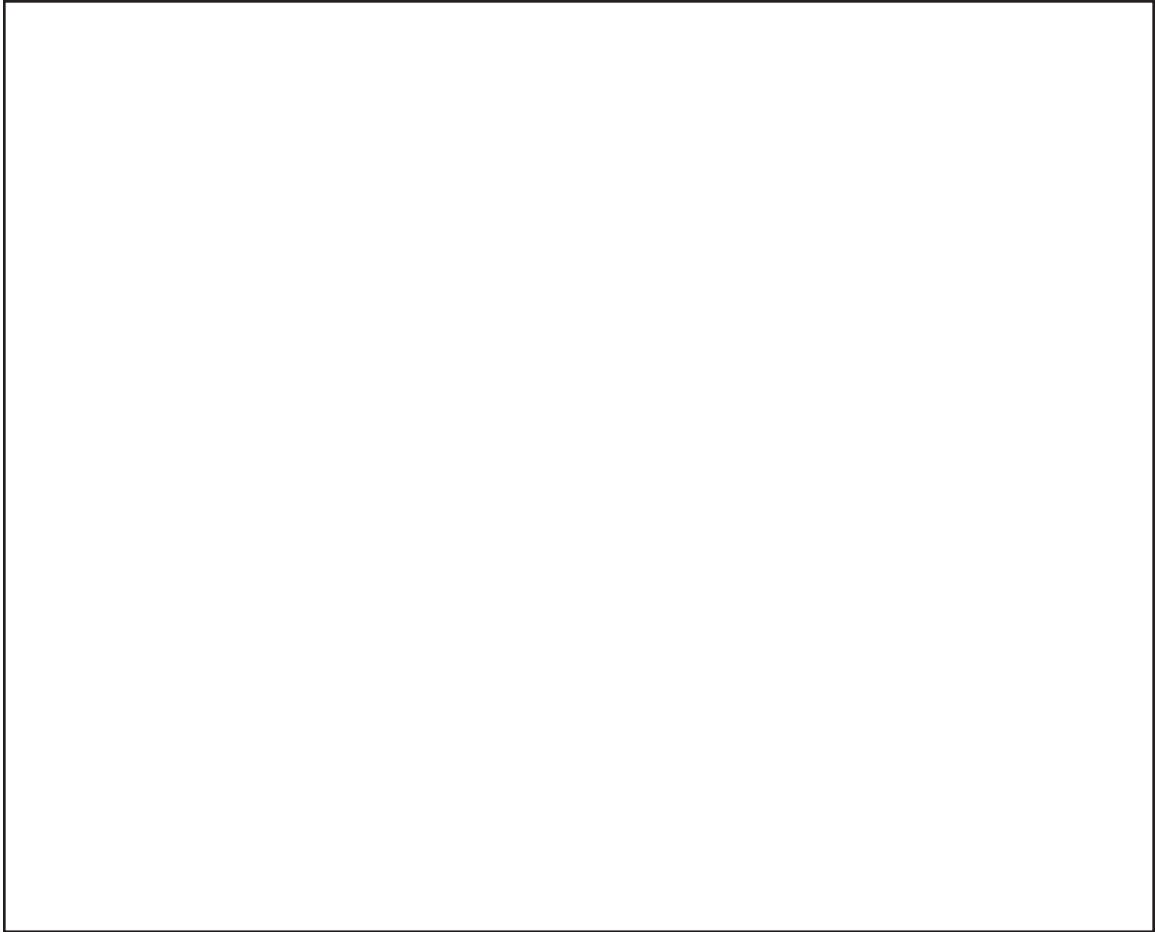


Figure 13_ American Academy in Rome ground floor plan (left) and second floor plan (right) with the private spaces shaded in with dark grey, semi-private studios in light grey and public spaces in white. source: "McKim, Mead and White: The Masterworks" by Samuel and Elizabeth White

single building. They share meals in the common dining room, research space in the library and recreational space in the outdoor grounds. The courtyard typology together with the mixed live/work programming facilitates visibility, interaction and engagement in the activities of the Fellows. The building is a precedent for how to organize live, work and public spaces in a spatial sequence that celebrates the arts.

Instead of planting Auburn's study abroad program in a foreign country, they rooted it two and half hours away in one of the

poorest county's in America, Hale County, Alabama. Founded by Samuel Mockbee in 1994, the original design/ build studio would embed itself on site during the week to design and build small individual homes. Today, the program has living quarters and studio space for multiple studios happening simultaneously that focus on a broader range of projects including community buildings, athletic fields, places of worship and planning projects. Mockbee's learning objectives were based on students and faculty living and working collectively. Daily interaction with the community would lead to a better understand their needs and would yield an architectural response that responds to these needs.

Community- Educational Partnerships

This thesis proposes a community-educational partnership for its reciprocal benefits in design education. Mockbee's founding objective of the Rural Studio is a reminder of the architect's social responsibility and the importance of instilling these values in students:

"If architecture is going to nudge, cajole, and inspire a community to challenge the status quo into making responsible changes, it will take the subversive

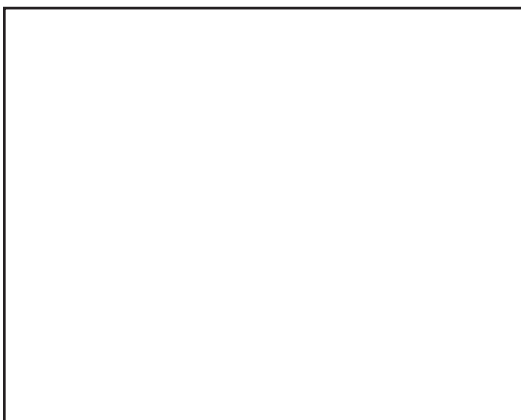


Figure 14_ Rural Studio Students in Newbern, Alabama. source:

leadership of academics and practitioners who keep reminding students of the profession's responsibilities." Several design/ build programs across the country have grown the importance of the architecture profession's duty to build for the betterment of society.

The more general discipline of what today is called Public Scholarship (formerly Service Learning) has grown recently by the help of higher education. In the last couple years, undergraduate coursework in civic and community engagement has become available at institutions such as Penn State University and Cornell University. The programs are interdisciplinary, university-wide opportunities that offer students experience working with the local community. These programs benefit the community because they are getting the services they need as well as the students as they are learning and gaining experience through this type of work.

Tool Lending and Fabrication

The inventiveness of the program comes from combining functions that have never been brought together before in one building. However, independently, these

For the past six years, the well-stocked tool-lending library has helped eligible homeowners and tenants build fences, finish basements, trim trees and mow their lawns for a mere \$25 annual membership fee. Essex said she turned to the lending library after she purchased a home in December 2007 on Des Moines' east side. She and her husband gutted the interior and rebuilt everything, handling some of the projects themselves. "We have used the library more times than we can count..." she said. "It's a phenomenal service for us, just incredible." ...the membership fee is minimal compared to what costs she could have encountered. "This past six months the library has become so much more popular than it was. I think with the economy, people are turning to more do-it-yourself type projects instead of hiring someone," she said.

_ Kristin Danley-Greiner for DesMoinesRegister.com, "Tool-lending library a hit with residents for \$25 a year" May 2009

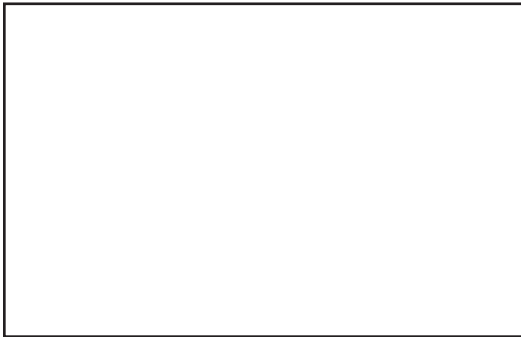
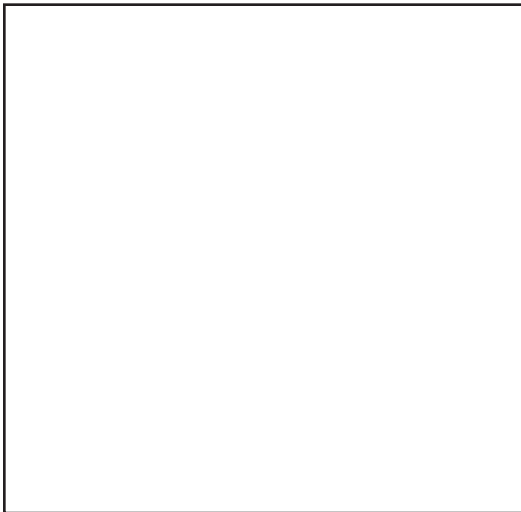


Figure 15 & 16_ Berkeley' Tool Lending Library. source: "Novel Resources on Loan at City Library" by Mai Fung, April 2008 for dailyca.org, images by Ted Kwong

uses exist; for example, the community-based remote study center. The other primary programming of the Center for Making is for handicraft and fabrication: the tool lending library and the fabrication labs.

Tool lending libraries have been around since their founding at the Berkeley Public Library in the 1980s. The idea has since spread across the country. Nationally, tool lending programs have a strong footing in the community of Portland, with several small localized storefronts lending tools. Other libraries lending to individuals include the West Philadelphia Tool Library, The Rebuilding Together Central Ohio Tool Library, and the Buffalo Tool Library. These organizations have had varying levels of success and often depend upon volunteers to operate the facilities. Takoma Park, Maryland's Tool Lending program closed in 2007 due to poor utilization. Lending tools to

Q: *What do members get for their \$125 a month?*

A: *We have every machine tool, woodworking tool, 3D printers, digital prototyping software, laser cutters, a full sheet-metal shop, an automotive bay, a textiles lab, a plastics lab. It's literally everything you need to make anything. We have a guy making a lunar lander on-site. And we have people who are silk-screening T-shirts and making stuffed animals.*

Q: *What's the business model?*

A: *It's a membership-based, do-it-yourself fabrication workshop. The primary revenue driver is from memberships, like a gymnasium. We teach a lot of classes. It's a great mix. It's a cross between a gymnasium, an educational institution, and an incubator, all founded on the principal of open access, so anybody can join, anybody can play, anybody can learn. We do some short-run manufacturing, a little bit of retail, and then we offer studios for startups*

_Mark Hatch, CEO of Techshop as quoted in an interviewed by John Tozzi for Bloomberg.com, November 2010

larger organizations is Toolbank USA based in Atlanta, which lends tools to volunteer groups for community-based work projects such as gardening, cleaning up the streets and infrastructure improvement. These outfits lend hand-operated manual and electric tools ranging in size from a hammer to a lawn mower so that people can perform home improvement, yard maintenance or hobby work.

Fabrication Labs and training centers are spreading around the world, as demonstrated earlier with MIT's Fab Academy, but there are several workshops that have recently opened around the country that operate for profit. NextFab Studio is a "membership-based, high-tech workshop and prototyping center" based in Philadelphia it calls itself

a “gym for innovators.”” (nextfabstudio.com) NextFab Studio is in cooperation with the Breadboard Program of the University City Science Center and is seeking to partner with non-profits and educational institutions. They are strategically located on Market Street amidst Drexel and the University of Pennsylvania. They charge a membership fee for use of the equipment and offer with that a required training course in how to use the equipment. They also offer other technology courses for a fee. Their facilities feature a classroom, computer lab, electronics prototyping area, wetlab, prototyping workshop (small



Figure 17_ TechShop. from the article in Wired Magazine entitled “In the Next Industrial Revolution, Atoms are the New Bits” January 2010 photo by Leon Chew

equipment) and a machine tools room (large equipment). Another example is Techshop, a San Francisco-based workshop, opened in October 2006 and

now has three locations open in the bay area with three more opening soon in San Jose, Detroit and Portland. Techshop's operation is also based on a membership fee and made \$700,000 in revenue in 2009. The operation projects \$1.1 million in 2010. ("TechShop Expands, Helps Turn Inventions Into Viable Products" by John Tozzi, Nov 2010 from Bloomberg.com)

This new institutional model with facilities for lending, fabricating and designing will support its educational and community goals.

d:center baltimore

The potential for this mixed program to become a part of Baltimore has started to germinate. In January 2010 creative people from Baltimore united to form the d:center baltimore. The underpinnings of this collaborative organization, the diverse people involved and their interdisciplinary and community ideals are similar to those in this thesis.

At this time there is no single entity dedicated to galvanizing the professions and the community around design. There is an existing and vibrant culture that percolates on the margins and D: Center Baltimore is the step toward putting that culture and its pioneering spirit at the center of this city's future.

_Elizabeth Evitts Dickson for the d:center baltimore

The board members represent several disciplines including a professional writer,

artists, architects, builders, an art student, individuals from community-based cultural organizations including the Neighborhood Design Center, the Historical Society, the American Institute of Architects and the Baltimore Architecture Foundation as well as leaders from the University of Maryland School of Architecture, Planning and Preservation, Morgan State Department of Architecture and Planning and Maryland Institute College of Art.

The message of the d:center is clear; however the large number of people on the board, their time constraints, and the severely limited financial resources has prevented the organization from growing. They have started a website and host monthly talks, both of which have been successful, but what they really need is a facility to bring everyone together in one place where the idea can start to become part of the local culture. It seems the Center for Making would be the perfect place for this.

Speculations

On architectural education

The Center for Making may offer a place for local design programs to come together and offer expanded programming

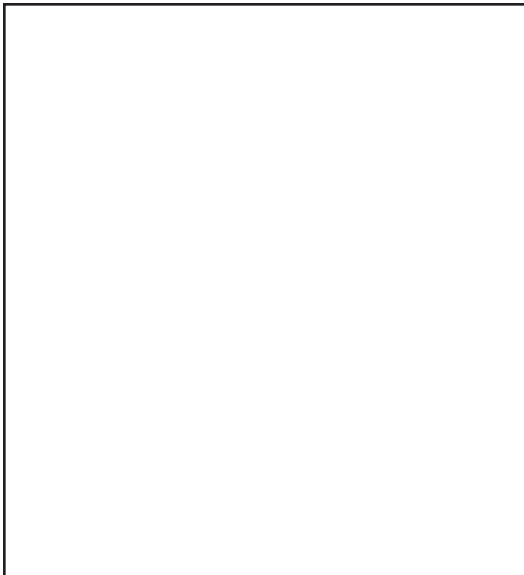


Figure 18_ The d:center logo is a testament to the organizations desire to be embedded in the community as an integral part of its DNA. source: dcenterbaltimore.com

where diverse student groups could work together to solve problems within the community. This work would expand the services of the Neighborhood Design Center, which currently matches practicing architects with groups of people that need their services. Design studios could take on smaller projects to restore storefronts or revitalize alleyways or other design-build projects for the city. Interdisciplinary and trans-institutional learning would broaden student and faculty perspectives and experience.

The state of Maryland currently has two accredited architecture programs: University of Maryland, in College Park, and Morgan State University, located in a residential area of Baltimore north of downtown. Former Dean and current Professor Steven Hurtt, AIA of the School of Architecture, Planning and Preservation in College Park notes that the state of Maryland has lobbied the School of Architecture since it opened to have a presence in Baltimore. Additionally, Professor Emeritus Gary Bowden, FAIA, a member of the advisory board at Morgan State, states that the architecture department is outgrowing their current facilities, fast, and will need expanded programming and studio space to

accommodate future classes of students. University of Maryland has seen a similar space crunch as enrollment has increased over the past few years and University planning has limited the architecture building's expansion. Other institutions in the city could become members of the consortium and benefit from the facilities and its programs.

The Center for Making is imagined to function as a non-degree granting institution, where students will be given credit from the school in which they are enrolled. Programs may host undergraduate and graduate students for a semester at a time. Short-term courses during the winter and summer may also host students for a course or two. The studio model may be layered where all levels are combined into one class (UT Austin's Vertical Studios). The studios may be interdisciplinary to encourage design thinking processes and innovation.

On a residencies and fellowships

The consortium at the Center for Making would welcome faculty on a semester or yearly basis and may provide housing for the faculty member. The center may also leverage advanced graduate students interests to lead teams of

students in community-based projects as a competitive scholarship program. Proposals from faculty and advanced graduate students could be for projects ranging from one semester to two years. Up to eight full fellowships or scholarships with housing could be awarded.

On finances

The tool lending library model typically functions as a component of a local library system whereas the fabrication laboratory is a viable business strategy. Perhaps the combination of these institutions would make for a self-supporting entity independent of the educational component. Student's participating in the programs at the Center for Making could earn positions working at the center to reduce their costs of attending. They could be involved in teaching training seminars for the tool lending facility and fabrication labs or could take on other roles in administration, special events, the gallery, café or store. This would also assist in uniting the different user groups.

