Re-Anchoring Bloomfield: Cross Programming a Makerspace to Foster Equity and Inclusion in North End, Halifax

by

Jillian Ellis

Submitted in partial fulfillment of the requirements
for the degree of Master of Architecture

at

Dalhousie University
Halifax, Nova Scotia
July 2019

CONTENTS

ABSTRACT

This thesis proposes the creation of a makerspace to re-anchor the Bloomfield Centre site within North End Halifax. The Bloomfield Centre was previously a hub for making, community resources and collaboration. Its closure left a void in the urban and social landscape. The lack of diversity among makerspace users prompts this thesis to question the current organization of mainstream makerspaces while also studying the rise of feminist makerspaces. This study provides a design framework which implements cross-programming to increase access while also increasing visual connections to the makerspace activities through program adjacencies and voids. Urban strategies implemented deal with degrees of observation and movements through the site based on current and historical paths. Through the preservation of two historical Bloomfield school buildings and the redevelopment of the site now occupied by the Bloomfield Junior High building, this thesis imagines the site in a way that reveals its history of equity and inclusion.

ACKNOWLEDGEMENTS

My sincerest thank you to my supervisor Diogo Burnay for your support, guidance, and dedication throughout this process, and to my advisor Sarah Bonnemasion for your direction.

Thank you, Ken Kam, for employing me as your TA for the last two years. Your mentorship and friendship have meant so much to me.

Thank you to my friends that have taught me so much. Your friendship has brought me so much happiness. Thank you, Ellen, for your incredibly positive attitude and Rhino tips; Robin and Stewart, for your help at the end; Kelly, for your help and encouragement with the writing. I would not have been able to do it without all of you! Thank you, Karen, Julie, Isaac and Ben for your help putting together the work. A special thank you to Aziza and Courtney for being there, always, but especially all those late nights and early mornings.

Thank you to my partner Matt, whose kindness and support got me to the finish line. Thanks also to my siblings, Leah and Chad, for your genuine curiosity in the work and your words of encouragement.

Last but not least, thank you to my Mom, Darlene, and my Dad, Bill, for your unwavering confidence in me.

CHAPTER 1: INTRODUCTION

Maker culture is inspired by a technology branch of the do-it-yourself (DIY) movement that promotes learning by making in a social environment (Godfrey 2015, 1). The "maker movement" is a global DIY community that formed to facilitate access to cutting edge technology and people's desire to create things in a hands-on way (Bean et al. 2015, 62). Makerspaces act as hubs for people to share tools, exchange knowledge and participate in individual and collective making, prototyping and repair. The term "maker" refers to people of all ages and backgrounds who use a broad range of tools and methods from engineering-oriented pursuits like electronics, robotics, and 3D printing to more traditional craft-oriented activities like jewellery making, textile production, and woodworking (Godfrey 2015, 1). Although the "maker movement" was coined in the early 2000's, people have been gathering and sharing knowledge around the ideas of making forever.

The language surrounding the maker movement and maker culture is inclusive. A "maker" is broadly defined by Godfrey as; artists, hackers, scientists, crafters, students, cooks, engineers, designers, and more. Daugherty also states that everyone is a maker: "'Maker'… describes each one of us, no matter how we live our lives or what our goals might be" (Dougherty 2012, 11). The broadness attempts to include a large group of people with a variety of expertise; however, the current maker landscape does not accurately reflect the rhetoric surrounding maker culture. According to a 2012 survey conducted by *Intel and Make Magazine*, women are underrepresented in the global Maker Movement (Faulkner 2014, 30). The *Intel* survey found that less than 19% of people participating in makerspaces were women (Faulkner 2014, 30).

The gender imbalance found in makerspaces both reflects and contributes to the longstanding inequality in Tech and STEM-related industries (Faulkner 2014, 30). If everyone by definition is a 'maker,' why do current mainstream makerspaces not facilitate the participation of all types of makers? This thesis uses both mainstream makerspaces and feminist makerspaces as case studies to inform the design strategies of a community Makerspace located on the Bloomfield Centre site in Halifax, Nova Scotia.

The lettering 'Bloomfield' on the facade of the Bloomfield Junior High building facing Almon Street. (Photograph taken fall 2018)

The Bloomfield Centre in North End Halifax is an example of a community hub that has prioritized space for creative making, repair and community gathering. The Bloomfield Centre was first established and defined by its school buildings and their surrounding schoolyard until the 1980s, when the school buildings transitioned into community spaces (Stevenot 2009, 15). The programs occupying the centre ranged from rentable artist studios, a specialized food bank, an LGBTQ2 Christian church, a bike repair shop and many more community groups and initiatives (Withrow 2005). The recent closure of the entire centre has left a void in the urban and social landscape. The uncertain future of the Bloomfield Centre site presents an opportunity to imagine the site in a way that reveals its history of equity and inclusion. Through the preservation of two historical Bloomfield school buildings and the redevelopment of the portion of the site now occupied by The Bloomfield Junior High building, this thesis proposes the creation of a Makerspace to re-anchor the Bloomfield Centre site within North End Halifax.

Halifax Peninsula (Google Earth, 2019)

CHAPTER 2: BLOOMFIELD CENTRE

Context Within North End Halifax

The Bloomfield Centre site is located in North End Halifax, Nova Scotia. Halifax is a port city on the east coast of Canada, first settled by the ancestors of the Mi'kmaq people (McCann 2012). Some of the many communities which make up the North End are people who are descendants of the former Africville residents. Due to its historically affordable accommodations, North End Halifax is home to many students and artists, the forbearers of gentrification in this area (Stevenot 2009, 6).

Bloomfield Centre and its surrounding neighbourhood (Google Earth, 2019)

Three streets border the site: Robie Street, Almon Street and Agricola Street. The site is situated at a hinge point. Bloomfield sits between a sparse commercial and industrial area to the west and a dense residential area to the east. The Bloomfield Centre site was established within the North End as a community anchor as early as 1887, when the Bloomfield Bungalow, the first of 5 school buildings, was built on the northern corner of the site (Withrow 2005).

Current Condition

Bloomfield Centre and its surrounding streets (Google Earth, 2019)

After numerous attempts by HRM to sell the property, it remains fenced and closed off to the public (Boon 2018b). The Bloomfield Centre is currently surrounded by a chain link fence to deter cars from parking on site and to prevent pedestrians from using the pedestrian path through the site. The fence does not completely close the site off to pedestrians, and there is access from Almon Street. Currently, signs warn of falling bricks around the site, with the Fielding and the Common Buildings in the worst condition. HRM currently spends close to $100,000.00 annually to keep the building under surveillance

AGRICOLA STREET FIELDING SCHOOL

AGRICOLA STREET CROSS WALK AT BLOOMFIELD STREET

CONNECTOR BETWEEN BUILDINGS

FILM SCREENING WALL

CHAIN LINK FENCE SURROUNDING COURTS

ROBIE AND ALMON STREET

BUS STOP ON ROBIE

ROBIE STREET COMMON SCHOOL

WALKING AROUND THE SITE FROM AGRICOLA TO ROBIE

PANORAMA OF THE COURTYARD

BLOOMFIELD JUNIOR HIGH SCHOOL

FIELDING SCHOOL

COURTYARD

COMMON SCHOOL

BLOOMFIELD JUNIOR HIGH SCHOOL

A walk through and around the Bloomfield Centre (from Agricola to Robie Street)

and fenced off (Halifax Regional Council: Corporate Real Estate 2018, 3). It has been completely closed to all tenants since 2014. Since its closure, many local groups, especially Imagine Bloomfield, have been advocating for a new development that focuses on maintaining the core values of the centre.

The Master Plan vision calls for a mix of residential, commercial, community and art spaces that work together as a vibrant urban neighbourhood. At the core of this concept is a hub for the arts and for incubating creative community programs and initiatives (Halifax Regional Council 2011, 3).

Bloomfield Centre Buildings Through Time

Bloomfield Bungalow elevation (PANS 1922)

Bloomfield Bungalow

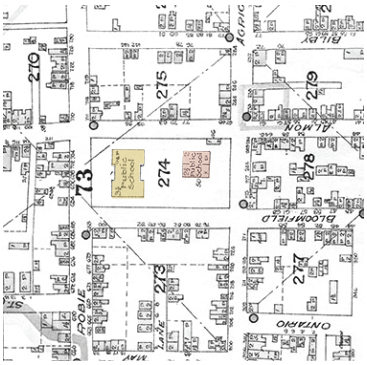
Year constructed: 1887 (rebuilt in 1922)
Architect: Unknown
Location on the site: Corner of Agricola + Almon
Year demolished: 1971

Fire insurance plan of Halifax, 1895, (PANS 1895)

In 1887, the first Bloomfield school was built on the corner of Agricola and Almon. The school was referred to as The Bungalow. The entrance to the school faced Bloomfield Street (Withrow 2005, 2). The wooden two-storey structure was built to house students from primary to grade nine (HRM Heritage Planning 2007, 3). The Bungalow did not have any running water and only had outdoor facilities (Withrow 2005, 2). At the time, the lot known now as Bloomfield Centre was half its size, as Bloomfield Street extended through to Robie Street. The Bungalow was destroyed in the Halifax Explosion and then later, in 1922, rebuilt in the same location on the site. It stood until 1971, when it was demolished to make room for the Bloomfield Junior High building that was built that year (HRM

Heritage Planning 2007, 3).