Space Program

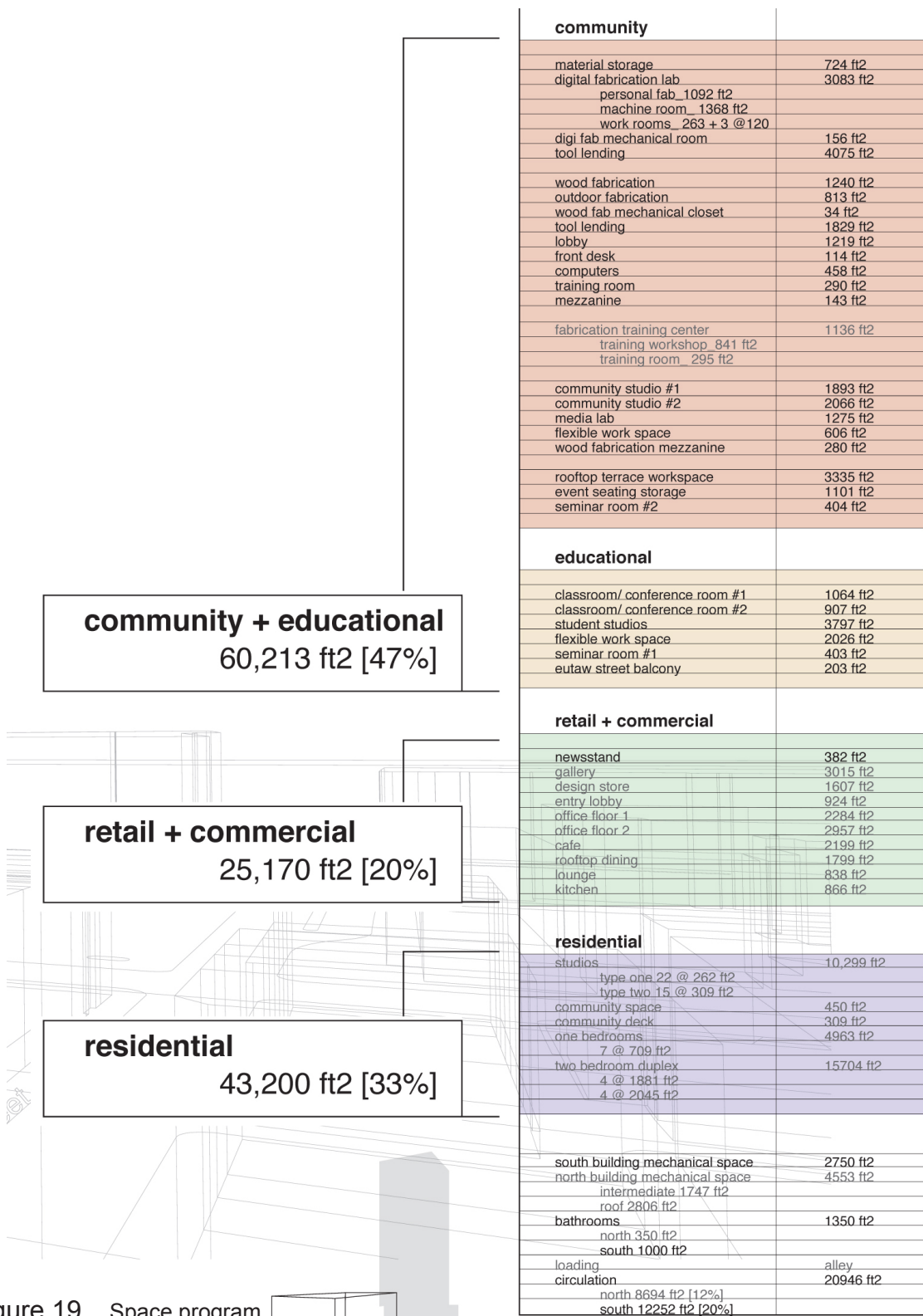
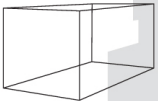


Figure 19_ Space program allocation and square footage breakdown



black = south building program
grey = north building program

The program was in flux throughout most of the design process. It was the most pliable element because of the invention of the conceptual framework of the thesis and the lack of precedent for these uses in a single building. Therefore, careful organization and thought needed to be given to the project's values so that they could better inform decisions about the

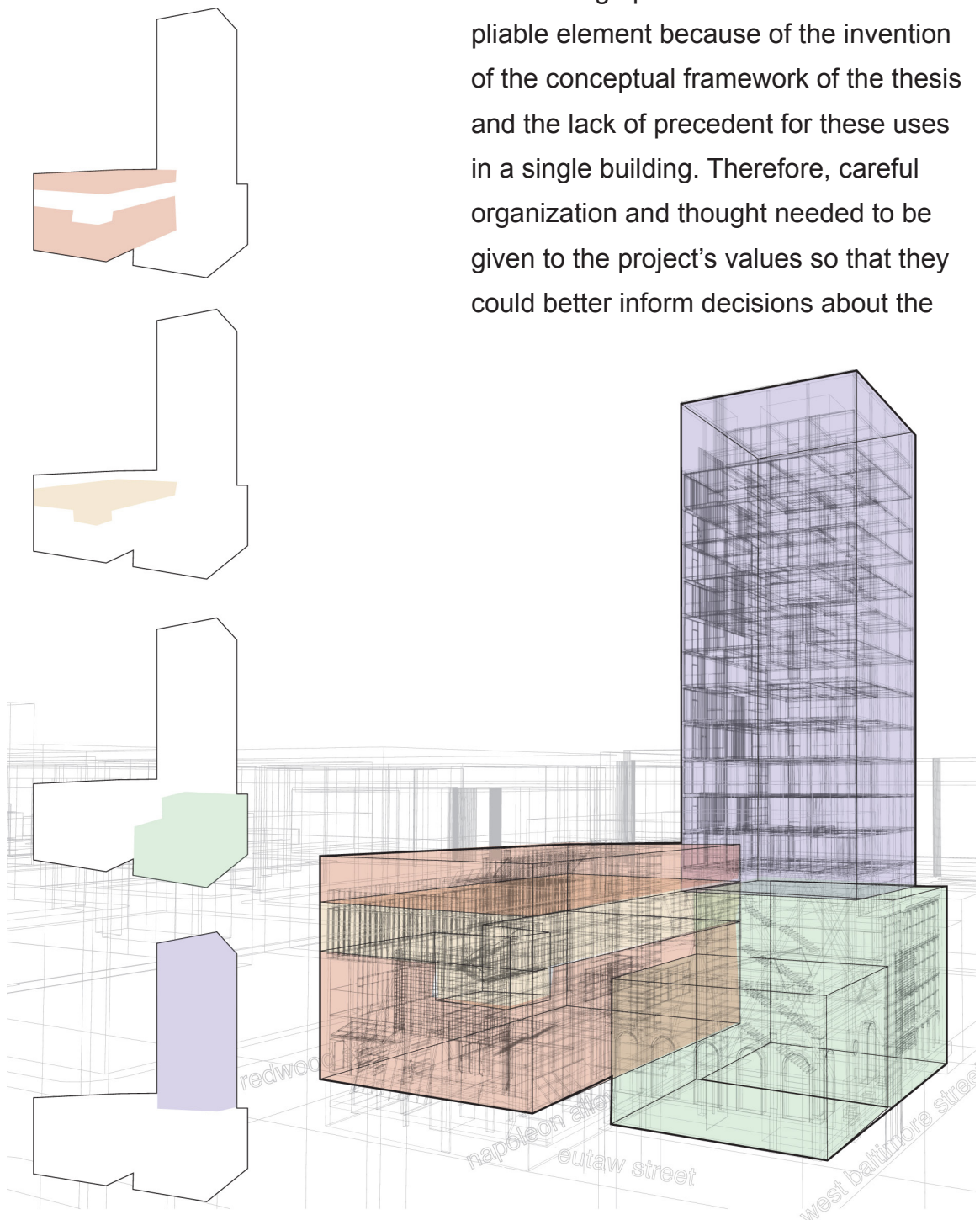


Figure 20_ Building massing and program allocation diagrams

program. For example, a large auditorium space holding over 300 people was an integral part of the building at one point. This did not reinforce the values of

shared space, mixed uses and nurturing a culture of makers because it promoted individualized learning through information gathering, rather than through making things. This was removed in favor of three spaces that can share the function of an auditorium as needed. One space for large groups is the rooftop. This space is terraced and can host lectures, movies, and large gathering events. The basement level fabrication lab is open to the ground floor above that can host large groups. Finally, a centrally located space has a vertical void and media screen that can accommodate smaller groups for a lecture. The first use of these spaces, however, is to make, fabricate and work corroboratively, three critically important ideas to the thesis.

The final program has a balanced mix of uses that is understandable, yet open-ended so that the users' have a chance to claim the space and appropriate it as needed during the creative process. The south building houses the Center for Making, with connections to the north building via the alleyway. The north building hosts the majority of the commercial and retail space and residences.

site

Why Baltimore?

Assumption: Baltimore. Why?

Baltimore is a city ripe with potential for the thesis's success, some of the reasoning for which has already been discussed. The city is made up of mixed-income urban neighborhoods, marginal artist communities, urban university campuses, a waterfront to attract visitors and a rich history categorized by diversity give Baltimore the right mix for this thesis. Baltimore has the highest concentration of affluent African Americans in the country. It is a blue-collar working class town with industrial roots. The architecture is rich in its stylistic range, reflecting the mix of classes living in the city.

Baltimore is the largest city and cultural center in the state of Maryland. It is located within a major art corridor along the east coast, with proximity to Washington and New York City. Baltimore has over 100,000 students studying within the city limits and is home to the oldest art school in the country: Maryland Institute College of Art. It is also one of

the few cities in the country where rates for studio space are reasonably affordable for artists. Baltimore is the ideal city to test architecture in support of creative culture because of its vibrant artists community and desire to add density to revitalize areas of the city. The Center for Making has the potential to contribute in a meaningful way to the culture of the city, the wealth and diversity of neighborhood communities, and the opportunities of students.



The site is located in downtown Baltimore. The site has a south building and a north building. The south building is site is currently an empty parking lot at the corner of Eutaw Street (to the east) and Redwood Street (to the south). The north building location is at the 400 block of West Baltimore Street (north) and Eutaw Street (east). Napoleon Alley cuts through the center of the two buildings and serves a hyphen connecting the two buildings.

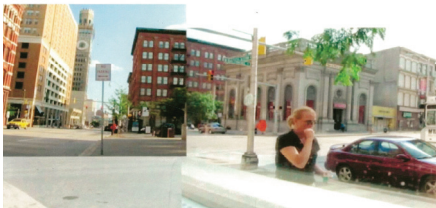
Figure 21_ Site massing model showing context bulk and mass, slope, and traffic movement around the site.



1 south east corner of eutaw and redwood



2 east eutaw street



3 north east corner of eutaw and west baltimore street



4 north west baltimore street



5 south west redwood street

Figure 22_Clips from five video studies of the site



Site as Community Catalyst

The site selection process evolved from frequent visits to the city, the consideration of seven evaluation criteria and the simultaneous mapping of conceptual and programmatic priorities of the thesis onto site options. One theme that drove all aspects of the site selection was the idea that it should be a catalyst in the community.

Process

Driving around Baltimore and talking to people familiar with the city initiated the site selection process. MICA and the Brown Center were known places, which led to selecting the Market Center District. It was suggested that Fells Point be looked at for its cultural attractions and hip, up and coming draw. Driving south on Eutaw Street one afternoon was the initial reason for considering the Market Center district. These three site areas were then evaluated for the following criteria before the conclusion to pursue a site in the Market Center District was decided upon. The list of criteria and an explanation why this area works:

1. Multi-nodal public transportation.
The site should be easily accessible from

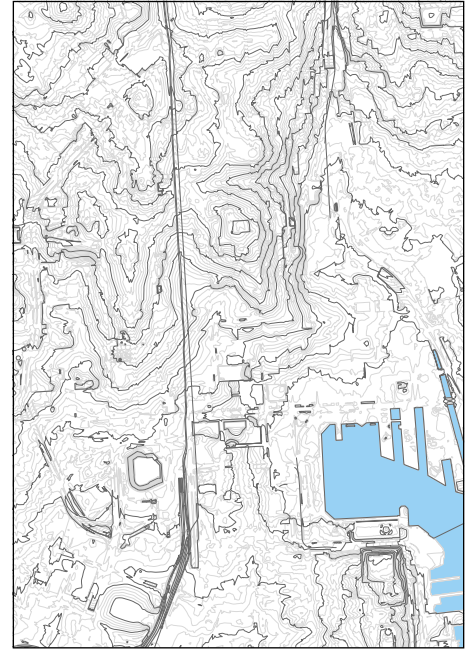
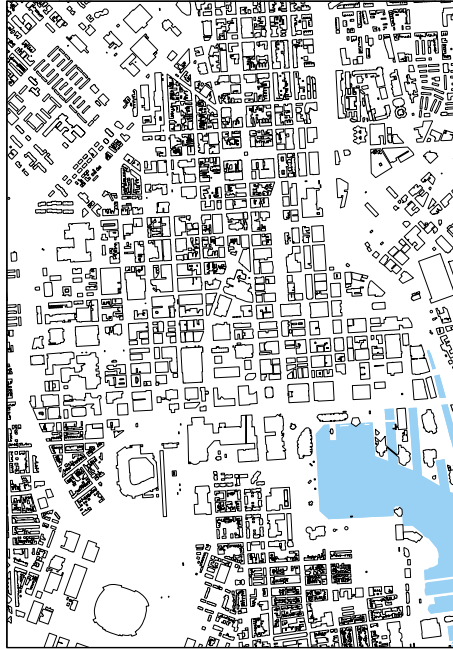


Figure 23_ Diagrams from left: buildings, topography, cultural institutions/ points of interest

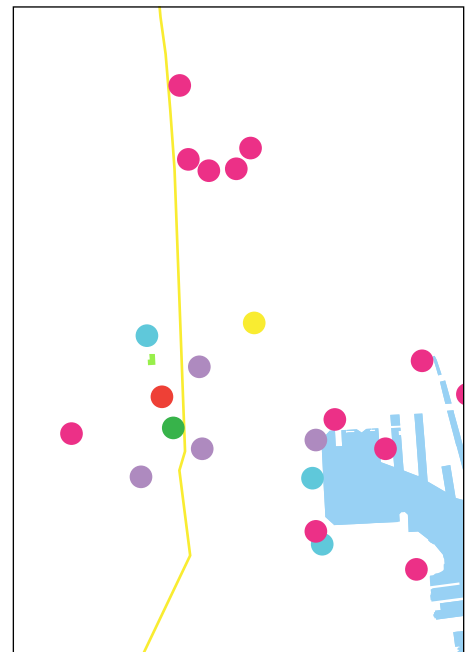
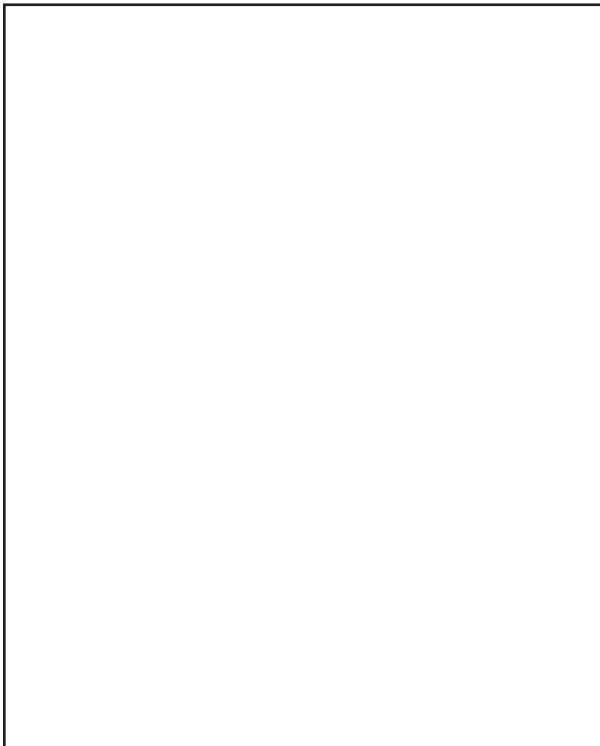


Figure 24_ Demographics of the site area. top, race and ethnicity (green is white, blue is black). middle, % of population with a bachelor's degree, bottom, annual income (light blue is poorest, red is richest)

all areas of the city if this place is to be a “center” for making. The plethora of buses and proximity to the light rail were key to the transportation network of the site. There are plenty of parking garages in the area to accommodate vehicular volume.

2. Proximity to diverse city districts and neighborhood communities.

The site should be diverse and have connections to diverse neighborhoods for maximum mixing. The Market Center District is rich in diversity. It is home to the longest continually running market in the country, Lexington Market. The Hippodrome Theater and Bromo Seltzer Tower have recently been restored. Historic loft buildings have been converted to luxury housing units. The University of Maryland, Baltimore’s campus is close by, with a public park at the center. Churches, retail, hotels, sports venues and the waterfront are all close by.

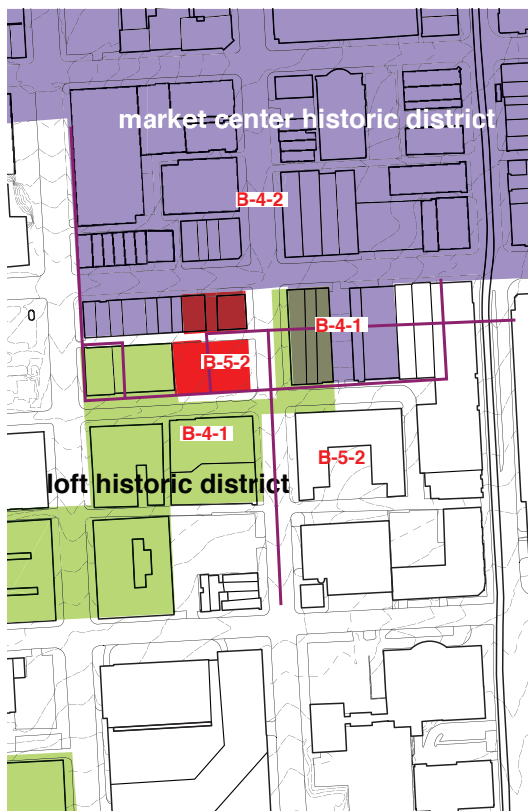


Figure 25_ Site conditions: historic districts, topography sloping towards the top of the image, rail transit to the right, and zoning district overlay (site FAR is 14.0)

3. Opportunity to create a cultural node that knits together existing institutions.

Proximity to cultural organizations is important to consider as this place will partner with and support these existing facilities. The site is situated between the Bromo Seltzer Arts Tower, studio work space for artists, and the Hippodrome

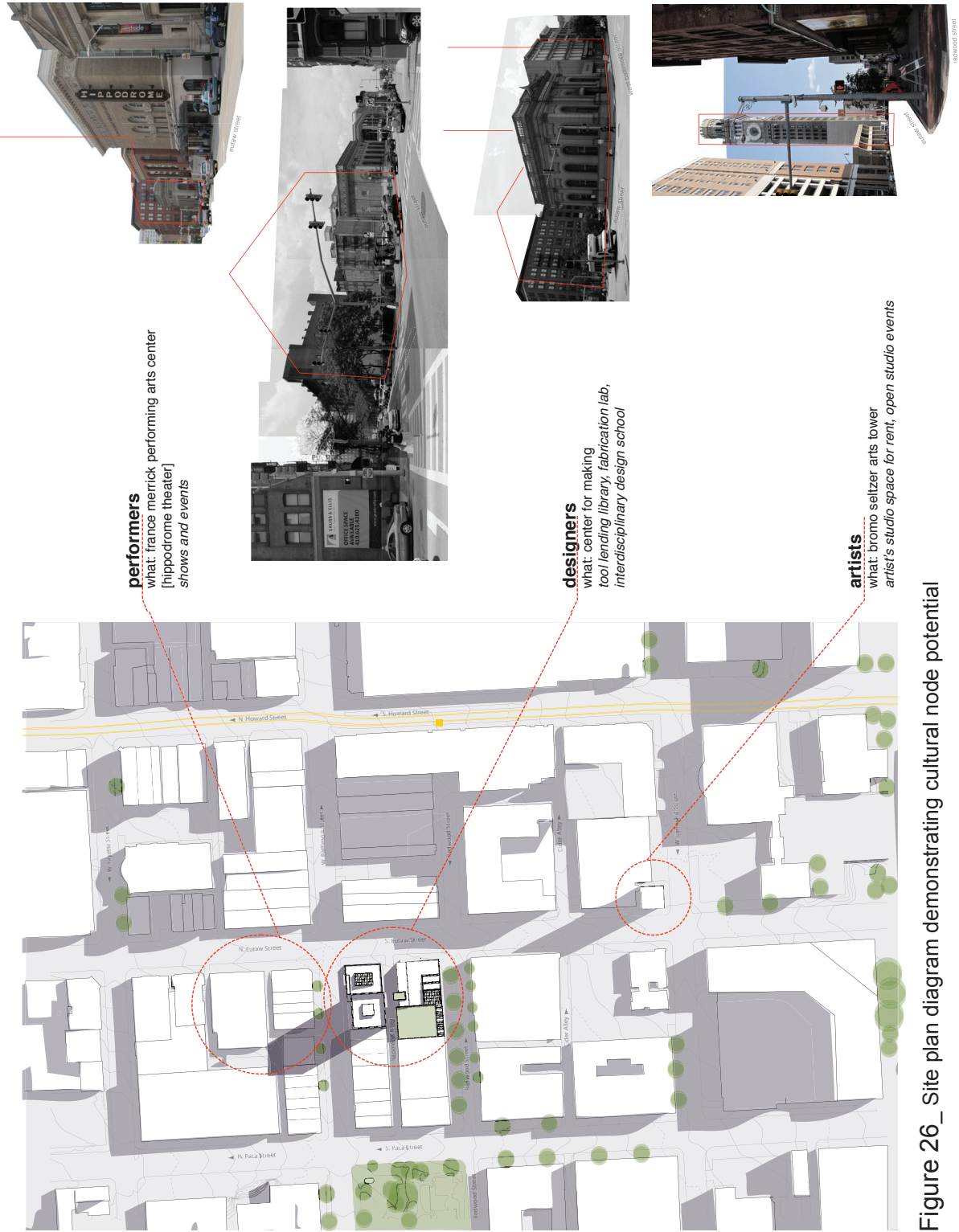


Figure 26_ Site plan diagram demonstrating cultural node potential

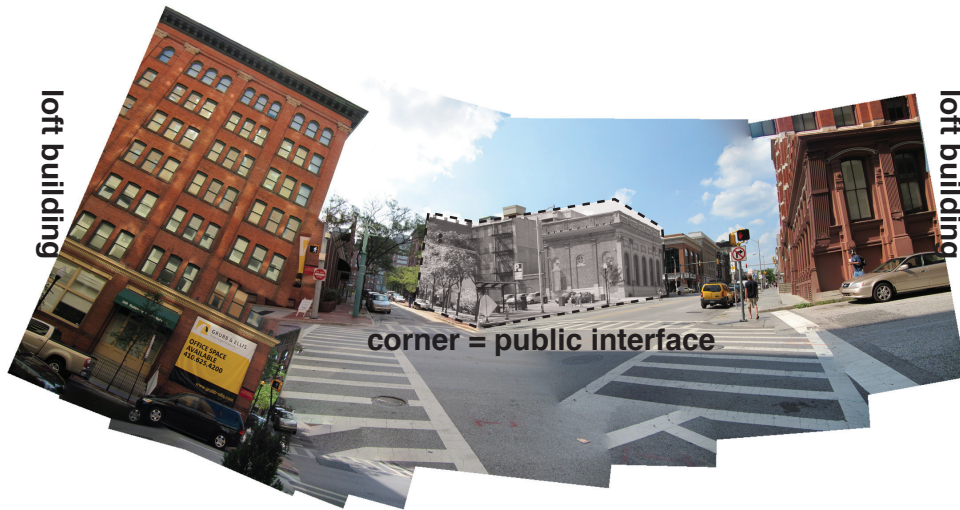


Figure 27_ Southeast corner at redwood and eutaw streets



Figure 28_ Site at the northeast corner of west baltimore and eutaw street

Theater. The Center for Making would connect performance and art with design.

4. Dense urban street condition.

An urban site will capitalize on accessibility, centrality and public exposure. A tight urban infill condition and an open, corner site bridging an alleyway will be explored. Site footprint is purposefully small to push people through a vertical spatial sequence and to utilize the urban roofscape.

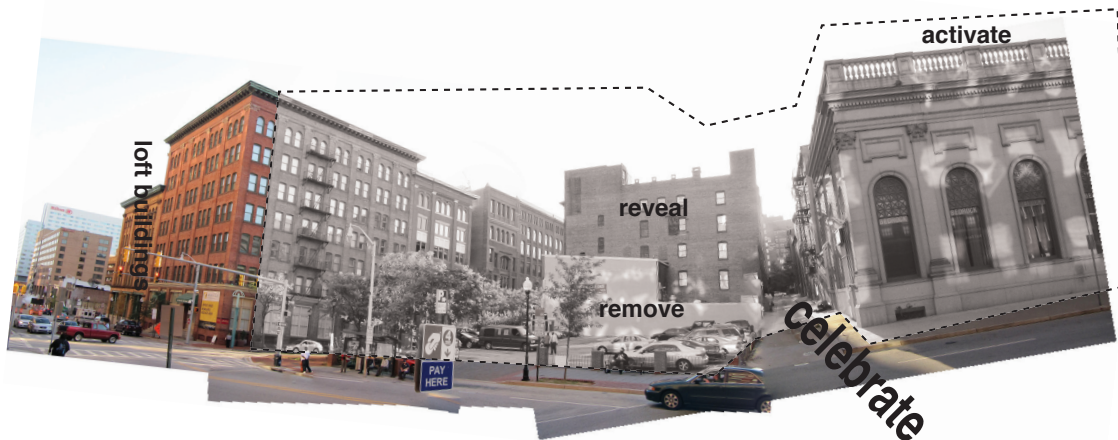


Figure 29_ East side of the site with the loft buildings to the south and west and the alleyway as the connection between north and south buildings

5. History and culture.

If this building is to nurture a local culture, it should find a way to build upon the city's existing cultural capital by revealing existing histories. The site is at the intersection of two historic districts, Market Center and Loft. The building embeds itself, literally, into the fabric of the neighborhood nestling between a beaux arts bank building and a row of historic retail buildings. It maintains the service alley which dates back to the origins of the city. The history of the site is inspiration and cultural capital in the design.

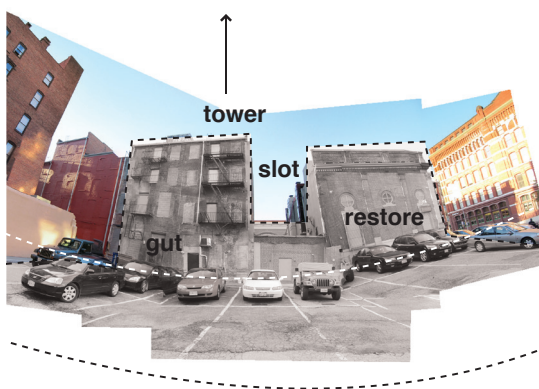


Figure 30_ Site conditions of the existing structures. south side

6. Urban public space opportunities.

The site should have design opportunities for a public interface as a way to spread ideas throughout the city. The site offers a diversity of streets, one primary eastbound street into the city, one north south street and a quite tree lined street.



Figure 31_ Historical context images. cast iron fronts are to be restored in the architectural proposal, while the interior masonry bearing walls are to be torn down in order to insert the housing tower. retail use at the ground floor will be maintained here. the bank building will be restored to its original single volume space and a new skylight will be added.

A public alleyway at the center of the two sites is an opportunity to activate that public space on multiple levels. Buildings of a modest are opportunities for rooftop activity to activate the street life.

Site History and Palimpsest

This area of Baltimore has a rich history to contribute. Stylistic changes, cultural trends, business growth and decline, decay and finally rebirth are embodied in the urban fabric. Once a vibrant garment district, the loft buildings today are a tremendous benefit to the area because they convert well into housing which adds density to the area. The eclectic buildings fronting West Baltimore Street are some of the oldest structures in the city, dating to the mid nineteenth century. These buildings have recently been restored and are looking for tenants. The city has been a catalyst in the revitalization of the

“Westside” area over the last decade, restoring it to a safe and culturally vibrant part of the city. Their financial contributions have brought two significant cultural buildings back into their former glory, the Bromo Seltzer Tower and the Hippodrome. Investors have built housing and hotels as the location is close to downtown, the waterfront attractions and sports venues. The site context is wonderful inspiration for the architectural investigations of the Center for Making.

Site History

Referred to as the N. Hess & Bro. Building, the two cast iron fronts at 407 and 408 West Baltimore Street were erected about 1875. The structures are listed in the National Register as contributing to the Market Center Historic District Designation. They are not listed on their own. The original first floor storefront is obscured by a brick wall, which extends across both buildings. The cast iron façade is intact on the upper stories and is a significant representation of a full cast iron facade, only nine of which remain in the city (of originally over one-hundred). It has operated as a shoes wholesaler, a clothier, a grocery, and various other uses. In 1983, the property was joined with the adjacent building.

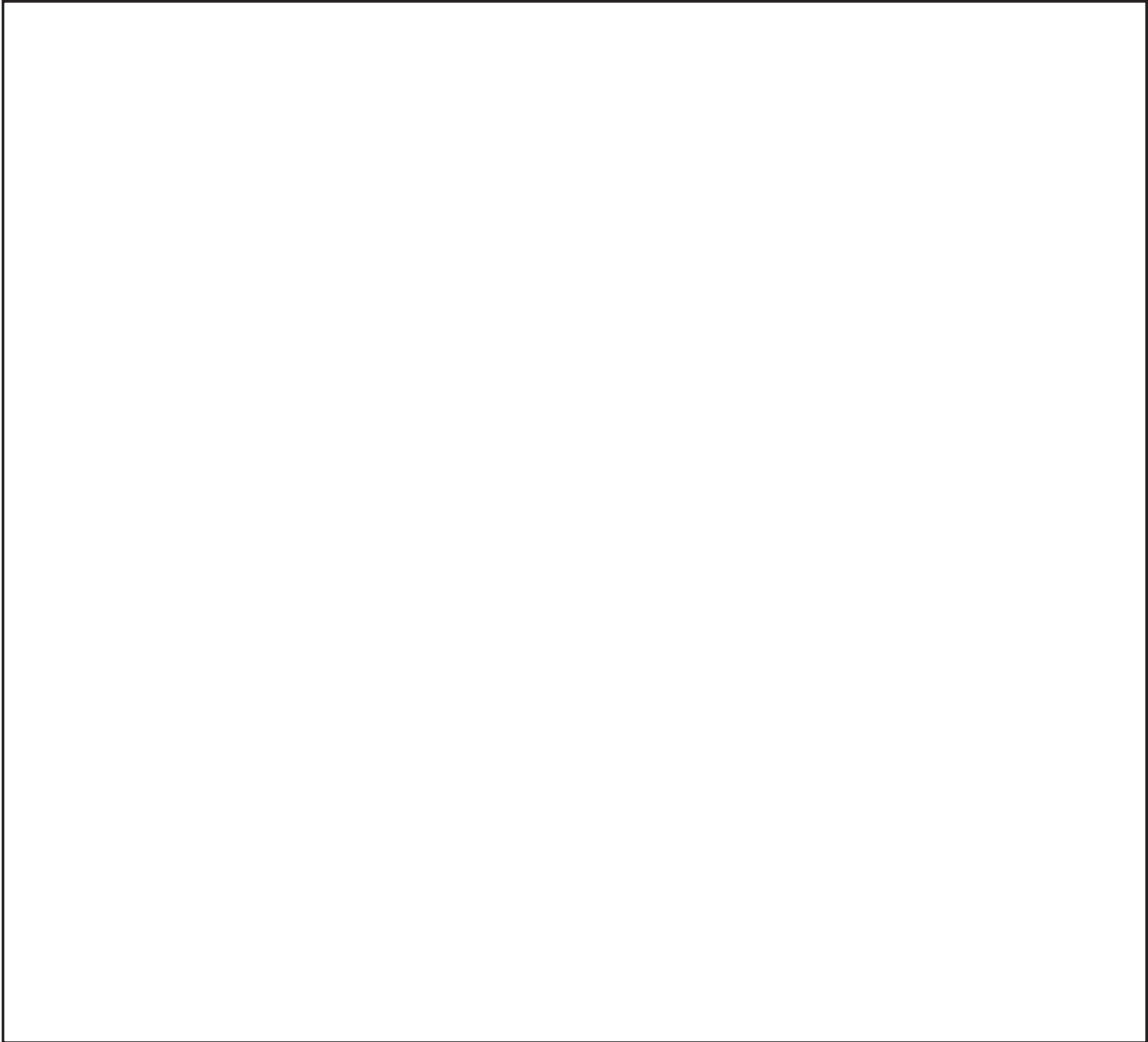


Figure 32_ Map is a sanborn map from 1880. note west german street is now redwood street (named after the first baltimore soldier killed in world war II). on the plan is the business operating out of the block and it is important to note that this area was historically a place where things were made, an industrial center. the elevation drawing above dates to 1885 and shows the same storefronts that exist today.