Bloomfield Academy (PANS n.d.; Notman Collection no.1983-310 number 21982)



Zoomed-in area of "Plan showing devastated area of Halifax City, N.S." (PANS N.S. Board of Insurance Underwriters Nova Scotia Archives Map Collection: V6/240 - 1917 Halifax loc.4.2.3.2)

Bloomfield Academy

Year constructed: 1913

Architect: Walter J. Busch (1865-1924)

Location on the site: Corner of Robie + Almon

Year demolished: 1971

In 1913 the Bloomfield Academy, also known as Bloomfield Street Public School, was constructed at the corner of Robie Street and Almon Street. This school, designed by Walter J. Busch, was similar in design to the Chebucto and Tower Road Schools. It was three and a half storeys, much larger than the Bungalow (HRM Heritage Planning 2007, 2). The Academy had two main entrances: one facing Almon and the other facing Bloomfield Street; each projected slightly from the building. The Academy was built to serve as a high school and later became a junior high school. The Halifax Explosion severely damaged the roof and windows of the Academy (Withrow 2005, 3). With repairs, the building remained standing until 1971, when it was demolished to accommodate the construction of the new junior high building.

Bloomfield Common School

Year constructed: 1919

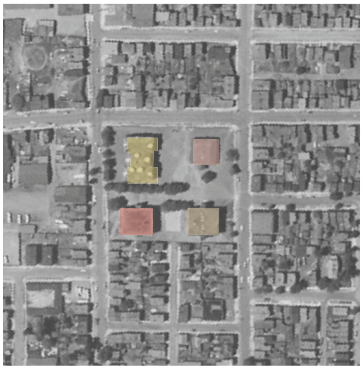
Architect: William Fraser (1867-1922)

Location on the site: Robie (southern corner of the site)

Year of closure: 2005

The third school built on the Bloomfield site was the Common School, in 1919, designed by the architect William Fraser (PANS Microfilm 13562). The Common School is located at the southern corner of the lot facing Robie Street. When the

Bloomfield Common School, Robie Street elevation (Library and Archives Canada 1919)



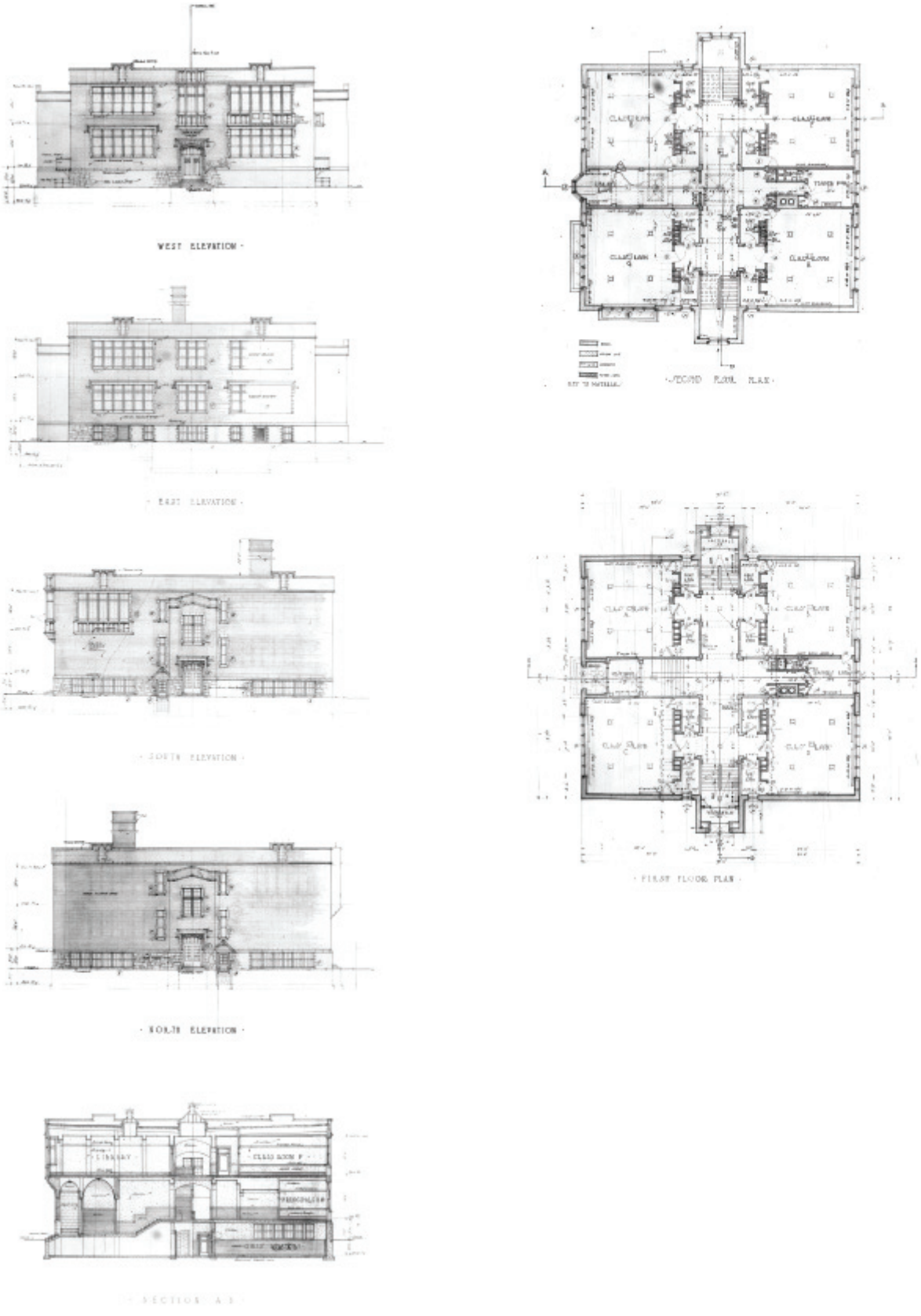
Aerial photograph (GIS Centre, Dalhousie University 2018)

Common School was built, the Bloomfield Centre lot expanded; Bloomfield Street no longer went through to Robie Street; instead, it ended at Agricola, as it does today (HRM Heritage Planning 2007, 2-3). The Common School housed grades four to six and an art room (HRM Heritage Planning 2007, 3).

The Common School was built out of bricks, on a brick and granite foundation, and it has elaborate details and mouldings surrounding its openings (HRM Heritage Planning 2007, 8). The most prominent feature of this building is the Robie Street entrance, the recessed entrance and oriel window above the entrance, both detailed in sandstone (HRM Heritage Planning 2007, 8). Fenestration is grouped symmetrically in groups of six with sandstone surrounds (HRM Heritage Planning 2007, 8). Symmetrically above the groups of windows, there are two parapets on each side, with recessed panels and triple trefoil inserts all in terra cotta (HRM Heritage Planning 2007, 8).

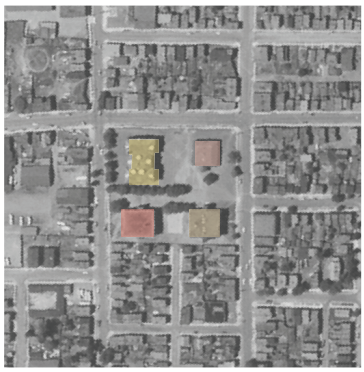
The building is organized by a central plan, with four equally sized classrooms on both the first and second floor. The stair core and secondary entrances are located symmetrically on each end, perpendicular to the main entrance. The basement was used for washrooms, boys' and girls' playrooms, as well as fuel, boiler and fan rooms. In the last 100 years of the Common School's existence, some windows have been filled in, and a balcony under the second-floor windows on the Robie Street façade has been removed.

> The Bloomfield Common School has considerable heritage value, both for its social history - the connection with the Playground movement and education in the community, its unusual architectural style and rarity in the Halifax context, its clear link with the reconstruction period after the Halifax Explosion, and its contextual value as a point of focus in the Bloomfield and surrounding North End neighbourhoods for the past eighty years (HRM Heritage Planning 2007, 9).



Orthographic drawings of the Bloomfield Common School (PANS 1919; Microfilm 13562)

W.S. Fielding School (Halifax Municipal Archives, 2019; Safety Committee Minutes September 1964 - October 1964, 102-38-1-24)



Aerial photograph (GIS Centre, Dalhousie University 2018)

Hon. W. S. Fielding School

Year constructed: 1929

Architect: William Fraser (1867-1922)