Napoleon Alley centers the site. It runs east west and has been part of the city maps since the beginning. It runs a single block only and always has. Other alleyways are named in the area, such as Cider Alley, however none of them only go one block. This is curious, but further documentation was not found on the subject. The alleyways were given names because people lived on them and needed to be found. Napoleon Alley is characterized by iron fire escapes

adorning functional, brick exteriors. In the summertime, light from the west shoots down the full length of the alley revealing the rich textures of the brick and iron fire escapes. The park to the west allows this to happen. Today, the alleyway is a functioning service street for trash pickup.

The German Savings Bank originally occupied a masonry cast iron building as seen in the elevation drawing above. A fire devastated Baltimore in 1904 destroying many of the buildings. The German Savings Bank chose to rebuild in the contemporary Beaux Arts style of the time. The brick masonry building clad in stone is marked on the pediment by the date 1905. The building fronts West Baltimore Street, the primary street. The back of the building reveals its brick structure, but is more articulated than is typical here with impacted columns, capitals, windows and a continuous cornice. This supports the idea that Napoleon Alley was originally more than just a service street. The German Savings Bank building has functioned as a bank for most of its life. In the 1980's it was operated by Centra Bank who used the slot site to the west as a drive through teller window with an exit out into Napoleon Alley. No interior photographs of the building were found



Figure 33_ Bank building historic image showing the original buildings to the west and south.

previous to its most recent use as a club. Through researching other buildings of the same style and period in Baltimore, the conclusion can be made that the interior space was originally one space, possibly with a skylight at the center.

Palimpsest

The site area is an eclectic mix that continues to grow and evolve. “The only constant is change.” said Lewis Mumford. And Baltimoreans are certainly welcoming of change and growth. In this city, history is seen in the context of the new. The Hippodrome Theater and Brown Center projects are two examples of adaptive reuse projects in the city that look forward while being conscious of the past.

Hayward and Shivers notes the projects in their book “The Architecture of Baltimore”. The existing urban fabric is maintained in both cases and adapted to suit the needs of today. The Hippodrome project layers glass behind the brick facades as a ghosted ribbon knitting the buildings together. The Brown Center outwardly engages the street and city through a parasitic relationship with the historic context, juxtaposing solid and void. Both projects are cultural symbols rich with time and place and contribute to a vibrant, palimpsest urban realm.

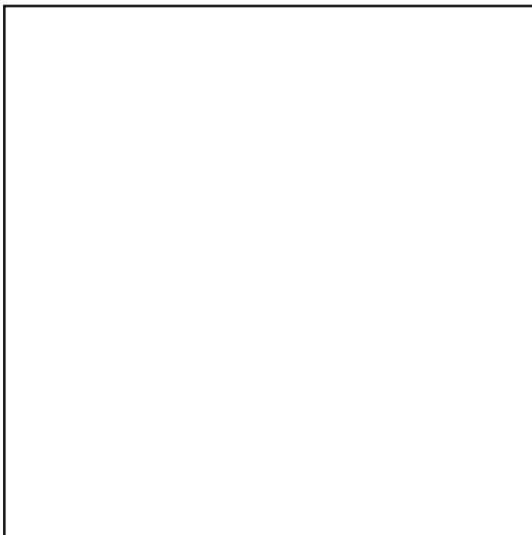


Figure 34_ Old and new together in Baltimore. source: Hayward and Shivers, “The Architecture of Baltimore”

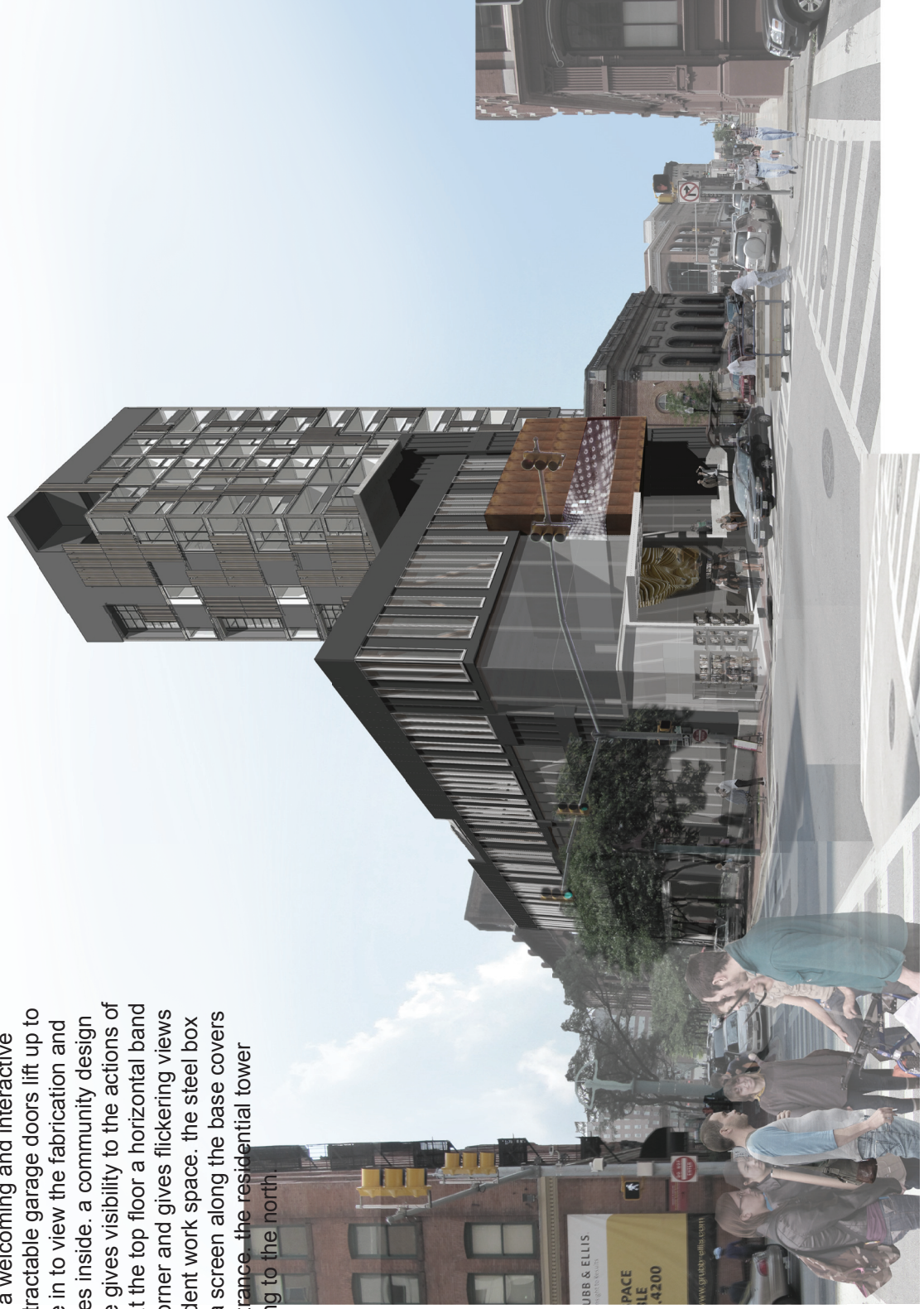
architectural response

The massing of the building responds to site conditions and historic context and the idea that the roofscapes of the buildings should contribute to the public realm. The building is contextually massed at 70 feet for the south building and a 220 foot tower rises to the north for maximum access to light and air in the residential units. The roof of the bank building at 40 feet is utilized as outdoor dining space. The buildings bridge the alley at the ground floor, with fabrication and tool lending programs that utilize that space for expanded work space and for loading. An elevated bridge connects the interior spaces at the cafe and student studios, as well as from the roof over to the cafe mezzanine.

The building shares, mixes and nurtures a local culture of makers by locating retail, gallery and tool lending programs on the ground floor. There is some vertical slippage of space with the tool lending library wrapping down to the basement level and the community studios located on the second floor. Programming the cafe on the fourth floor of the north

buildings allows for people to come across from the Center for Making to get some coffee or have a bite to eat, and allows the gallery roof to be programmed outdoor space. Design student space is located on the fourth floor, where the interior bridge spans the alley. A collective workspace and flexible media room or lecture space at the center of the two studio wings (east and west) is shared by the public and the design students. This “void” in the building cuts through north-south and connects West Baltimore Street with Redwood Street. On Redwood Street it is a glass curtain wall with transparency through two glass lifts that move vertically along the alleyway, adding dynamism to this reclaimed “street” and highlighting activity that might be taking place there. On West Baltimore Street, it is also a curtain wall with a scaffold for accepting art installations. This is a surface for exploration and creativity. It could be an extension of the gallery exhibitions or a product of the work done at the Center for Making that can give visibility to the Center along a heavy commuter street.

Figure 35_ The building corner engages the public in a welcoming and interactive interface. retractable garage doors lift up to invite people in to view the fabrication and design spaces inside. a community design studio above gives visibility to the actions of the center. at the top floor a horizontal band wraps the corner and gives flickering views in to the student work space. the steel box with a media screen along the base covers the main entrance. the residential tower raises beyond to the north





corner of west baltimore and eutaw street

Figure 36 _ the roof of the bank building has been utilized as an outdoor cafe, while the solidity of the nearly square structure is maintained and played off of. the solidity of the volume rising from the Center for Making (BCM) along the alley becomes transparent as one turns the corner. Light from seminar spaces and the main stair help activate the alley. the cornice lines along West Baltimore Street have been maintained and the infill site is a simple storefront window who's floor plates align with the cast iron buildings that will be restored.



Figure 37_ the corner of the BCM is flexible and opens up welcoming people. a newsstand with "how to" magazines compliments the view of the fabrication lab behind a canted curtain wall. along the shady, quiet Redwood Street is a sitting area with a window into the fabrication space. the vertical glass curtain wall is seen just beyond this which cuts through to W. Baltimore Street. Further down, hanger doors open up to showcase the tool lending library and draw people in. to the right of the newsstand is the main entrance with a terraced sitting area for visitors.

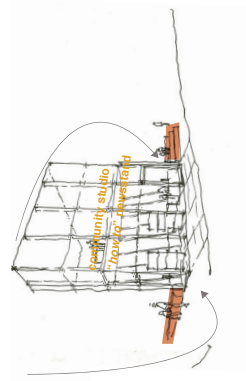
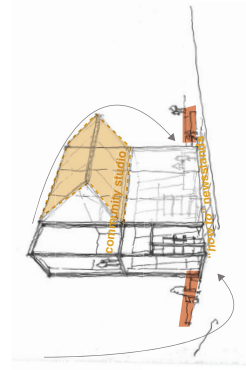
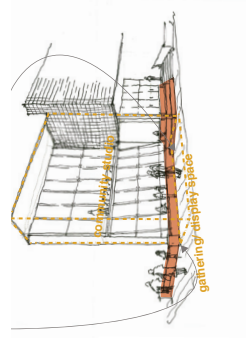
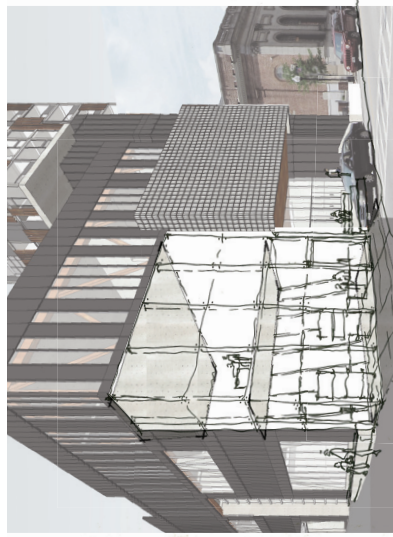
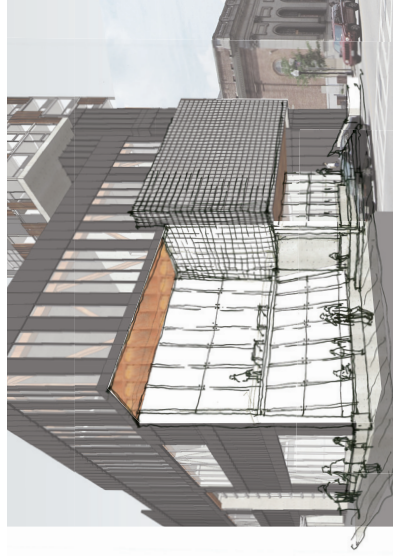
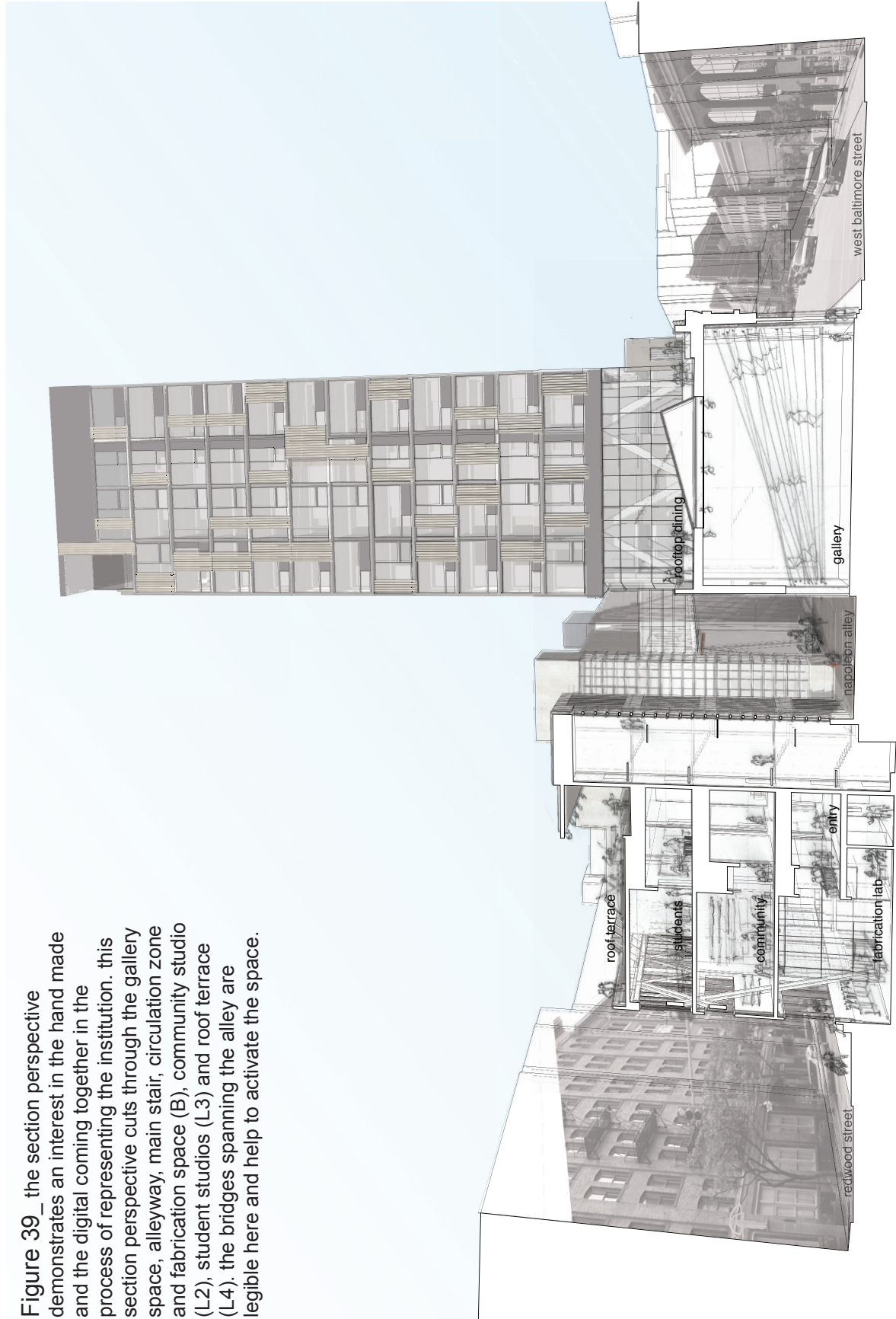


Figure 38_ several options were investigated for the corner. the final solution hybridizes all three and offers a glazed condition as the image on the right suggests, or it can open up and engage pedestrians.