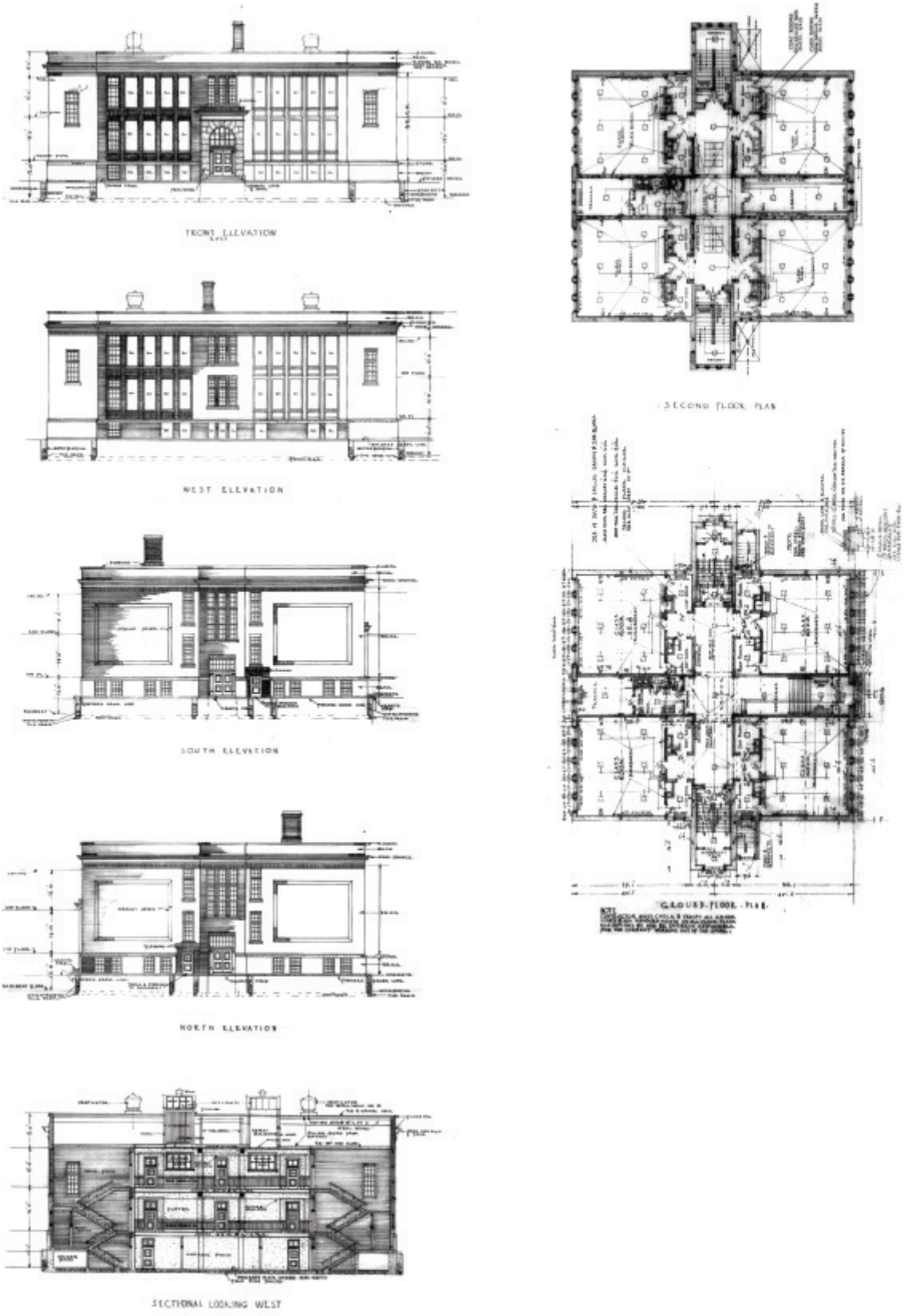
Location on the site: Agricola (eastern corner of the site)

Year of closure: 2005

Constructed in 1929 and designed by S.P. Dumaresq, the Right Hon. W. S. Fielding School was named after Mr Fielding (1848-1929), who held many roles within the provincial and the Canadian governments, including minister of finance and acting prime minister. The M.E. Keefe Construction Company Limited constructed the building. The Fielding School housed grades primary to three, as well as a nurse's office (HRM Heritage Planning 2007, 3).

A stone arch, with windows inset, surrounds the Agricola Street entrance. The front and rear elevation fenestrations are symmetrical; three rows of five windows across surrounds a cluster of three more narrow windows. The Fielding building's detailing is brick and is much less ornate than the Common building.

Both the Fielding and Common School are built and organized by a central plan, similar in plan and elevation. The Fielding School used the basement for washrooms, boys' and girls' playrooms, a boiler and coal room. The ground and second floor are composed of 4 equally sized classrooms, each with one wall of openings, facing either Agricola Street or the schoolyard. Again similar to the Common School, the stair cores are symmetrically located perpendicular to the main entrance. Both the stair cores that face the schoolyard were later connected to the Bloomfield Junior High building with metal pedways.



Orthographic drawings of the W.S. Fielding School (PANS 1929; Microfilm 13556)

Bloomfield Junior High School

Year constructed: 1971

Architect: Mettam Wright Associate Architects and Planners

Location on the site: Agricola + Almon + Robie (northern portion of the site)

Year of closure: 2014

The newest building on the Bloomfield Centre site was constructed in 1971. Bloomfield Junior High School housed grades seven to nine, special education classes, home economics and industrial art classes until 1988 (HRM Heritage Planning 2007, 4). Mettam Wright Associate Architects and Planners designed Bloomfield Junior High. To construct this school, both the Bungalow and Bloomfield Academy were torn down. There is no record of the state of these schools at the time of their demolition. The school is designed in a way that conceals the "front" entrance of the building. As you approach the building on either Almon, Agricola or Robie, it is not clear where the entrance is located. The school is connected to the two other buildings on-site with pedways with corrugated metal cladding. The façades of the Bloomfield Junior High have few windows and are, for the majority, blank red brick walls. The interior space of the "L" shaped building consists of double-loaded corridors and a gymnasium (Stevenot 2009, 15). The Junior High building is set back significantly from Almon, Agricola and Robie. Most of the surrounding ground treatment is uneven pavement and what was previously a parking lot.

Bloomfield Junior High School, Almon Street facade (photograph taken 2018)

Aerial image showing current condition on the Bloomfield Centre site (Google Earth 2017)

Bloomfield Centre basketball
Almon Street facade (2018)

Exhisting courtyard
(2018)

Connectors between the Fielding,
Common school and the Junior
High Building

The Rt. Hon. W. S. Fielding School
Architect: S.P. Dumaresq
Constructed in the year 1929

Bloomfield Common School
Architect: William Fraser
Constructed in the year 1919
(front facade facing Robie Street)

Halifax explosion
damage Bloomfield
Academy in the
background (1917)

Bloomfield High School
Architect: W. J. Busch
Constructed in the year 1913

Bloomfield Bungalow plans
(rebuilt after the explosion)

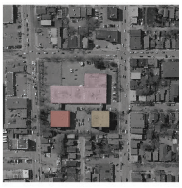
2019

After the complete closure in 2014 the site became a parking lot for 4 years until the site was fenced off completly to cars and pedestrians.

2017

2014

1988-2014 the Bloomfield Centre was used as a community centre and housed various community services in all three buildings. Tenants in the Fielding and Common school were evicted due to poor building conditions in 2005.



2005

1973

The Bloomfield Centre after the construction of Bloomfield Junior High in 1971. The Bloomfield Academy and Bungalow were demolished.

1971

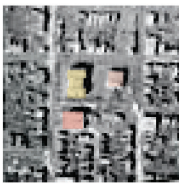
1954

The Bloomfield Centre site expanded in 1919 for the construction of the Bloomfield Common school. The Bungalow, Academy, Common and Fielding School are all occupied as schools during this time.

1929

1921

This aerial photograph shows the Bloomfield Common School (built 1919). It also shows the Bloomfield Academy as well as the Bungalow School. The Bloomfield Centre site was expanded and Bloomfield Street no longer goes through to Robie.



1919

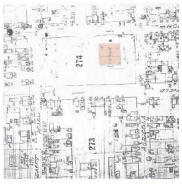
1917

The Bloomfield Academy and The Bungalow School required extensive repair after the Halifax explosion.

1913

1895

The Bloomfield "Bungalow" School occupied the corner of Agricola St. and Almon St.



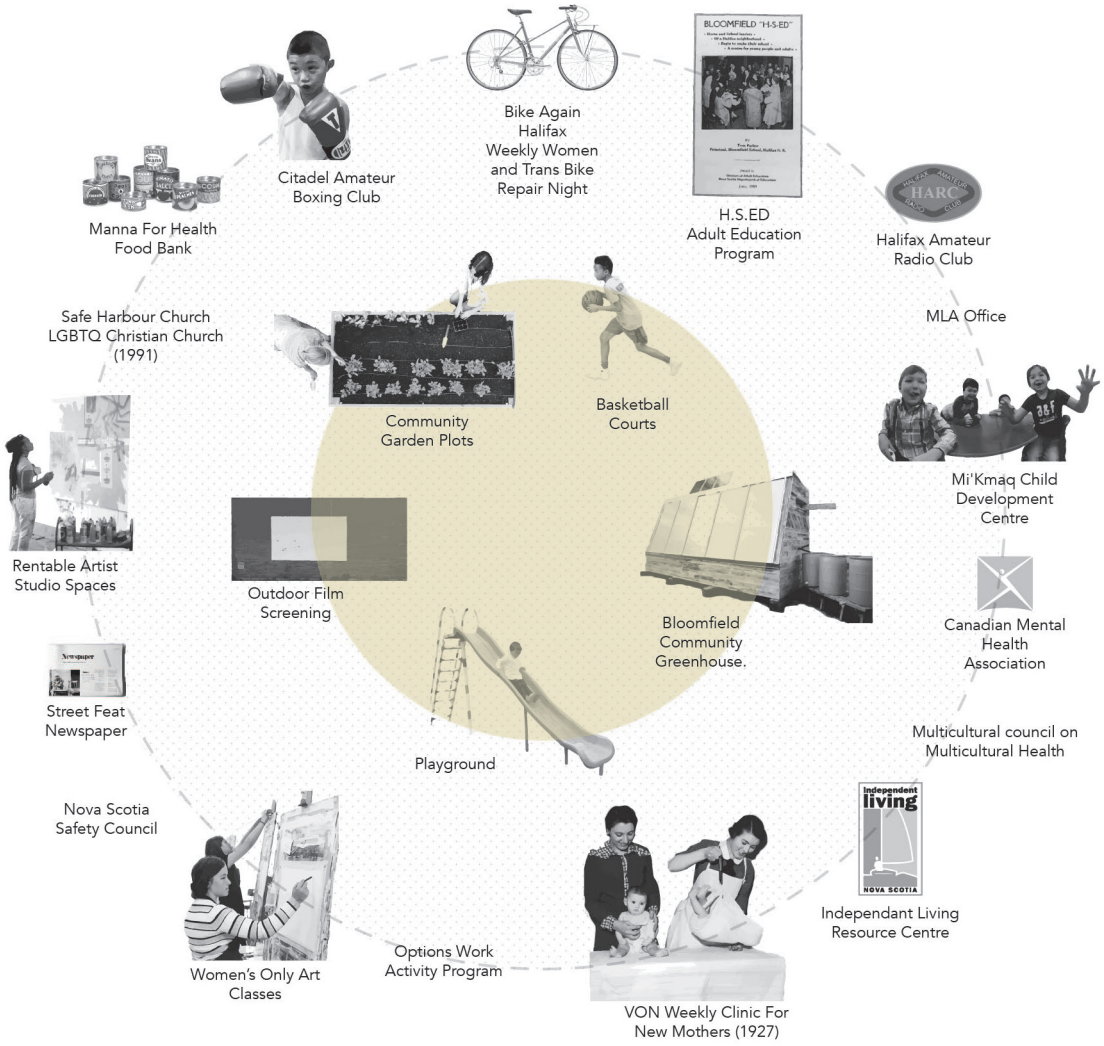
1887

Timeline graphic showing the Bloomfield site and buildings through time

Social and Programmatic History of the Site

The Bloomfield Centre site is home to many social movements that impacted change within Halifax and influenced the work of this thesis. The supervised playground movement led by the National Council of Women, a movement which allowed neighbourhood children to experience supervised play, this was especially important, as it allowed working mothers to access neighbourhood childcare. The development of children's playgrounds was promoted as a means of providing safe opportunities under adult supervision, meaningful play, and to curb youth smoking, bullying, and delinquency. Activities included swings and sandboxes, games, crafts, and local outings (Halifax Regional Council 2011, 5). Currently, on the Almon and Agricola Street corner, there is a plaque commemorating the Local Council of Women for establishing the first vocational playground on that site in 1906.

Plaque commemorating the Local Council of Women in Halifax



Programmatic graphic showing the varied Bloomfield programs (highlighted in green: programs that took place in the surrounding school yard area)

Bloomfield Centre had been used for formal educational purposes from 1887 until 1988 (HRM Heritage Planning 2007, 4). After 1988, when the last school shut its doors to students, it offered space to local community-based programs like non-profit groups and a community centre for arts and recreation (Stevenot 2009, 15; HRM Heritage Planning 2007, 4; Imagine Bloomfield Society). Women started many of these initiatives with goals of empowering and creating a space for women and other groups less represented within the community (Stevenot, 2009, 9). The closure of the Bloomfield Centre site left a void in the urban and social landscape and created a shortage of community spaces available for people to gather and access resources within the North End. Not all of the above-listed groups and initiatives were able to find new locations within Halifax. This thesis pulls out historical programs that, due to the closure of the Bloomfield, no longer exist, while also pairing and intertwining other programs to support the Bloomfield makerspace.

Bloomfield Centre: A Place for Making

The previous programs housed within the Bloomfield Centre were not entirely alike or always related; however, the overarching ideals of the Bloomfield Centre were to create a community hub for resource access and community gathering. The Bloomfield Centre has acted as an anchor in North End Halifax for decades, prioritizing creative spaces and community resources. The combination of programs encourages different groups to learn, share a physical space and to collaborate, much like the qualities of a contemporary makerspace.

Multicultural Council	
MLA's Office	
People First	*Advocacy group for people with intellectual disabilities*
Street Feat	*A publication that advocated for the poor in downtown Halifax*
Canadian Mental Health Association	
Independent Living Resource Centre	*Aids Nova Scotians with disabilities through programs and services that promote Independent Living*
Halifax Amateur Radio	
Safe Harbour Church	*A Christian church established and run by the LGBTQ+ community*
Manna for Health	*A specialized food bank for people who live with serious illness especially AIDS*
Bike Again	*A pay-what-you-can bike repair shop*
Northern Lights	*Senior citizens club*
Indo Canadians of NB	
Bryony House	*A transition house that provides 24 hour emergency services for women, with or without children, escaping intimate partner abuse*
Women's Only Art Classes	
Options	*A work activity program for people who face barriers to employment*
NS Safety Council	
H.S.Ed Adult Learning	
Citadel Kick Boxing/Wrestling Club	
Mi'kmaq Child Development Centre	
Artist Studio Spaces	
Community Garden	
VON Mothers Group	*A weekly clinic for new mothers*
Supervised Playground	
Community Gym space	

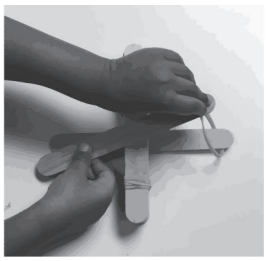
Full list of programs that have occupied space within the Bloomfield Centre buildings (Withrow 2005)

CHAPTER 3: INTRODUCTION TO THE MAKER-SPACE

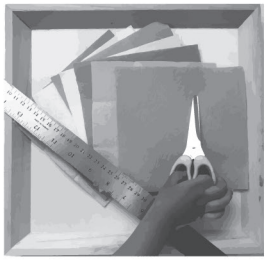
Defining the Maker Movement and Maker Culture

Maker culture is a collection of subcultures related to making new technology and customizing existing technology (Makermedia 2018). It can be considered the technology branch of do-it-yourself (Godfrey 2015, 1). Typical areas of maker culture include engineering-oriented pursuits like electronics, robotics, and 3D printing to more traditional craft-oriented activities like jewellery making, textile production, and woodworking (Godfrey 2015, 1). The maker movement is a social movement with an artisan spirit. Maker culture emphasizes learning-through-doing (active learning) in a social environment; it emphasizes informal, networked, peer-led, and shared learning motivated by fun and self-fulfilment.

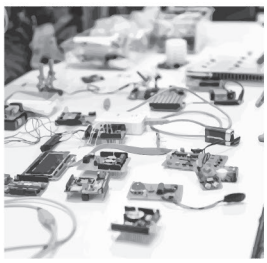
The maker movement was first introduced formally in the early 2000s by the founding of *Make* magazine and the formal organization of maker fairs (located in San Francisco) (Bean, Farmer, & Kerr 2015, 62). Although “maker movement” was coined in the early 2000s, people have been gathering and sharing knowledge around the ideas of making forever.



PROTOTYPING



TEXTILES



ELECTRONICS

ROBOTICS

DIGITAL

FOAM AND CARDBOARD

METAL

KINETIC

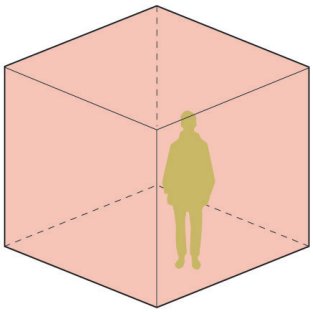
WOOD

FOOD

Diagram showing the varied types of making

The Popularization of Makerspaces

The popularization of makerspaces was to encourage and empower people of all ages to create, innovate, tinker, and make their ideas and solutions into reality (Bean et al. 2015, 62). The maker movement gained national attention in the United States, which led to initiatives to expand makerspaces into schools from primary to 12 and university campuses (Bean et al. 2015, 62). The goal was to expand access to machines and tools like a laser cutter or CNC to a broader group of people and children. Many people believed that makerspaces becoming a part of the P-12 curriculum could help increase the number of young people interested in pursuing careers in STEM-related fields. Many people thought it could also decrease the gender imbalance in STEM-related fields (Bean et al. 2015, 61-62). Currently, there are about 400 makerspaces in the US alone (Makerspaces, 2017). The maker movement has been branded as inclusive and accessible - “everyone is a maker,” claims Dale Dougherty, CEO and founder of Make Media (Makemedia, 2018). The maker movement is meant to empower people of all ages to create, innovate, tinker, and make their ideas and solutions into reality (Bean et al. 2015, 62).



Graphic of mainstream makerspace

Ellen Foster's dissertation describes the making rhetoric as a loose but unifying term. "Making" is often defined as the creative use or re-use of technologies and artefacts to accomplish small or large-scale projects, although it is a loose term that can mean a myriad of things. Cultures of making incorporate many different movements, histories, and ideologies, but their unifying and overarching rhetoric is to claim that everyone can "make" – that is, manipulate or create – technologies (Foster 2017, 6). The vagueness or openness of the label "maker" allows for many interpretations. Foster claims that the very nature of the "openness" may reproduce inequities of power in technology-based cultures (Foster 2017, 8).

Gender Inequity Found in Makerspaces

The current cultural landscape of the North American makerspace is homogenous; it appears that the gender gap, as evidenced by the low number of women entrepreneurs and patent holders, extends into the world of making and how we define a maker (Bean et al. 2015, 61).

> According to a 2012 independent market study conducted through online surveys by Karlin Associates, LLC on behalf of *Make* magazine and Intel, 81% of US makers are male. (Bean et al. 2015, 61)

More than 80% of people participating in makerspaces across the US are male (Bean et al. 2015, 61)

The gender inequality within makerspaces is multi-layered and complex. Susan Faulkner, a senior researcher in the User Experience Research group at Intel Labs, has found that there are two main reasons why women are underrepresented in

the worldwide maker movement: the type of making women are doing isnt being taken seriously; and many women avoid makerspaces, the community-operated workspaces that tend to be dominated by men due to harassement and general feelings of lack of safety (Faulkner, McClard 2014, 191).

> In these spaces, many women find their work styles are undervalued or misunderstood – sketching and thinking are taken as signs that a woman needs help when she's just using a different work process. Art projects are not seen as being as serious as other, more technical, projects. There is a gendering of technology at play in these environments. Technology is culturally construed as masculine and art as feminine. Our culture, and many other cultures, places a higher value on the masculine. (Faulkner, McClard 2014, 191).

A 2014 survey conducted by Harris Poll on behalf of Intel found that 41 per cent of women makers in the US come from an arts and crafts background, whereas 65 per cent of men have engineering or physical sciences backgrounds (Faulkner 2014, 30). Faulkner found that women with non-technical backgrounds often find that male makers with technical backgrounds undervalue their work styles (Faulkner 2014, 30).

The Rise of the Feminist Hacker and Makerspace

The rise of the feminist hacker and maker space sought to create a new narrative for what a "maker" and makerspace could be. Sparked by the lack of any serious institutional movement toward holding misogynistic behaviour and environments within makerspaces accountable, female-identifying makers felt they needed to take matters into their own hands to establish spaces of mutual support (Foster 2017, 30).