Figure 39_ the section perspective demonstrates an interest in the hand made and the digital coming together in the process of representing the institution. this section perspective cuts through the gallery space, alleyway, main stair, circulation zone and fabrication space (B), community studio (L2), student studios (L3) and roof terrace (L4). the bridges spanning the alley are legible here and help to activate the space.





D= design **F= fabricate** **M= make** **E= exhibit**

digital + physical processes of making

using machines to cut, etch, smooth

working with the hands to design + assembly

visibility + public interaction with design work

design process axonometrics @ 1/16" = 1'-0"

Figure 40_ the north and south buildings, commercial, residential, community and educational uses are united through the design process. the design process here is broken down into design, fabricate, make and exhibit. these spaces can be seen in these section axons as they track through the south building (1, 2) and north building (3, 4).

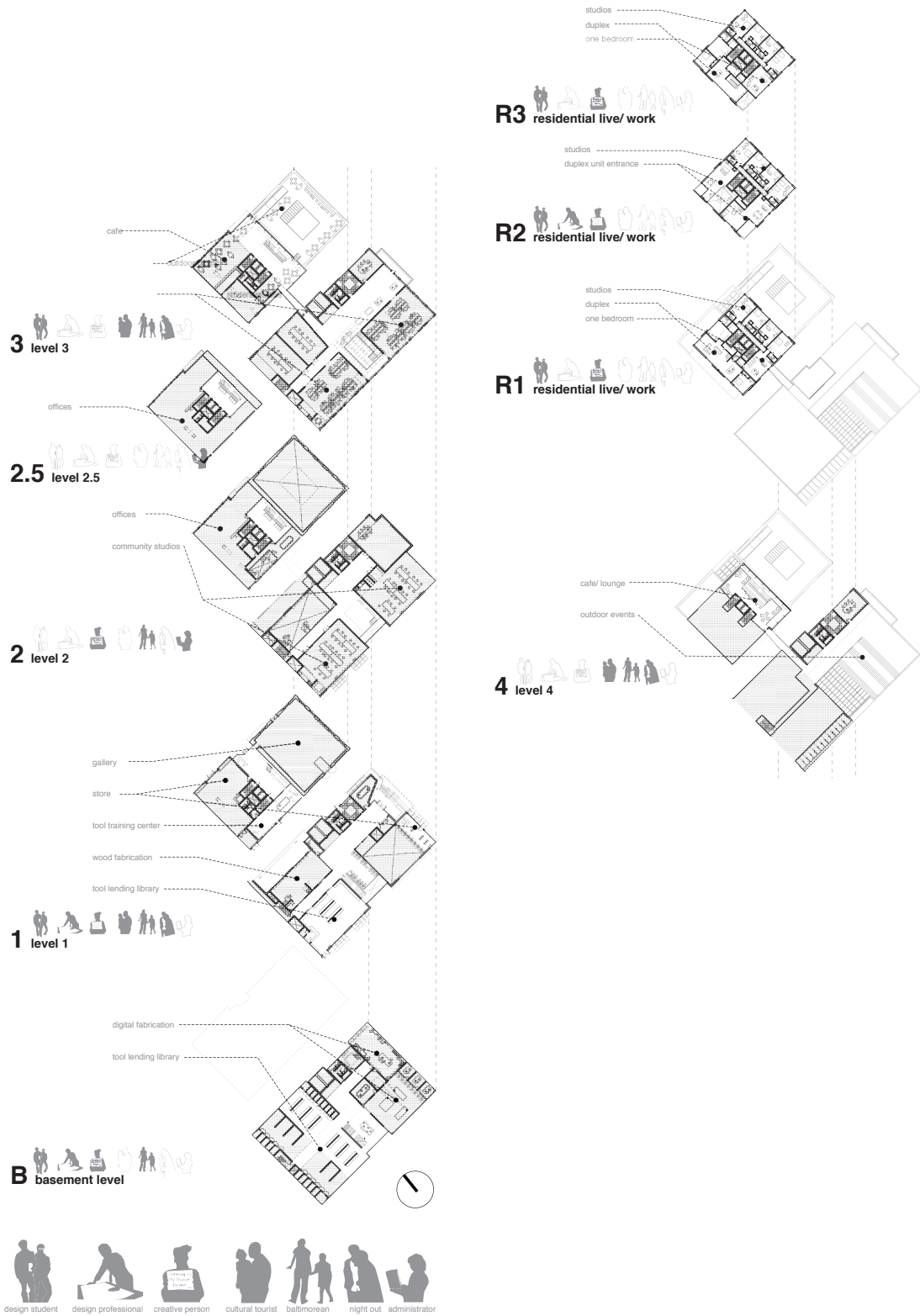
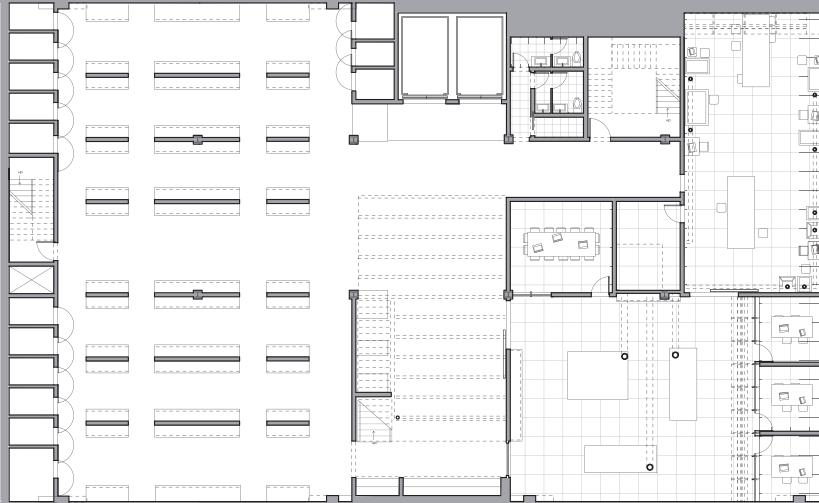


Figure 41_ stacked floor plans showing user groups and program distribution.



-12 feet

B basement level

I scale 1/8" = 1'-0"

Figure 42_ fabrication and tool lending spaces

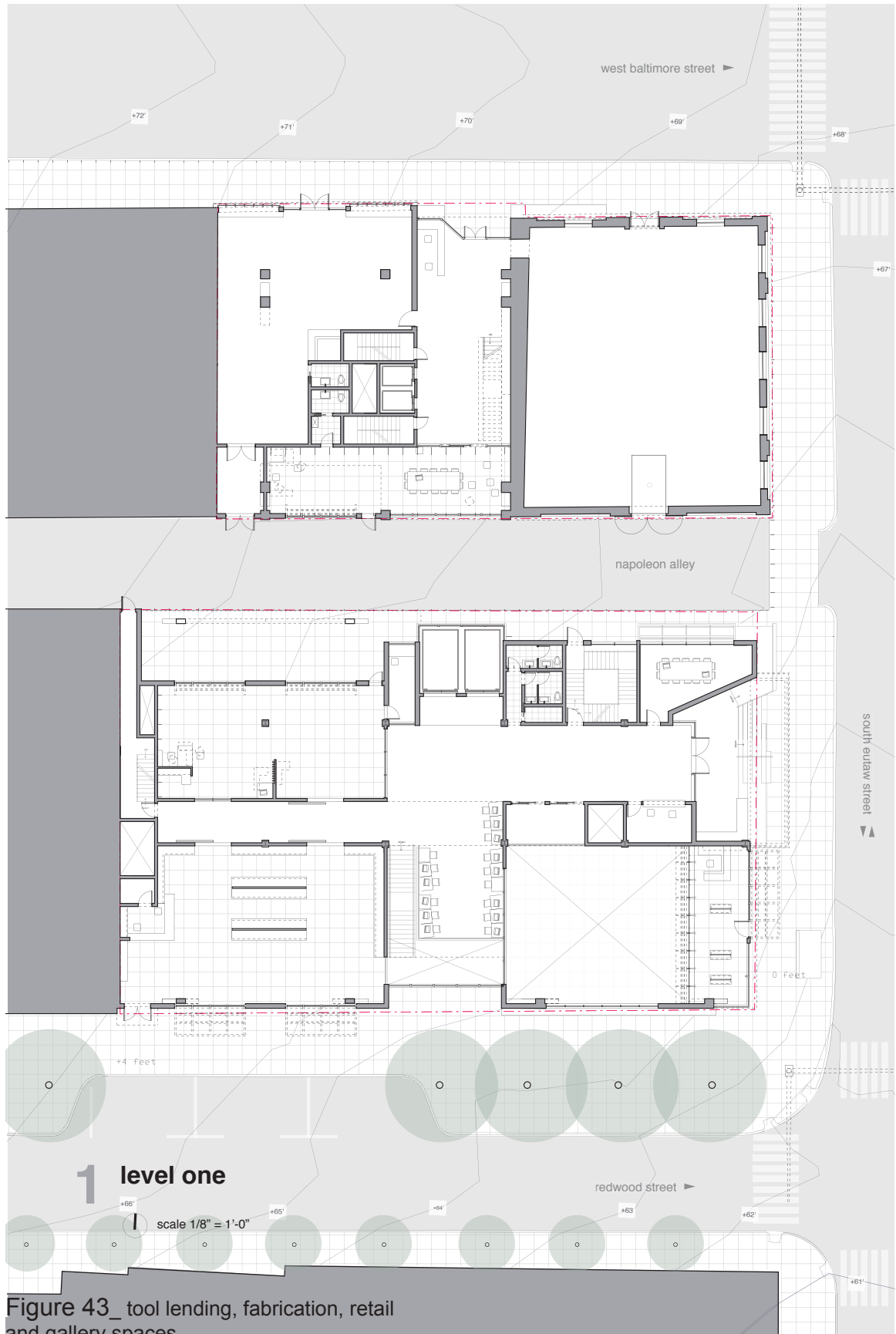
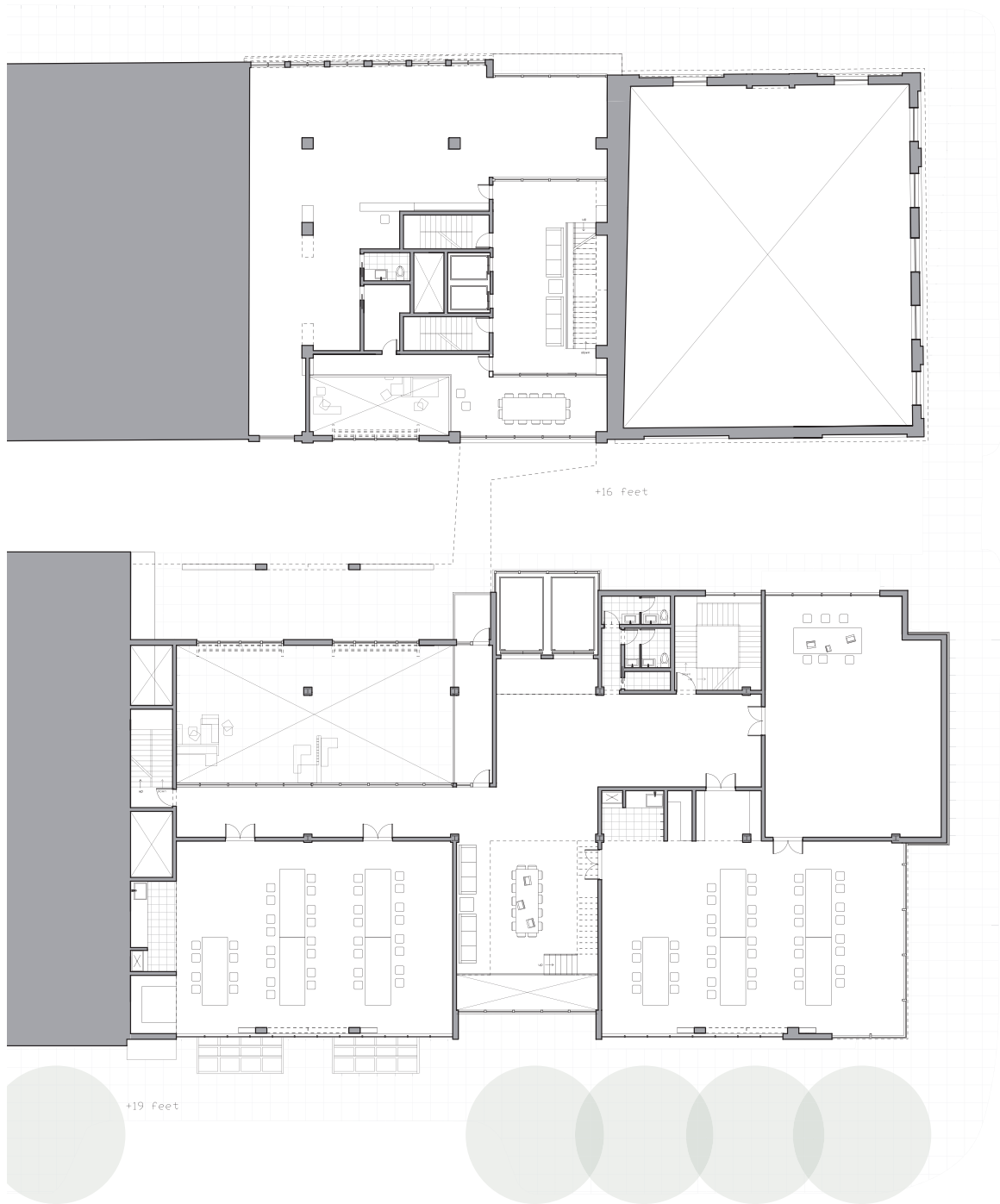


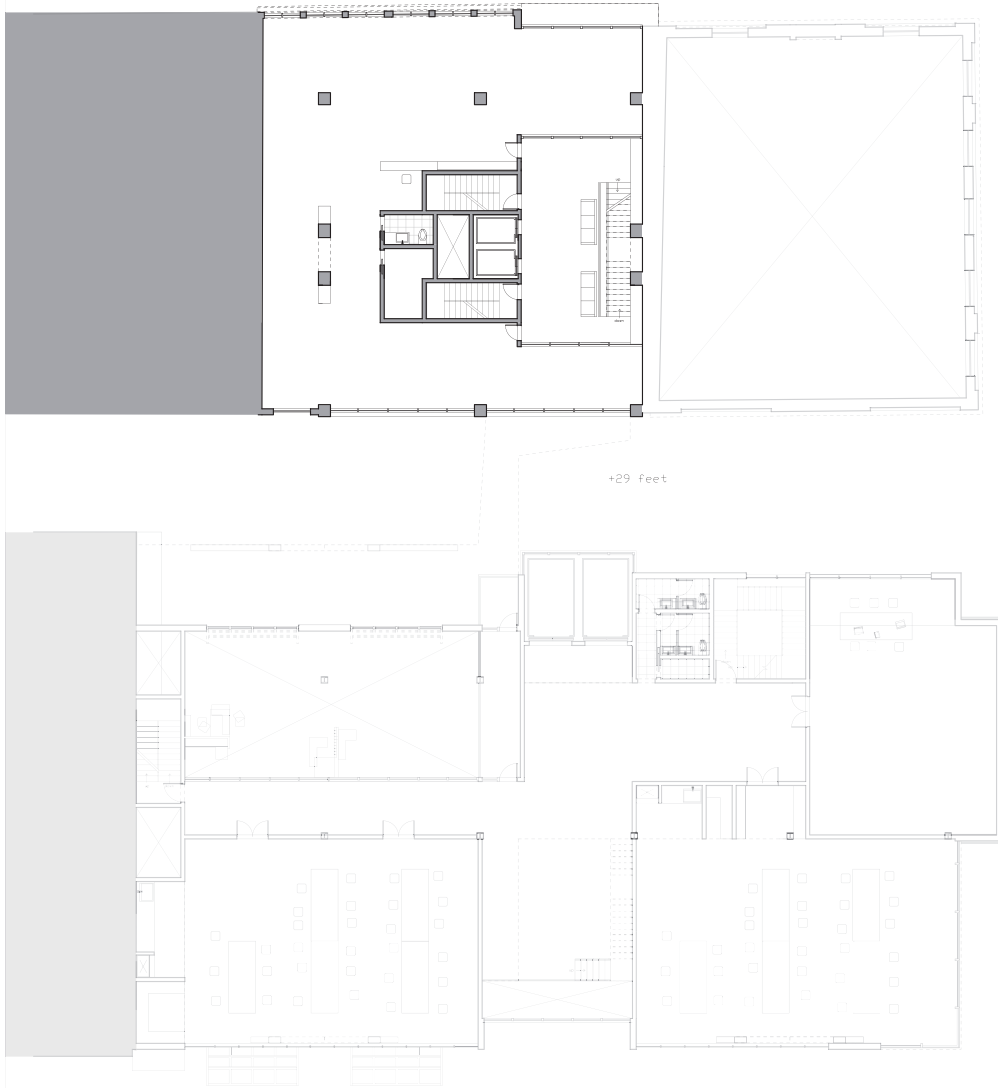
Figure 43_tool lending, fabrication, retail and gallery spaces