The main differences found in feminist makerspaces that are not present in mainstream makerspaces are formalized policies and additional programming that makes makerspaces more accessible. The policies range from a formalized

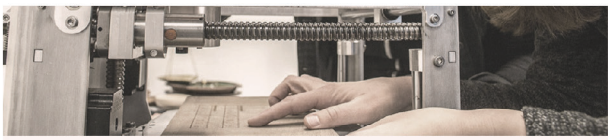
The Rise of Feminist Hackerspaces and How to Make Your Own

Building community spaces, a brief history of feminist organization in tech, and what comes next.

Creating space for equity in making

As makerspaces spread and grow, how do we ensure that resources for making are equitably distributed?

Meet Double Union, San Francisco's Feminist Hacker/Maker Space

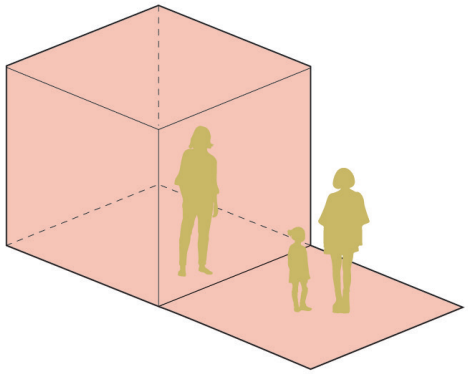


FEMINIST MAKERSPACES: MAKING ROOM FOR WOMEN TO CREATE

Collage of feminist based makerspaces headlines online

sexual harassment policy to policies around cleaning up the workspace (Prototype 2018). The additional programming like on-site childcare allows for women to access the makerspace without worrying about finding and coordinating childcare (Hackermoms 2018). As one maker said to Faulkner,

> To be a maker, you don't need an engineering degree. You need childcare. As women are entering the workforce at a higher rate than ever, this serves to substantiate the concept of the "second shift," in which women experience the double burden of unpaid childcare and home labour in addition to paid work in the formal sector. (Faulkner 2014, 30)



Graphic of feminist makerspace

Most of the feminist maker spaces prioritize these critical components: on-site childcare; location - near a main public transit corridor; formalized policies outlining community guidelines, specifically on harassment and shared workspace expectations; workshops to learn a new skill or tools; and membership rates that are affordable or pay-what-you-can.

Critique of the Feminist Makerspace

> Women don't need to be segregated from men to be makers. We all need to take more responsibility for making tech environments welcoming, whether they are makerspaces or corporate environments. We need to respect all kinds of making and take seriously all the paths that lead people to making. (Faulkner 2014, 31)

Physical access is only one type of access to space; psychosocial access shapes the way people view themselves and others within the built environment (Nieusma 2004, 15). By creating an alternative space like a feminist makerspace, these spaces are automatically compared with the mainstream makerspace. What are the differences in their physical space, equipment, hours of operation and participants? This comparison leads to the perception of one as inferior. Because feminist based makerspaces are technically a subsection of makerspaces, they are inherently inferior. This inferiority permeates through to the individual and the participants, influencing the mainstream makers and the general public opinion of their work and abilities; this has the possibility of over-inflating the skills of a mainstream maker, strengthening the stereotype further.

Strengthening the Stereotype of Who is a Maker and Interested in Making

Creating safe spaces for women and non-binary people to make and fail without judgment is one temporary solution to the existing male-centric makerspaces. However, feminist or alternate makerspaces may continue and perpetuate the stereotypical male “maker” within mainstream makerspaces. As Dr J. Lewis highlights, barriers are gender stereotypes like “women are just less interested” and “women and men have intrinsically different talents and interests”, and that is why there is a gender imbalance in STEM fields and makerspaces (Lewis 2015, 4).

Further Homogeneity and Reinforcing Hierarchies

Feminist makerspaces seek to include makers that do not find mainstream maker spaces inclusive or accessible.

The creation of alternate space, disconnected from the mainstream makerspace and its barriers, does allow for a more diverse population of makers to participate in makerspaces. However, by creating an alternate space, this removes and unintentionally categorize types of makers, reinforcing the hierarchy that already exists, making the space even more homogeneous and inaccessible.

No Push for a Cultural Shift

The physical existence of a feminist makerspace could allow for heightened misogynistic behaviour. It could be argued that if a maker wished to not be around this type of behaviour, there is a space created for them for this purpose. The creation of safe spaces could create the attitude that a mainstream makerspace does not need to be safe because those spaces are elsewhere; this attitude resists any push for a cultural shift.

The Unnecessary Burden of Creating an Additional Maker-space

The creation of a makerspace is a task that requires equipment, workshop space, volunteers, funding and more. With feminist makerspaces, women have access to tools and making, but at the cost and labour of having to create and construct their own space to do so. This is an unnecessary burden when funding and resources are limited, and the infrastructure already exists.

Moving Towards Universal Makerspaces

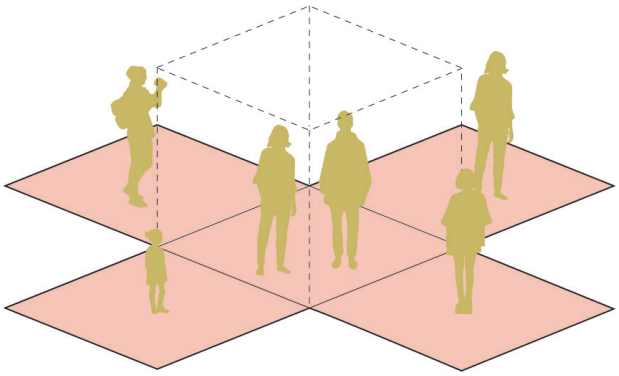
The need for safe spaces within maker culture is evident. These other spaces were created with that as their primary intention.

> These spaces tend to reassess and redefine what is meant by ‘openness’ - a concept held dear to the hacker/maker movement. Emphasis is put on not only openness but on an environment in which female safety is paramount, and

> in which male-domination is not only acknowledged but constantly challenged. (Lewis 2015, 7)

Although feminist makerspaces intend to increase access for women and non-binary makers, this thesis argues that a feminist makerspace is only a temporary solution and could further emphasize the growing divide between the stereotypical maker and everyone else, perpetuating the male-centric exclusive nature of makerspaces.

> Any single design effort, no matter how intensely motivated, is inadequate relative to the enormity of the problem. Incremental efforts necessarily lack the punch needed for broad social change, since existing conditions are over-constrained and barriers must be addressed simultaneously at multiple nodes. (Niesma 2004, 24)



Graphic of Bloomfield makerspace

In order to move closer to a universal makerspace, those initiatives for creating safe spaces must be implemented into mainstream maker culture. The emotional labour required to implement such spaces into male-centric spaces is substantial; however, it is essential to change the governing mentalities surrounding Makerspaces, including who has the right to call themselves a maker. The exclusionary nature of mainstream makerspaces requires more of significant intervention. Why should women have to create their own space when space already exists?

CHAPTER 4: BLOOMFIELD CENTRE DESIGN PRINCIPLES

Urban Observations and Proposed Strategies

Setbacks and Urban Condition Along the Periphery

Both the Fielding and Common buildings are set back an equal distance from the street. There is a courtyard between them, which backs onto the end of Fern Street. The Bloomfield Junior High building is set back a significant distance from the street on all three sides, disconnecting the rest of the site from Almon Street.

Robie Street is one of the main arteries for commuters and transit in Halifax. There is a bus stop located on Robie Street in front of the site. Agricola Street has a higher volume of cyclists and pedestrians than Robie; however, all the sidewalks surrounding the site are only at the minimum width to comply with city building codes.

Based on the current conditions surrounding the site, this thesis proposes to demolish the Bloomfield Junior High building, while maintaining both the Fielding and Common buildings; increase the width of all pedestrian paths around the periphery of the site; remove barriers between the site and the sidewalk to minimize the perceived public boundary; include bike lanes on Robie and Agricola Street; and integrate a bus stop shelter with the entrance of the makerspace along Robie Street.

The Bloomfield Junior High building will be demolished and the Fielding and Common buildings will remain as historical anchors. The Common and Fielding buildings offer unique

historical architectural qualities that signify both social and cultural ideals evolving through time. Both buildings, but primarily the Common School, signify the urban rebuilding after the Halifax Explosion in 1917 which destroyed most of North End Halifax (HRM Heritage Planning 2007, 6). Based on the report prepared by HRM heritage planners, the Fielding and Common buildings have significant heritage value and are recommended to be preserved (HRM Heritage Planning 2007, 9).

Permeability Through the Site

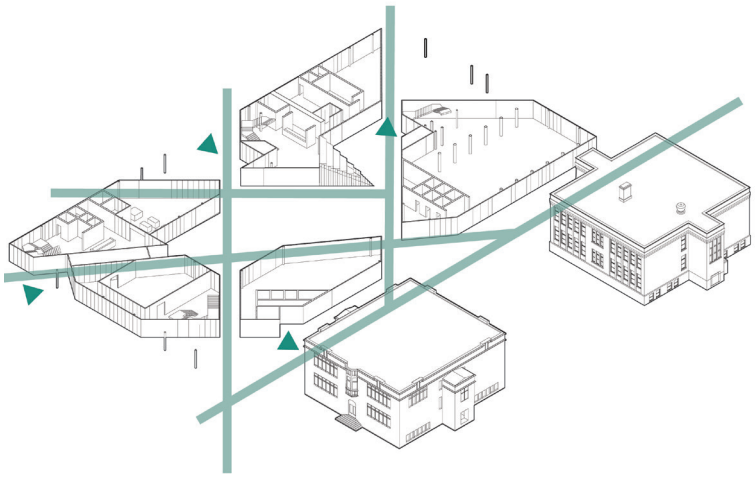
The site is situated at a hinge point between residential and industrial neighbourhoods. Thus, the project requires the creation of an urban strategy that can address both of these distinct neighourhoods.