2 level two

scale 1/8" = 1'-0"

Figure 44_ community studios, media lab, and offices



2.5 level two.five

scale 1/8" = 1'-0"

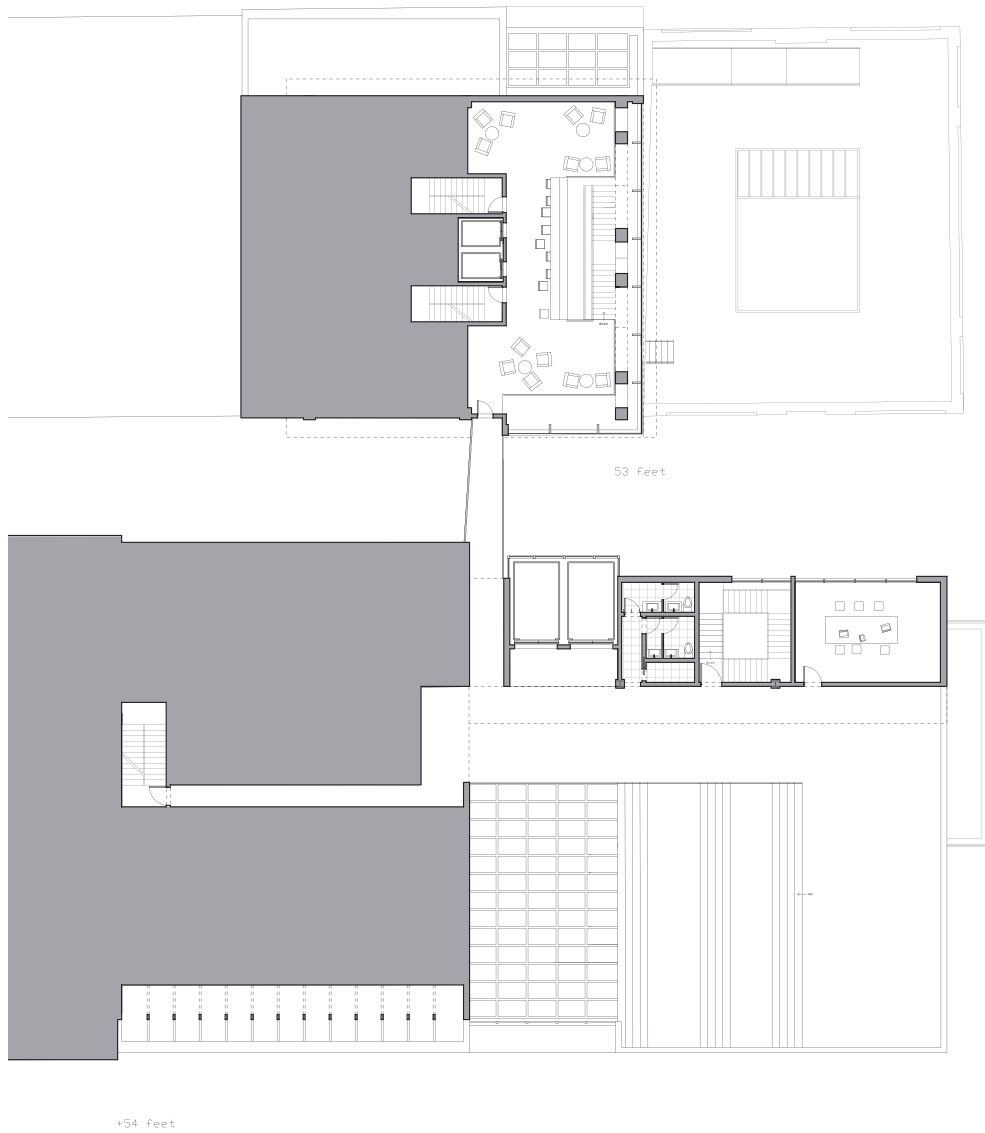
Figure 45_offices



3 level three

scale 1/8" = 1'-0"

Figure 46_ student studio space, bridge to cafe and outdoor dining



4 level four

scale 1/8" = 1'-0"

Figure 47_ roof terrace for working, events, or movies, cafe mezzanine

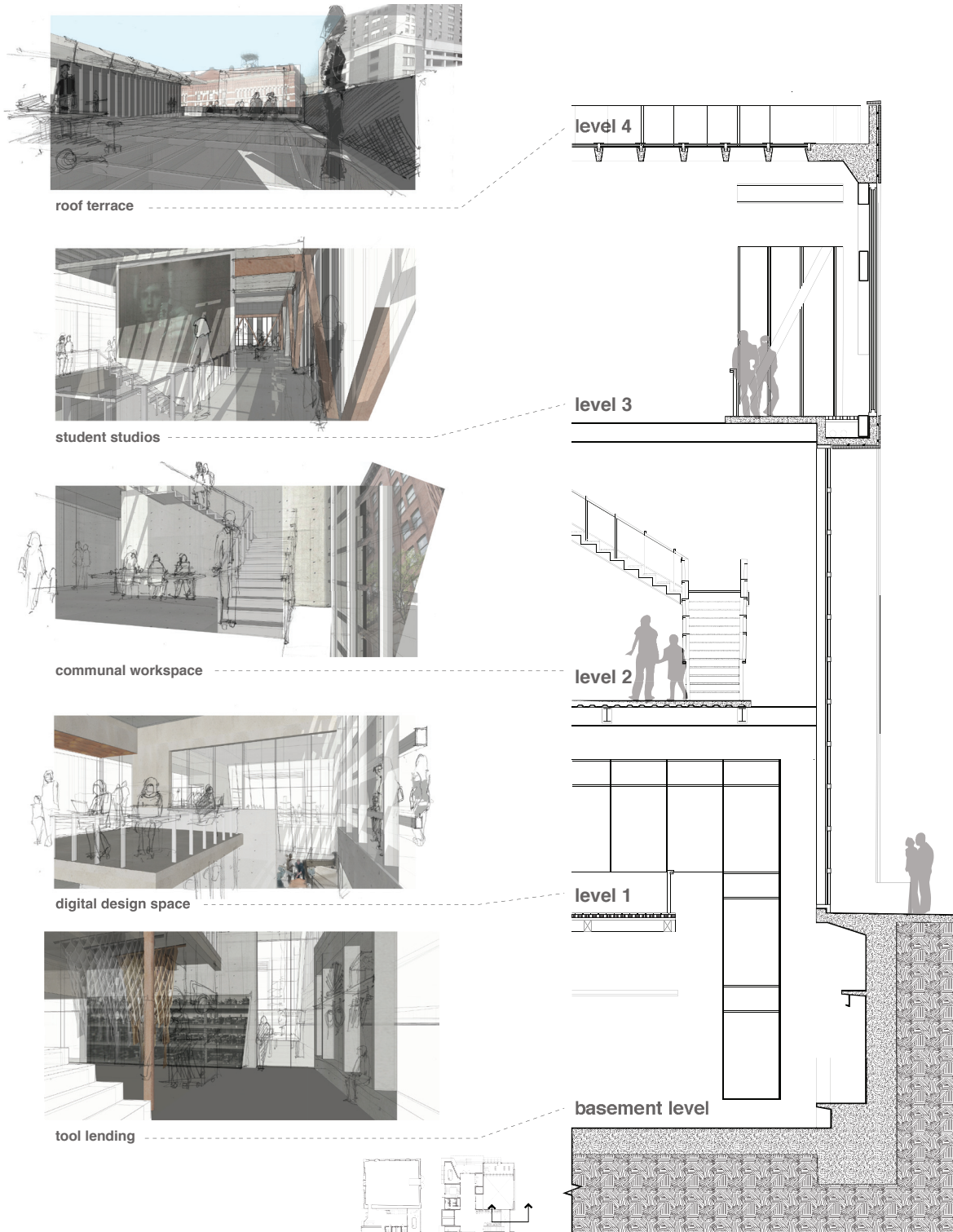
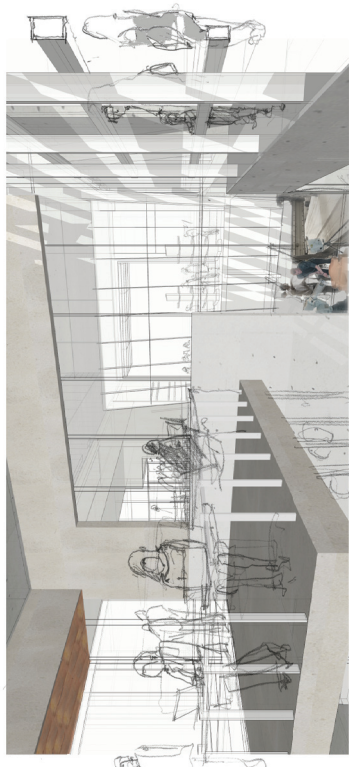
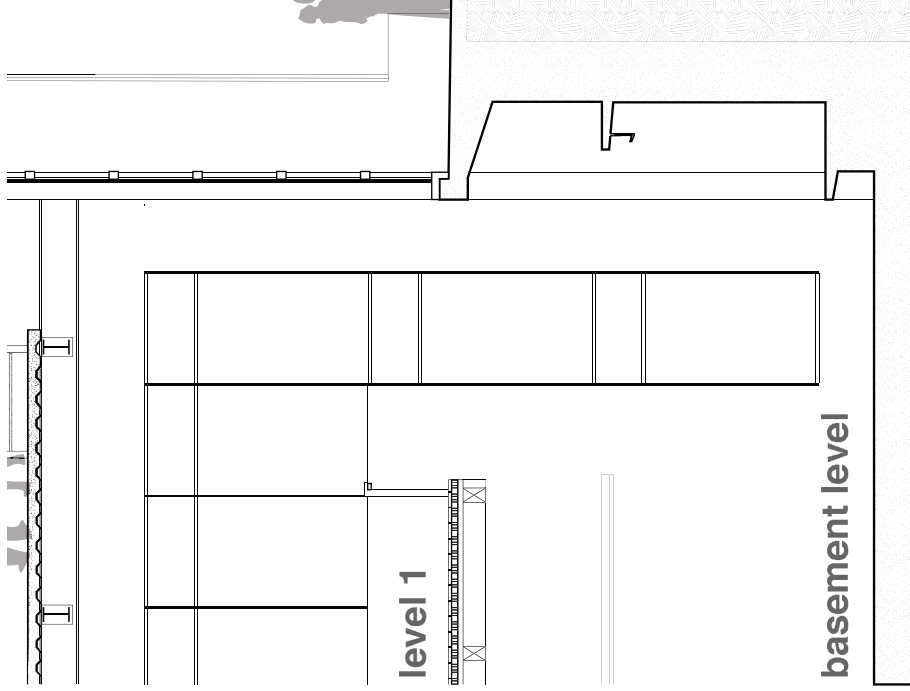
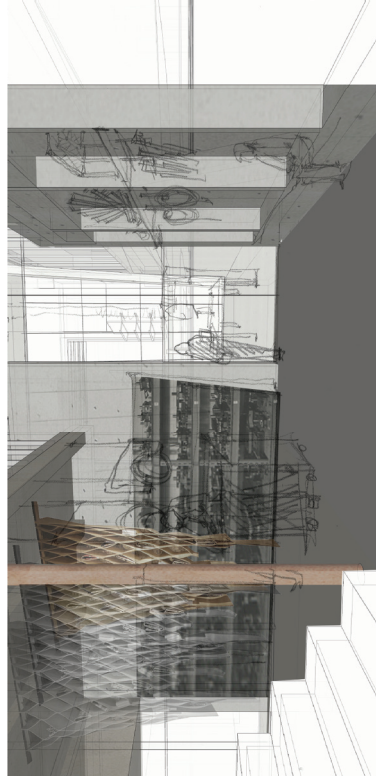


Figure 48_ detail section through “void” that connects the project north and south with vignettes

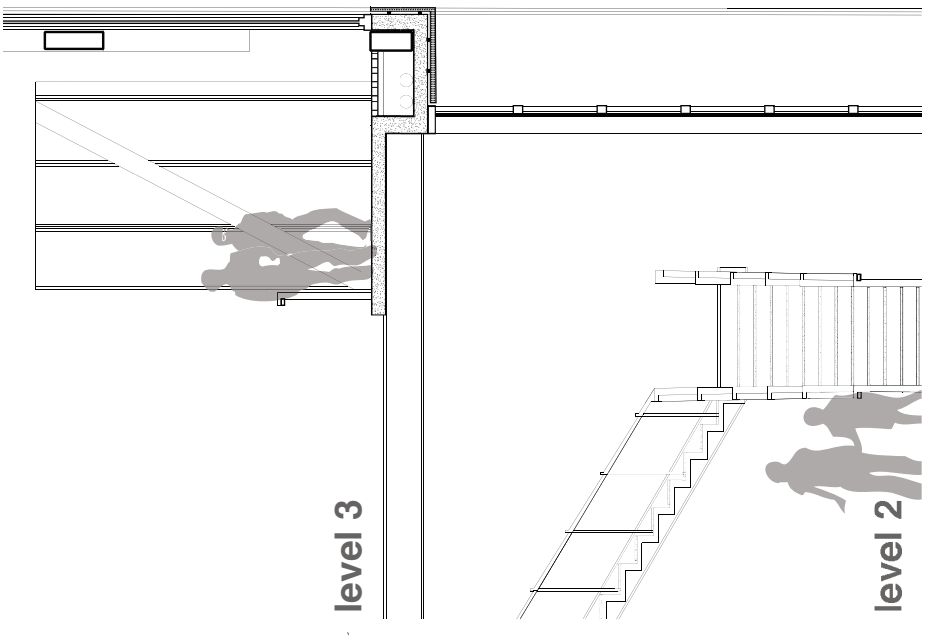


digital design space



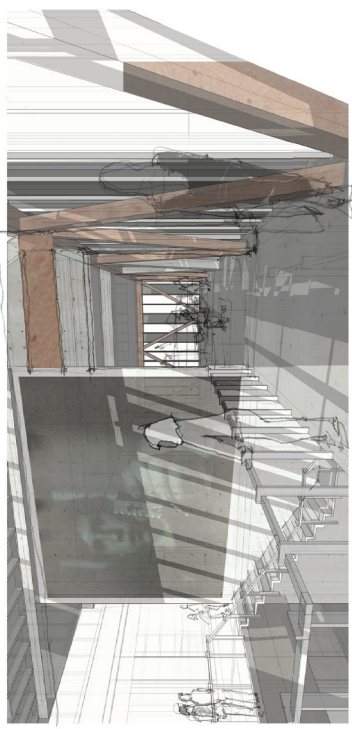
tool lending

Figure 49_ detail of the basement and ground floor levels. basement detail and vignettes show tool storage, works in progress storage and views into the fabrication lab. level one shows the digital design platform with views into the fabrication space and an onlooker from the street.