This site previously acted as a major pedestrian thoroughfare, with people primarily moving from Robie to Agricola. Currently, pedways connect the Fielding and Common School to the Bloomfield Junior High building. The raised pedways maintain walkability and visibility at grade along the axis of what used to be Bloomfield Street. Visibility through the site and into buildings is limited, as all three existing buildings are constructed out of brick and stone, with the Bloomfield Junior High building being especially opaque, due to the pattern and size of fenestration.

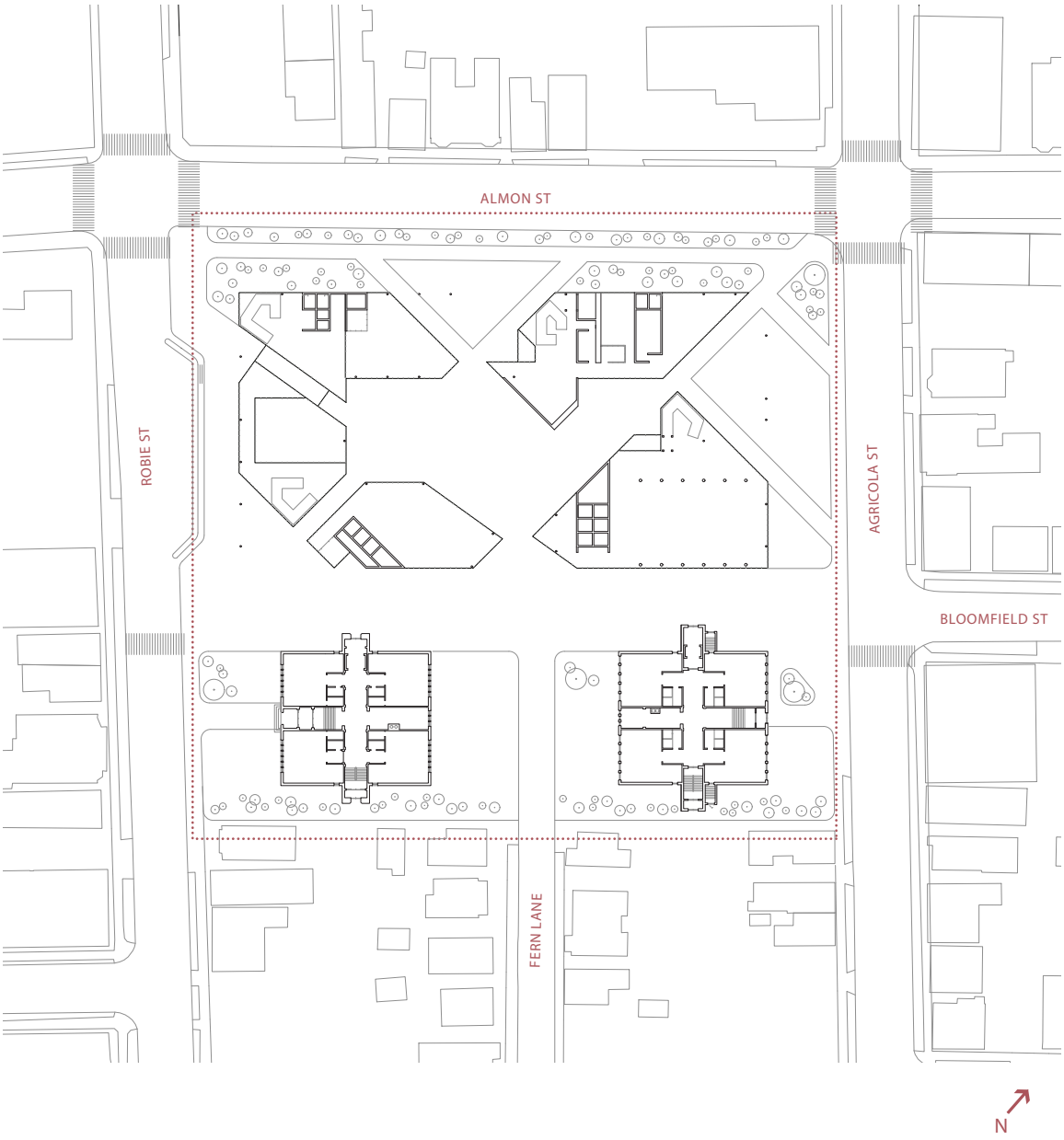
As a response to the current materiality and permeability through the site, this thesis proposes to maintain the current pedestrian street along the Bloomfield Street axis; puncture the site with secondary pedestrian paths to activate the courtyards; establish material choices that provide visual connections through the site; and increase the visibility of the

makerspace activities.

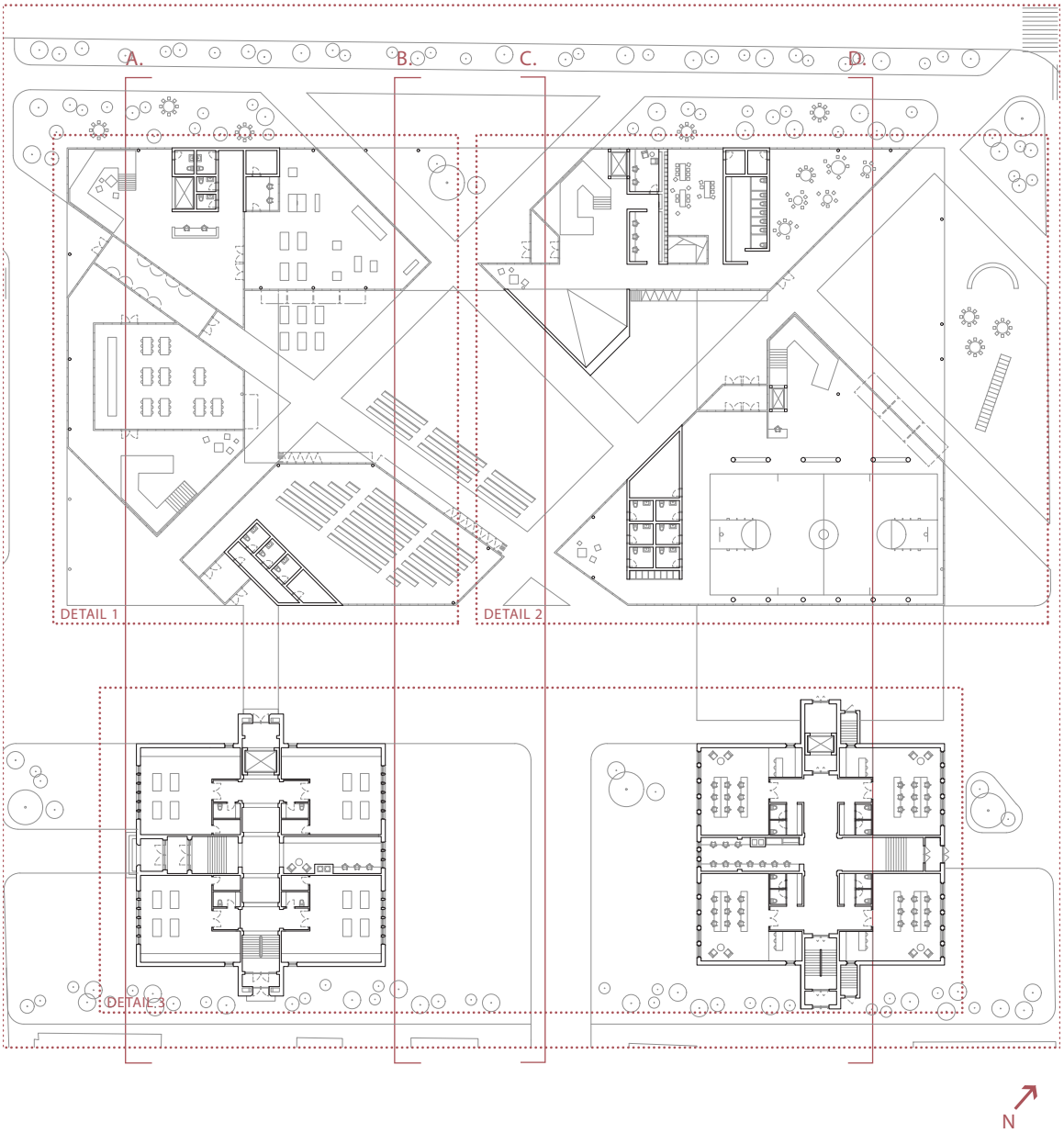
By mapping the site using historical paths, urban strategies and current points of access (bus stop on Robie, crosswalk on Agricola), new pathways are created by carving through the buildable area. These diagonals allow for the site to become permeable and offer short-cuts through the site at all hours.