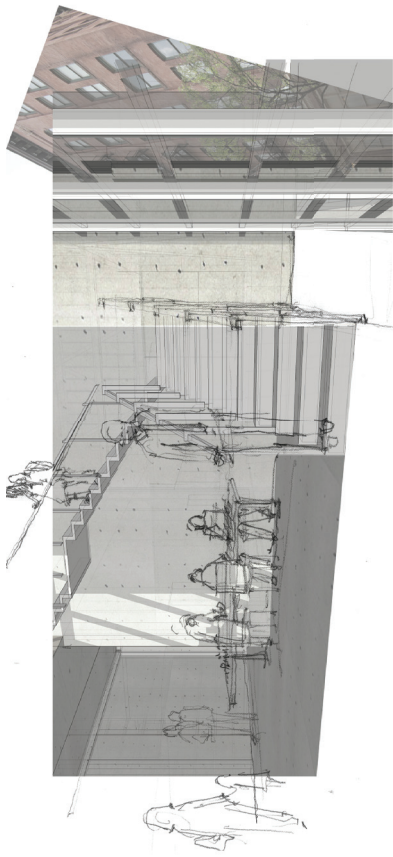


level 3

level 2

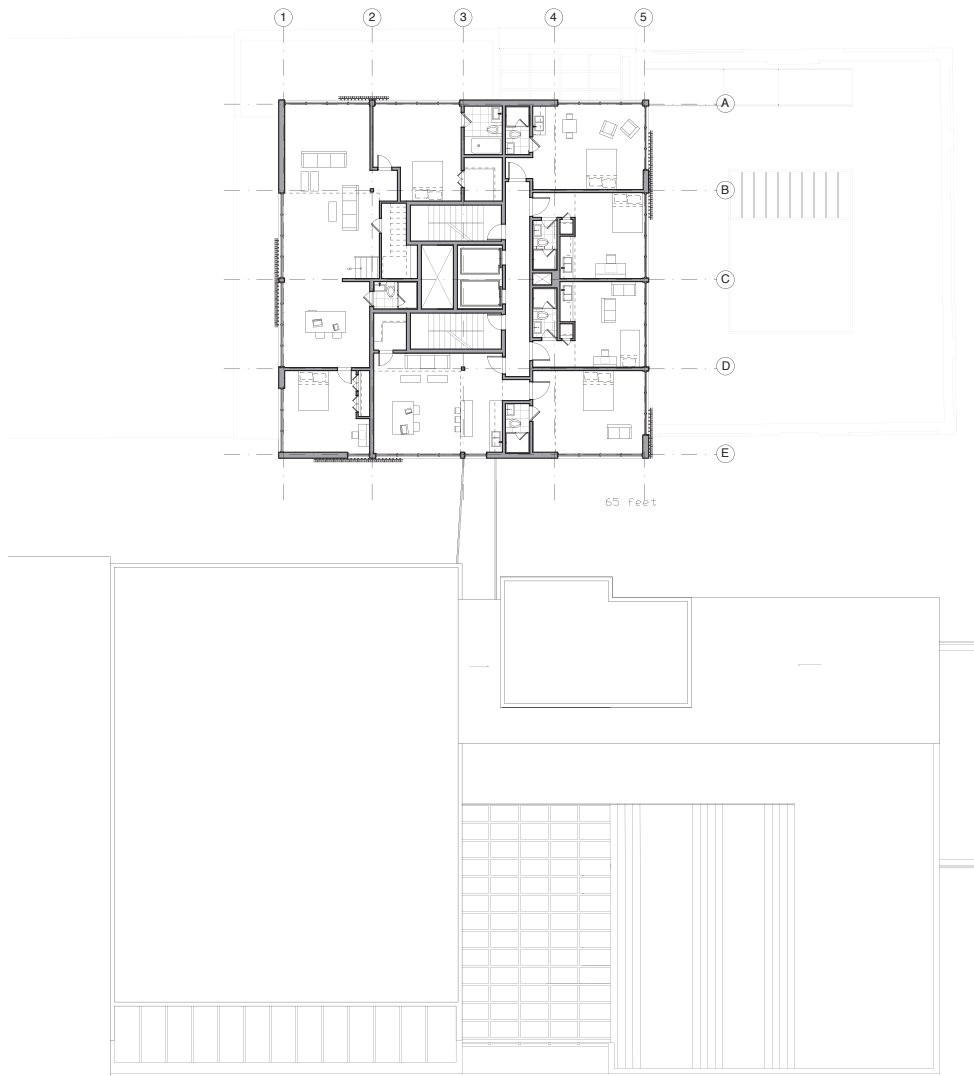


student studios



communal workspace

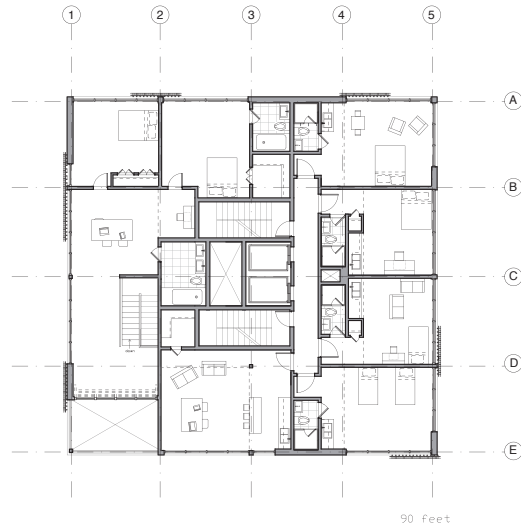
Figure 50_ detail of levels 2 nd 3, a double height space shared by community and students. it is flexible as work space, crit space or for lectures. the second floor opens down to the spaces below while the roof of this space is structural glass, so that the activities on the roof are visible.



R1 residential one [4, 7, 11]

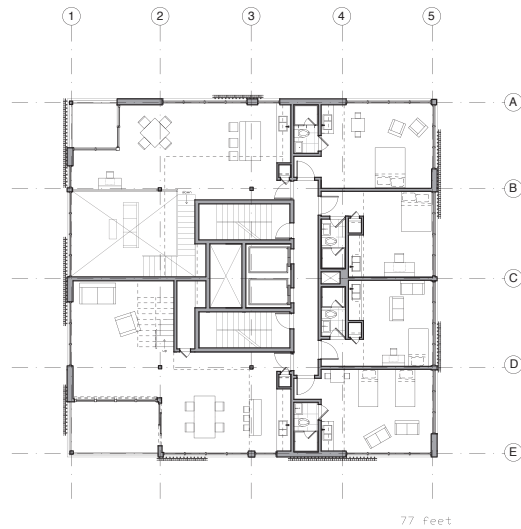
scale 1/8" = 1'-0"

Figure 51_ student studio apartments are located to the east while two bedroom live/work duplexes are on the west side of the building.



R3 residential three [6, 9, 12]

scale 1/8" = 1'-0"



R2 residential two [5, 8, 11]

scale 1/8" = 1'-0"

Figure 52_ the residential tower repeats four times in groups of three floor plans. R2 is the level of entry for the duplex units. one unit has stairs that go up and the other's stairs go down. in addition, there are two one bedroom units every three floors. this could be a faculty or graduate teaching fellow's unit.

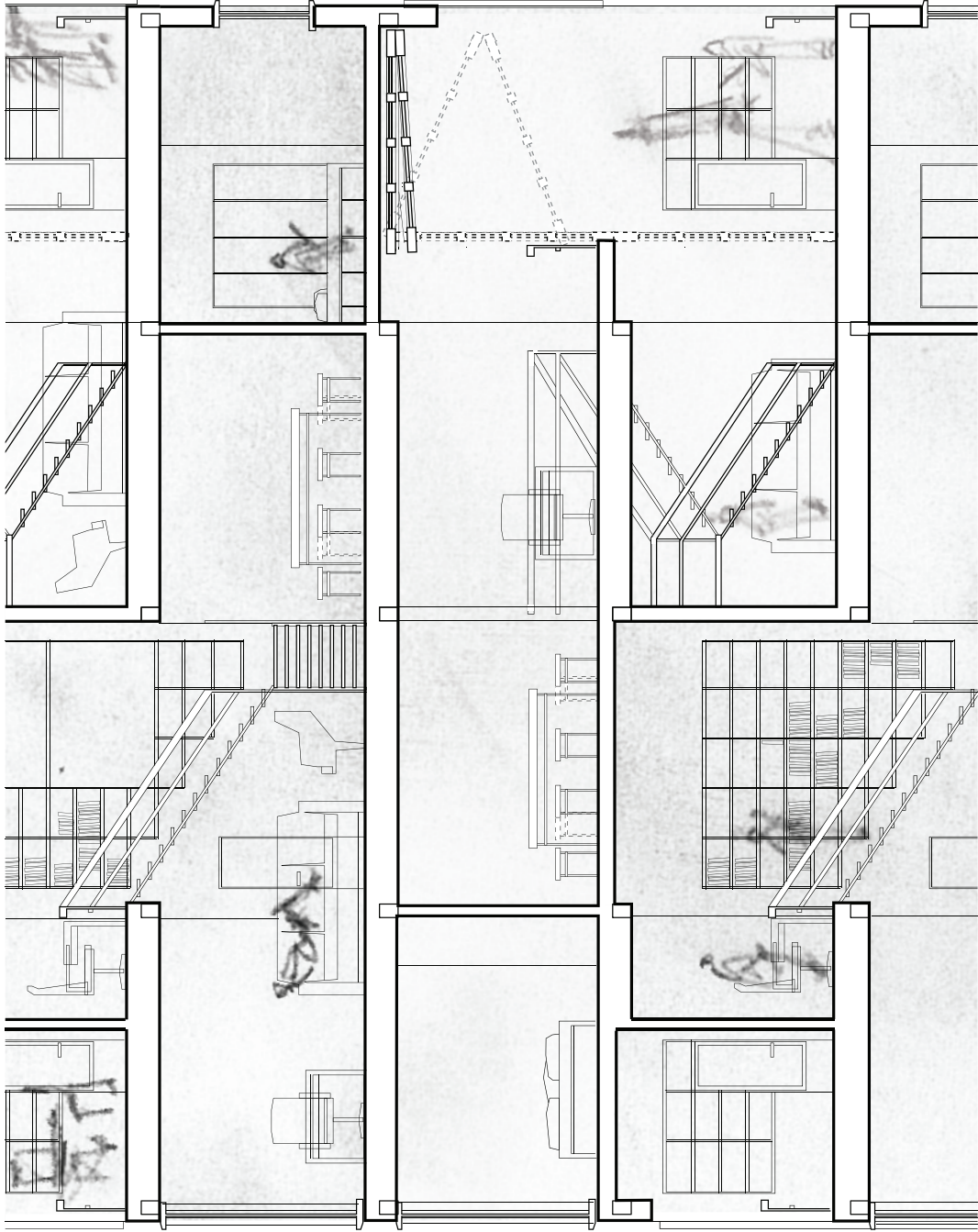
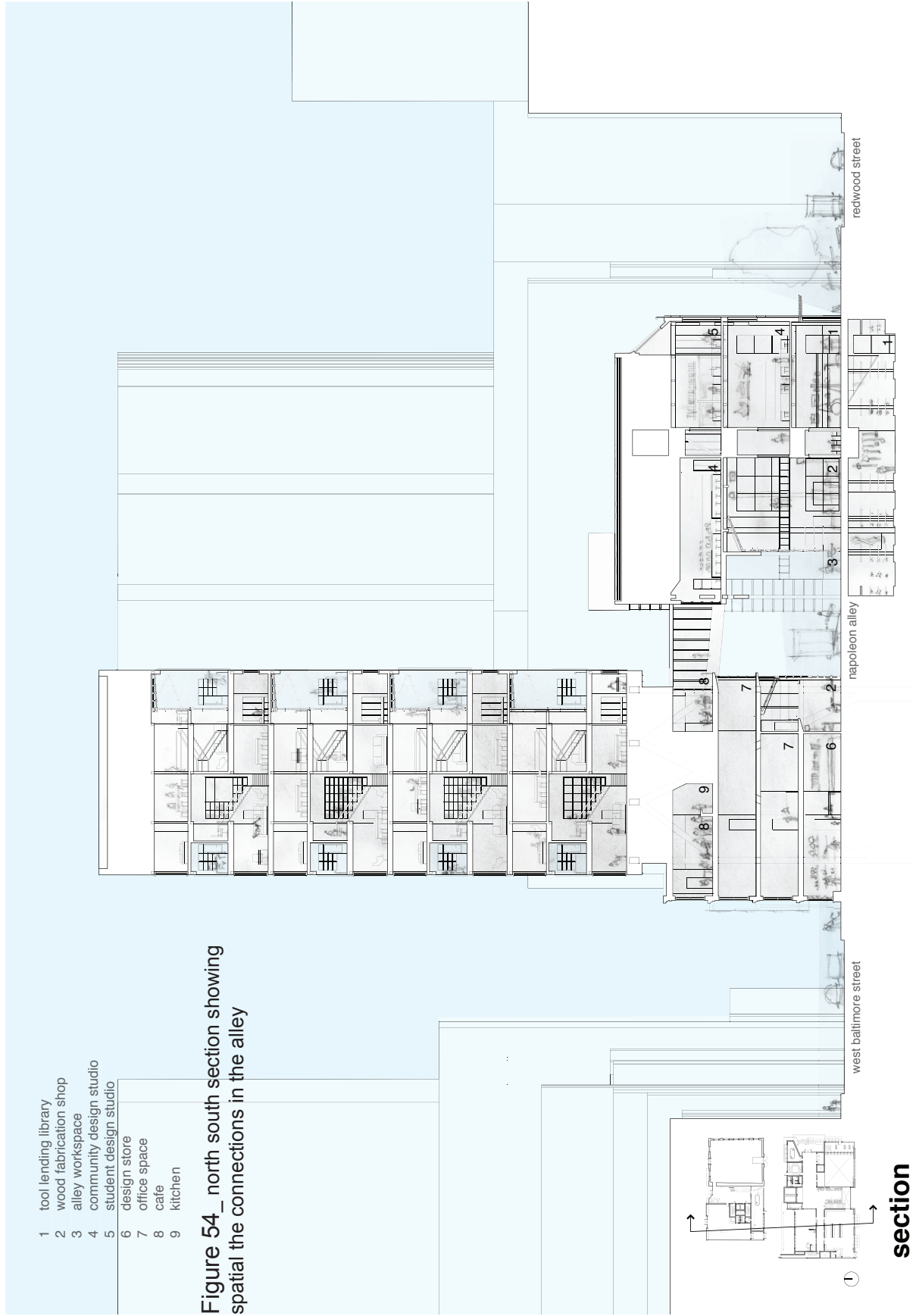


Figure 53_ a detail section of the duplex units. each unit has an outdoor space and a double height space. they have two bedrooms and two bathrooms with flexible, open work space. this housing is meant to be market rate, while the one bedroom and studio units could be rented to students at the BCM or at market rate if necessary.