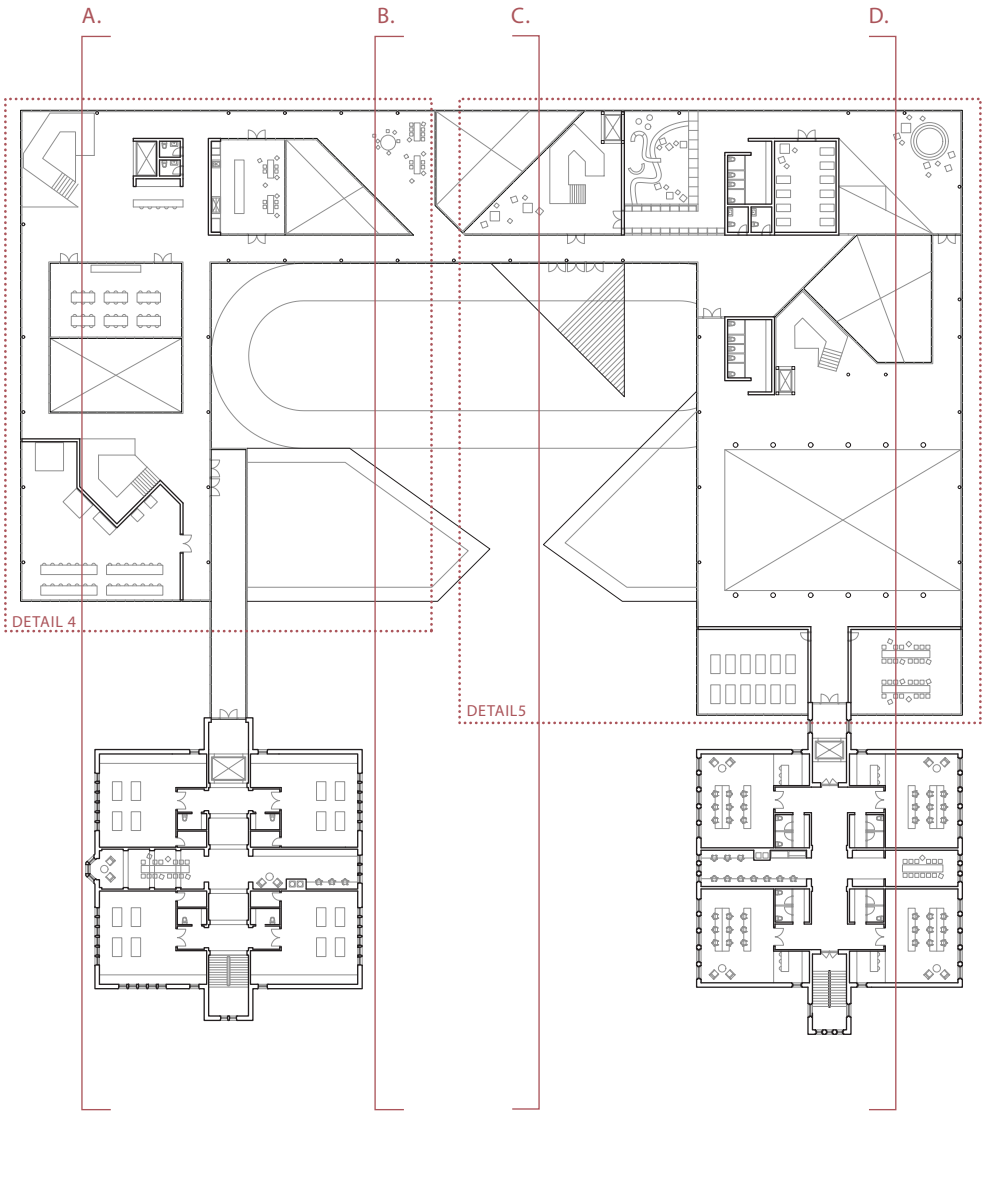
Axonometric showing pedestrian paths through the site



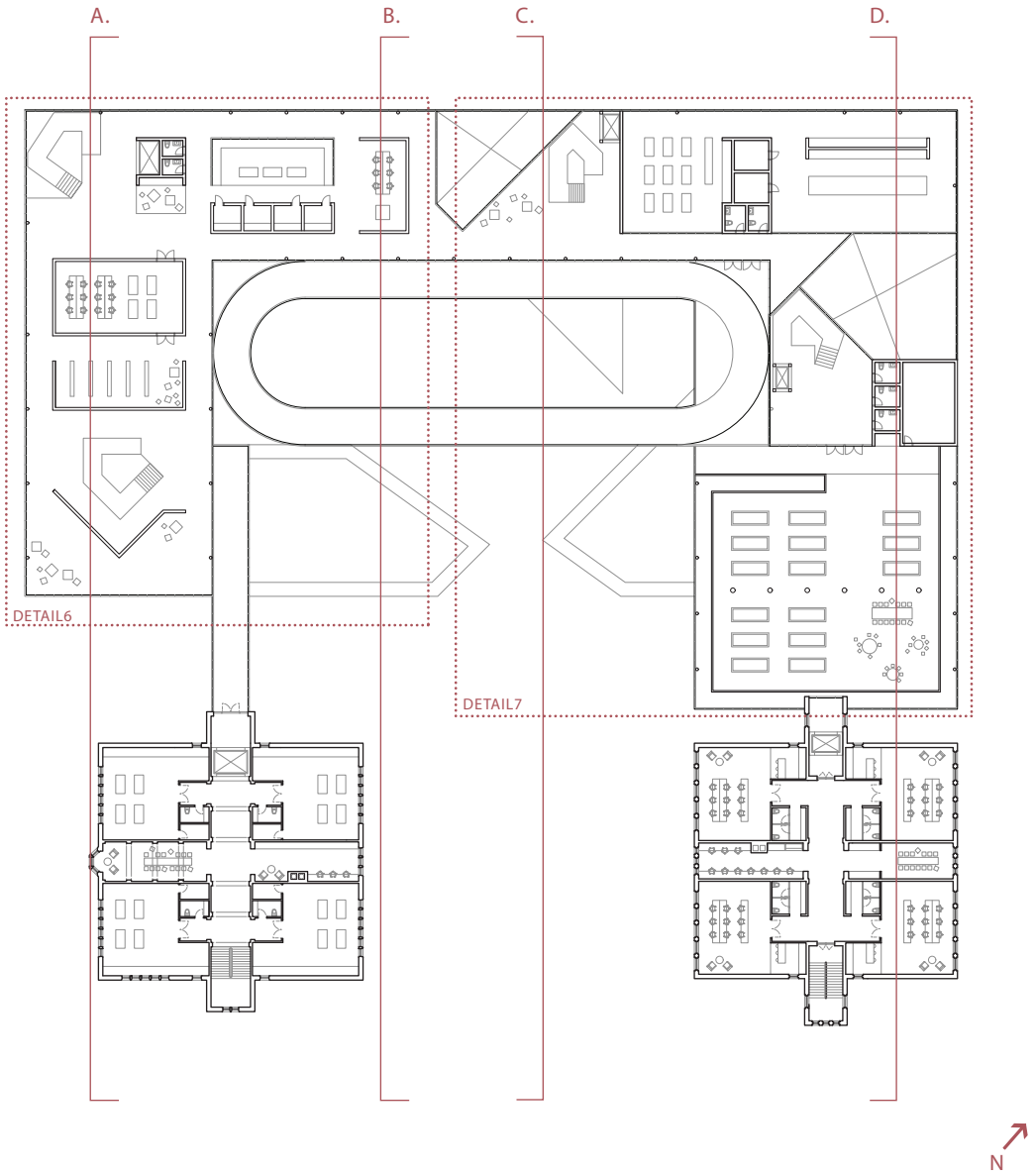
Site Plan



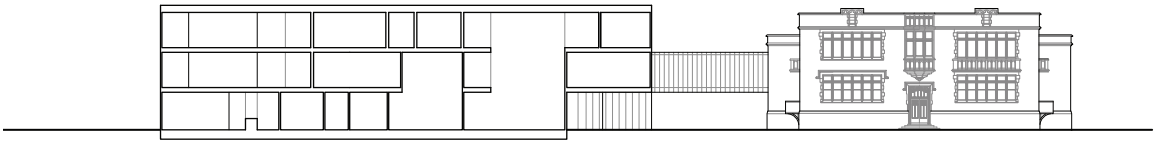
Ground floor plan



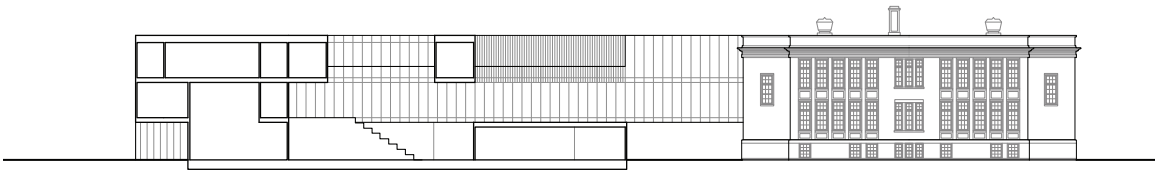
Second floor plan



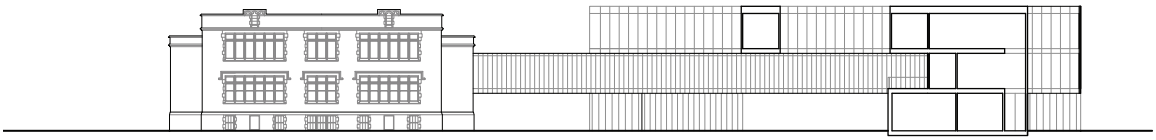
Third floor plan



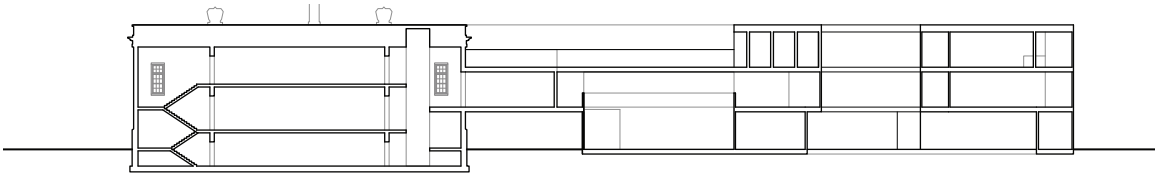
Building section A: cutting through makerspaces



Building section B: cutting through looking into the courtyard toward amphitheatre



Building section C: cutting through the childcare centre and looking into the courtyard