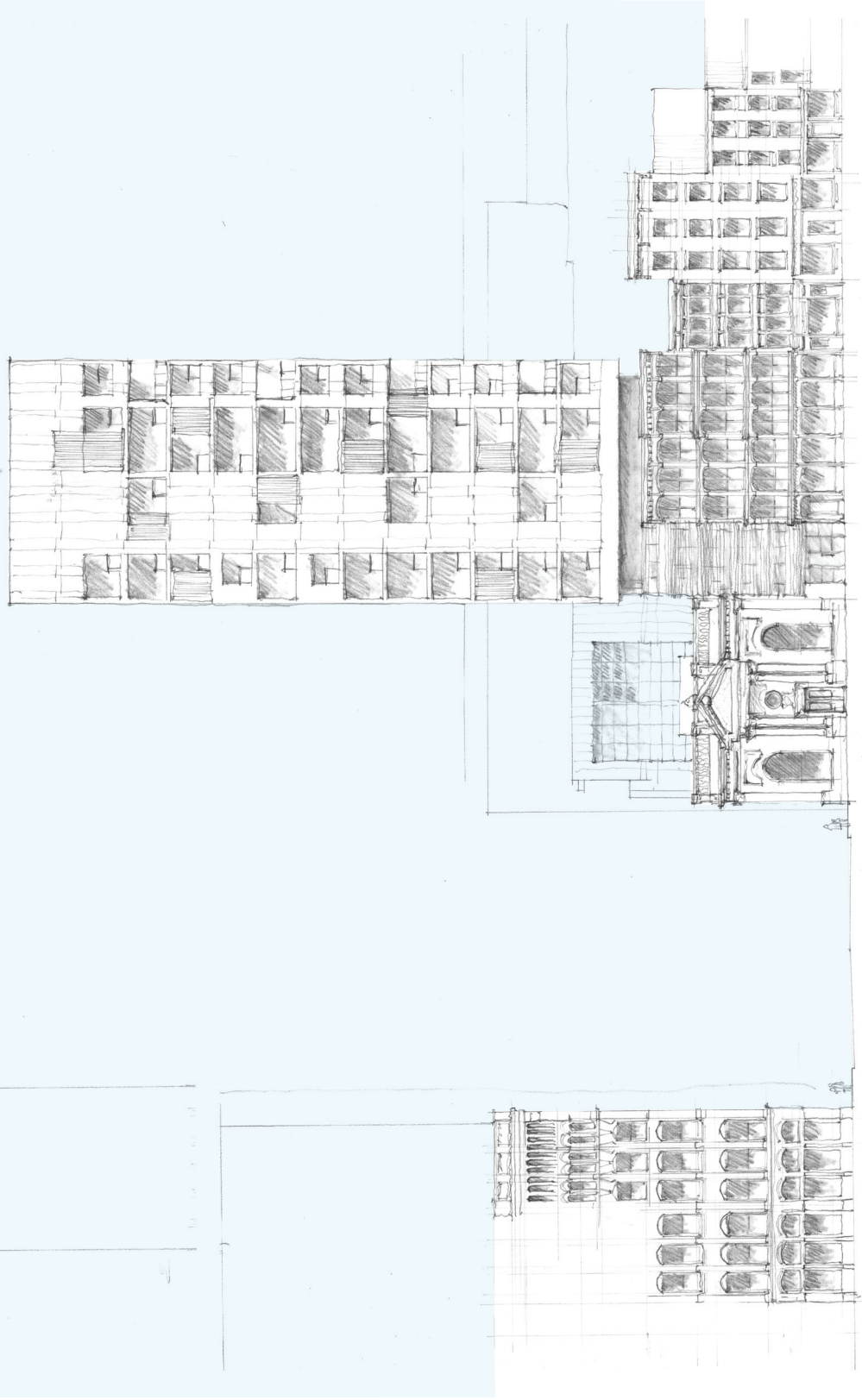
- 1 tool lending library
- 2 wood fabrication shop
- 3 alley workspace
- 4 community design studio
- 5 student design studio
- 6 design store
- 7 office space
- 8 cafe
- 9 kitchen

Figure 54 _ north south section showing spatial the connections in the alley



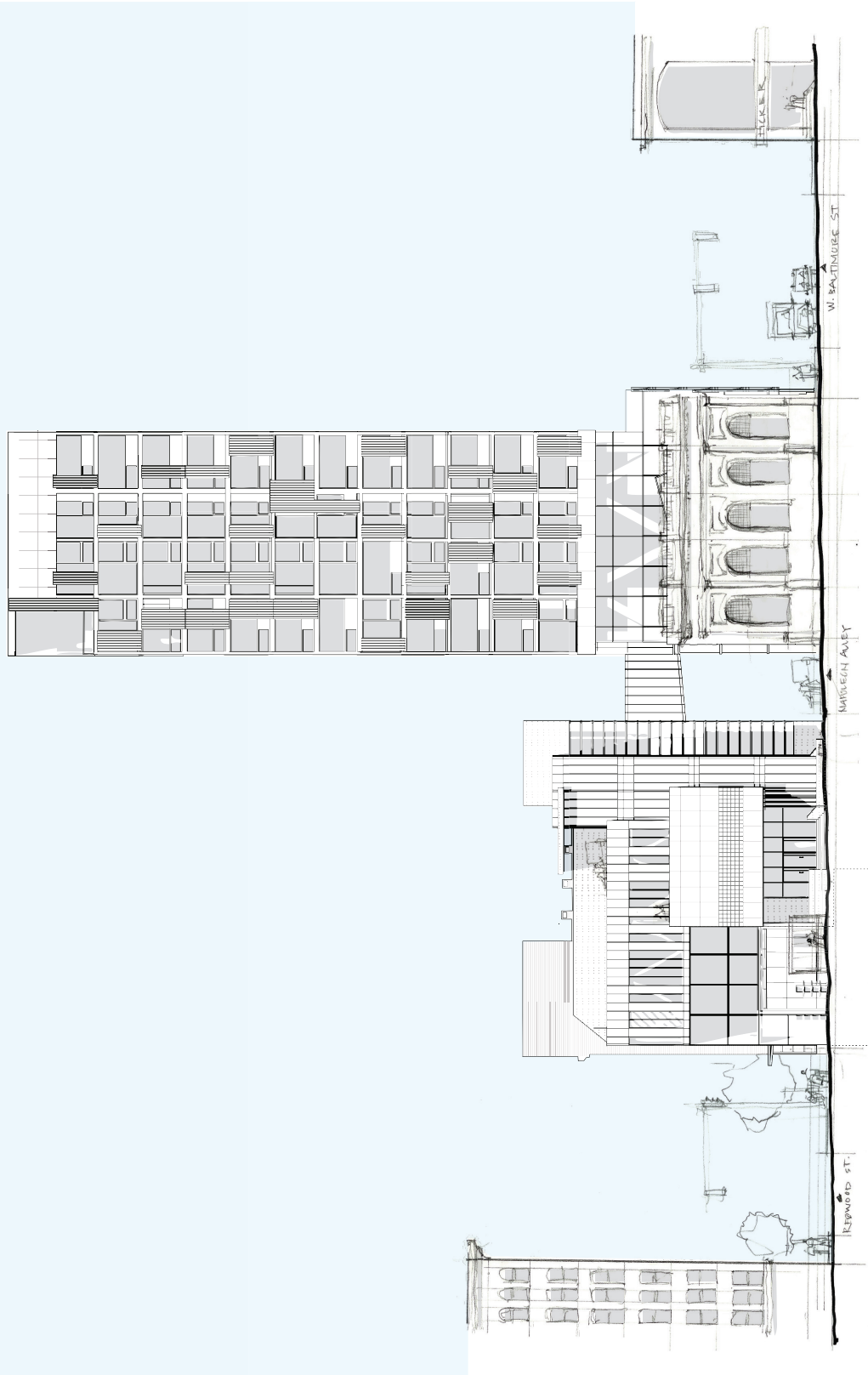
section

Figure 55_ this series of elevation drawings experiment with various making techniques. this one is hand drawn.



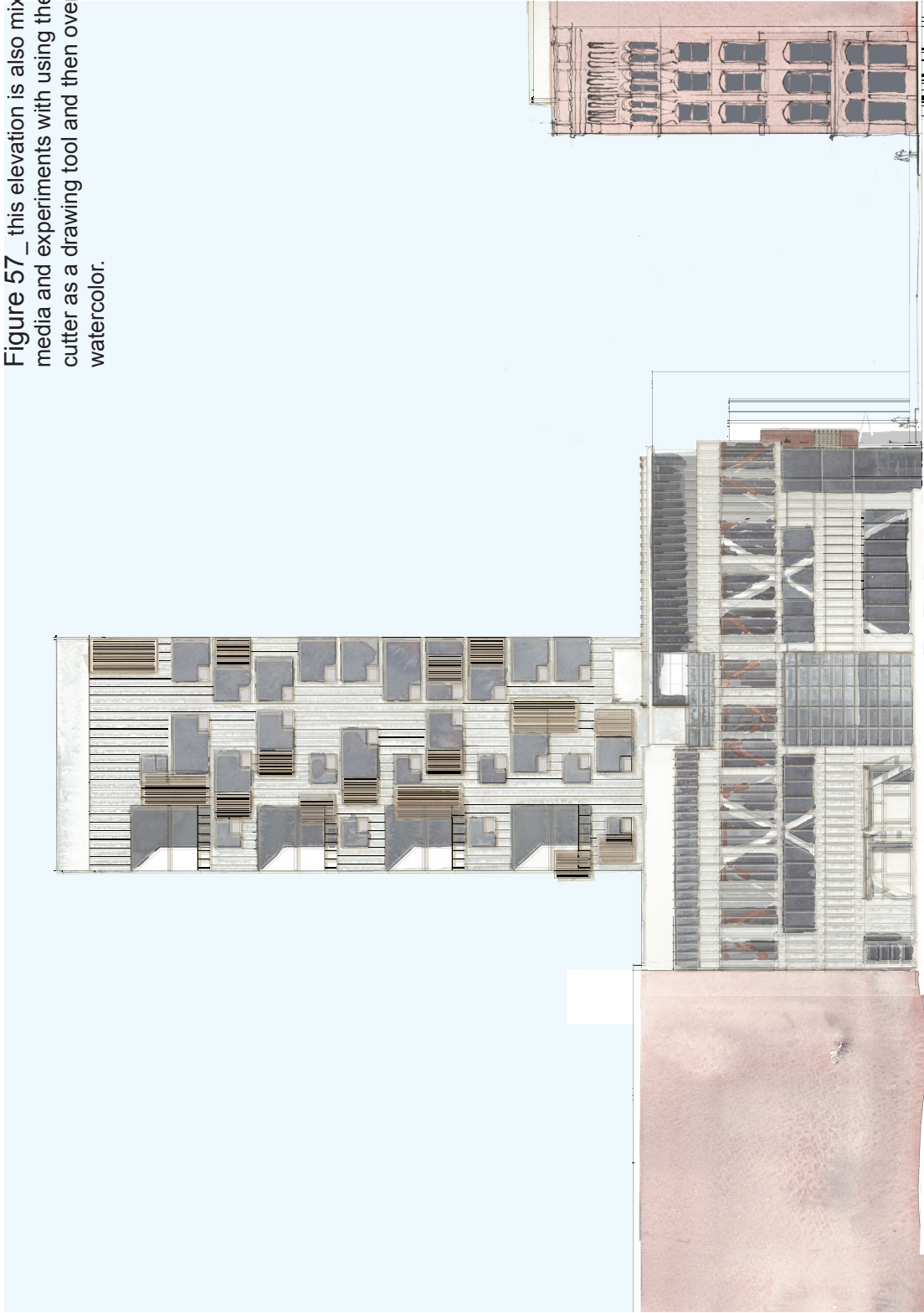
west baltimore street elevation

Figure 56_ this elevation combines hand and digital drawing.



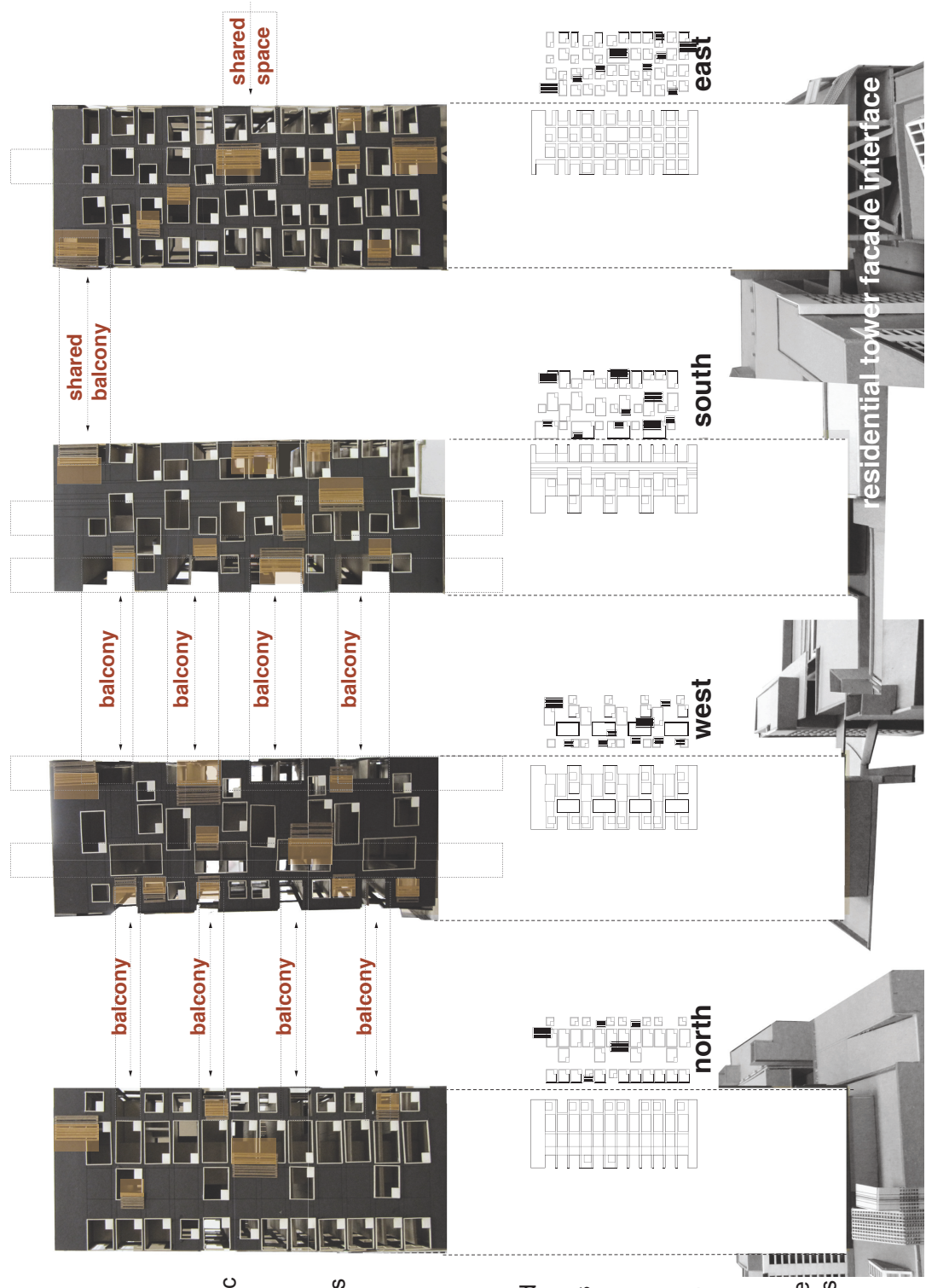
eutaw street elevation

Figure 57_ this elevation is also mixed media and experiments with using the laser cutter as a drawing tool and then overlays watercolor.



redwood street elevation

Figure 58_ the residential elevations engage the public by kinetic wood paneled screens that can be shifted to the occupants comforts and outdoor balconies. On the east side of the building, common spaces add spatial diversity to the elevation. A shared space midway up the tower occupies two floors and has a mezzanine for club meetings, intellectual debate, and idea sharing. additionally, a shared balcony on the top floor can be used by all and has great views of the city.



conclusion

This thesis investigates a new institution that seeks to galvanize the community of Baltimore around design and making through a hybrid architectural proposal that embodies its values of handicraft and fabrication. The new and the old, the high tech and the raw come together in the buildings knitting itself into the fabric of the city. The building is sympathetic to its surroundings, without copying them. It looks to create an identity for the institution by hybridizing structural conditions, exposing materials and secondary structure, and layering wall construction so that the building becomes a learning tool. The rawness of the concrete and steel on the interior create a scaffold for use of the space.

The building responds to the surrounding area, leveraging the urban infrastructure and cultural capital of the city. The building is a concrete and steel structure clad in grey terracotta. Prefabricated window systems repeat along the top of the building. An orangy-red rusted core ten steel truss flickers behind the vertical windows. The hybrid material choices

reveal the building construction and speak to the industrial history of the city however subvert the context, which is mostly masonry.

As the building meets the ground, it provides seating and welcomes the public with views into the building. The corner condition opens up and becomes part of the sidewalk while the main entrance pulls one up and in. Core ten steel cladding wraps down and under the entrance leading visitors into the building along its spine and back to the tool lending and fabrication facilities. The tool lending facility has its own entrance along Redwood Street. Two garage doors retract and provide easy movement of equipment and materials in and out. The ground floor responds to the surrounding area by enhancing the potential of existing street characteristics.

The malleability of the site and program conditions was necessary in the design process as they evolved commiserate with the ideas in the thesis resulting in a project who's ideas, site and program are so intertwined that they could not exist without each other.

The goals of the thesis are subversive in that they undermine the foundation of our consumerist economy. The agenda supports socialist ideas of empowering individuals with knowledge and tools to act for themselves. Sharing means people consume and own less stuff saving space, money, and reducing environmental damage. By coming together to take part in these activities, a connection to the local community is made and knowledge can be shared, bettering the intellectual and cultural capital of Baltimore.

Students benefit because they are given the opportunity to work with other disciplines to solve problems for a client. Community members benefit because they receive services they cannot afford at market rates.

The architecture of the Center for Making makes these things possible through an open and engaging public interface that outwardly expresses the mission to the city. The historic building reuse demonstrates the dedication of the Center to rooting itself in the downtown fabric of the city and encouraging activity and growth. The tower marks the skyline as a place for making, culture, and innovation in the city.

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