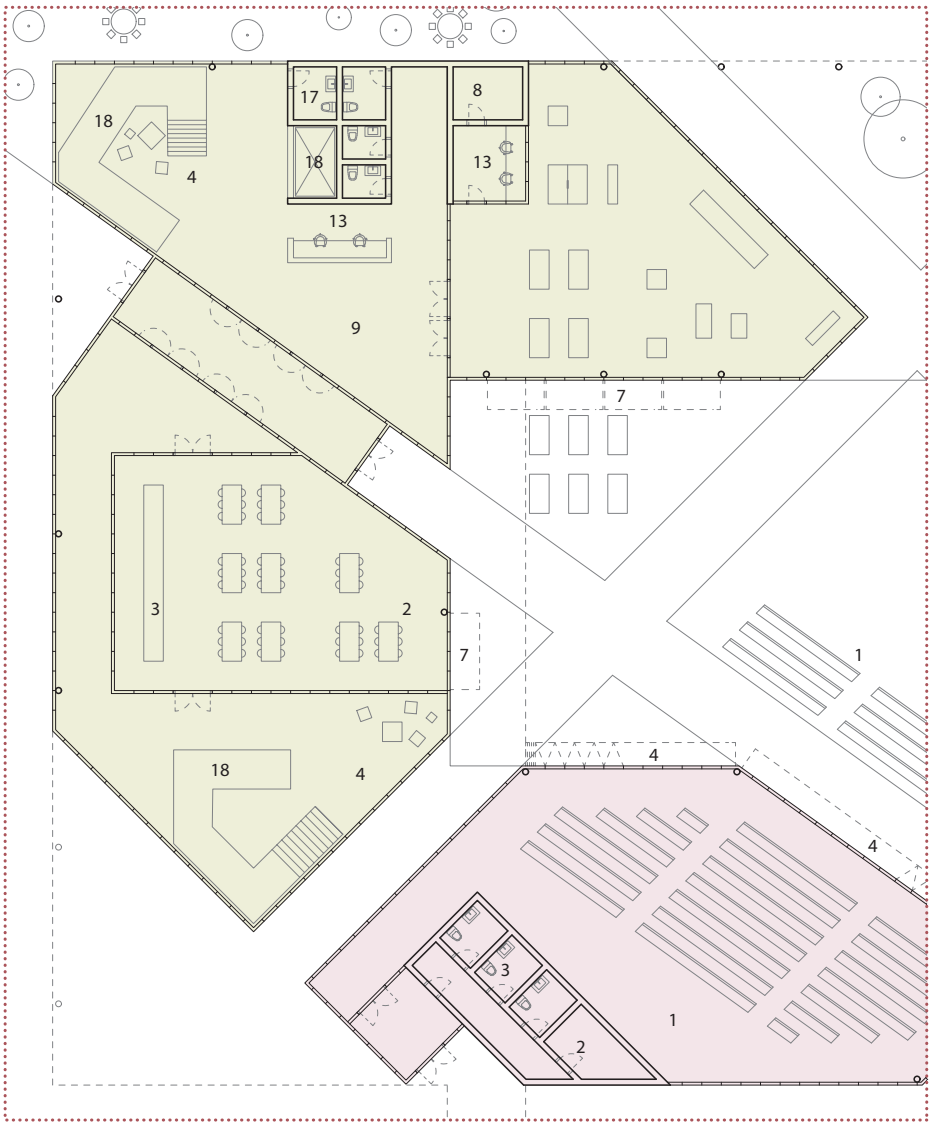
Building section D: cutting through the community gym, childcare centre and W.S. Feilding building

Programmatic Strategies

Programmatic Components

As previously expanded upon in chapter two, currently the site sits completely vacant, surrounded by a fence. What remains are overgrown parking lots and basketball courts, a painted wall for screening films, a small group of garden boxes, a bus stop, and the Bloomfield tree at the corner of Agricola and Robie.

The programmatic strategy for this thesis is to pair historical activities with contemporary community needs. To form and organize the Bloomfield centre programs, historical activities that have taken place on the site through time and the current need for access to creative and community spaces in Halifax have been considered. This thesis proposes a community makerspace; a community gym; a childcare centre and playground; place of worship; rentable artist studios; rentable workspace for small businesses and non-profits; a community garden and walking track; and an amphitheatre.



MAKERSPACE

Universal Makerspace (Robie and Almon corner)

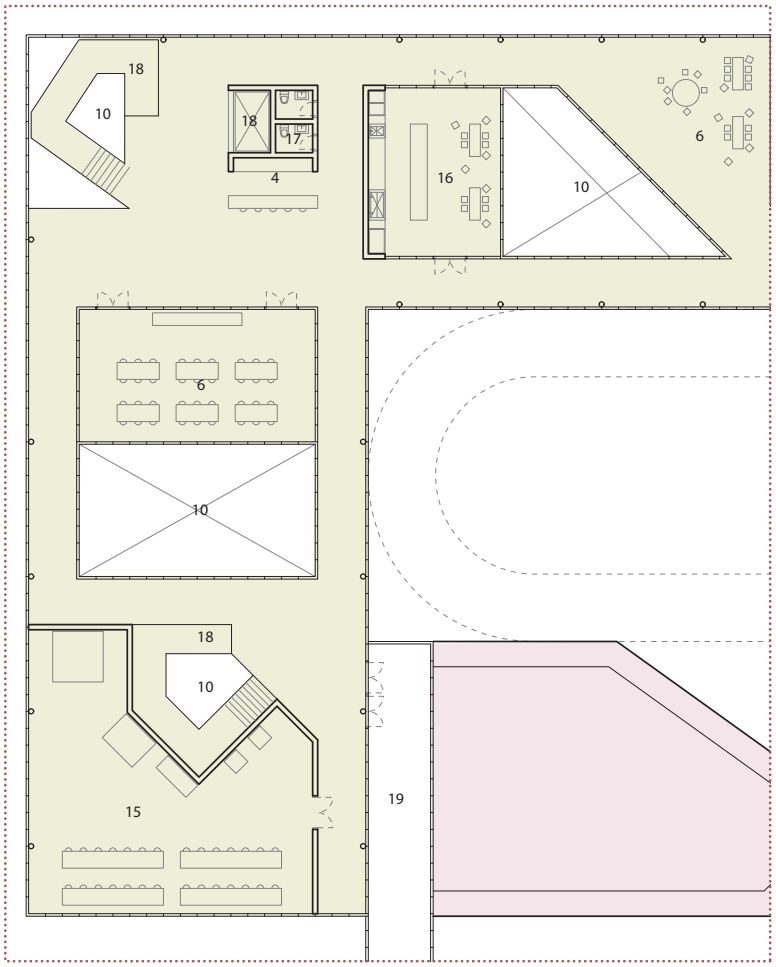
1. Large woodshop / fabrication shop
2. Medium assembly shop
3. Tool library
4. Lounge / meeting space
7. Garage doors opening onto courtyard
8. Storage
9. Exhibition space
13. Office
17. Washrooms
18. Vertical circulation

PLACE OF WORSHIP

Safe Harbour Community Church

1. Community meeting / worship space
2. Storage
3. Washrooms
4. Operable wall system opening onto courtyard

Detail 1: ground floor of makerspace and place of worship

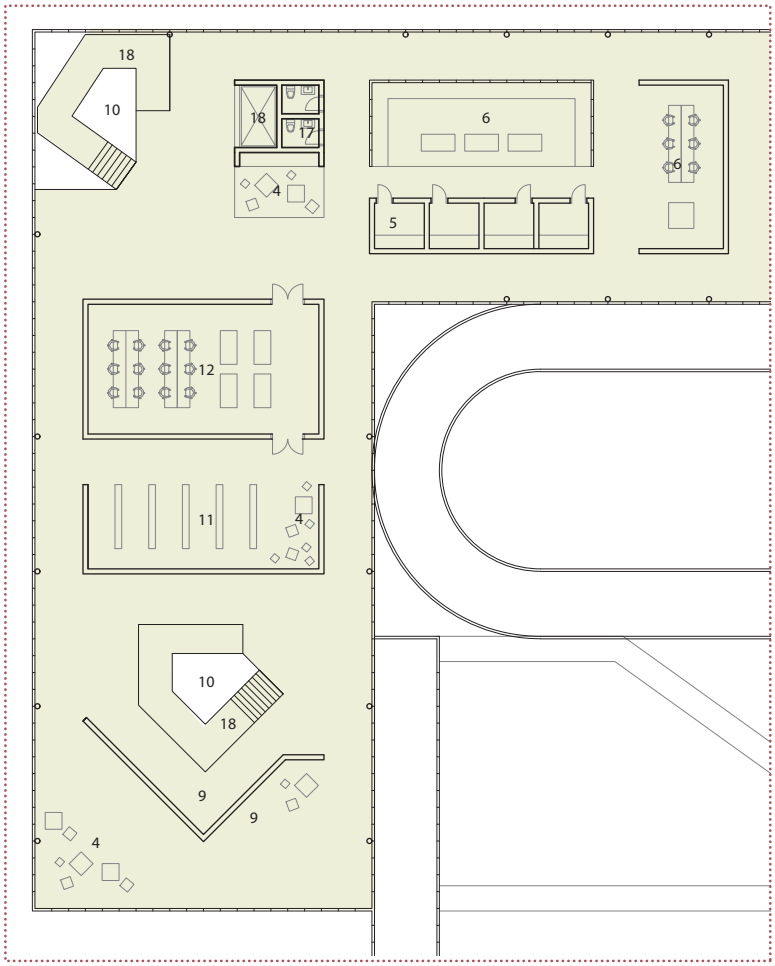


MAKERSPACE

Universal Makerspace (Robie and Almon corner)

4. Lounge / meeting space
6. Communal work / meeting / teaching space
10. Void
15. Digital fabrication lab
17. Washrooms
18. Vertical circulation
19. Connector to Bloomfield Common Building

Detail 4: second floor of makerspace

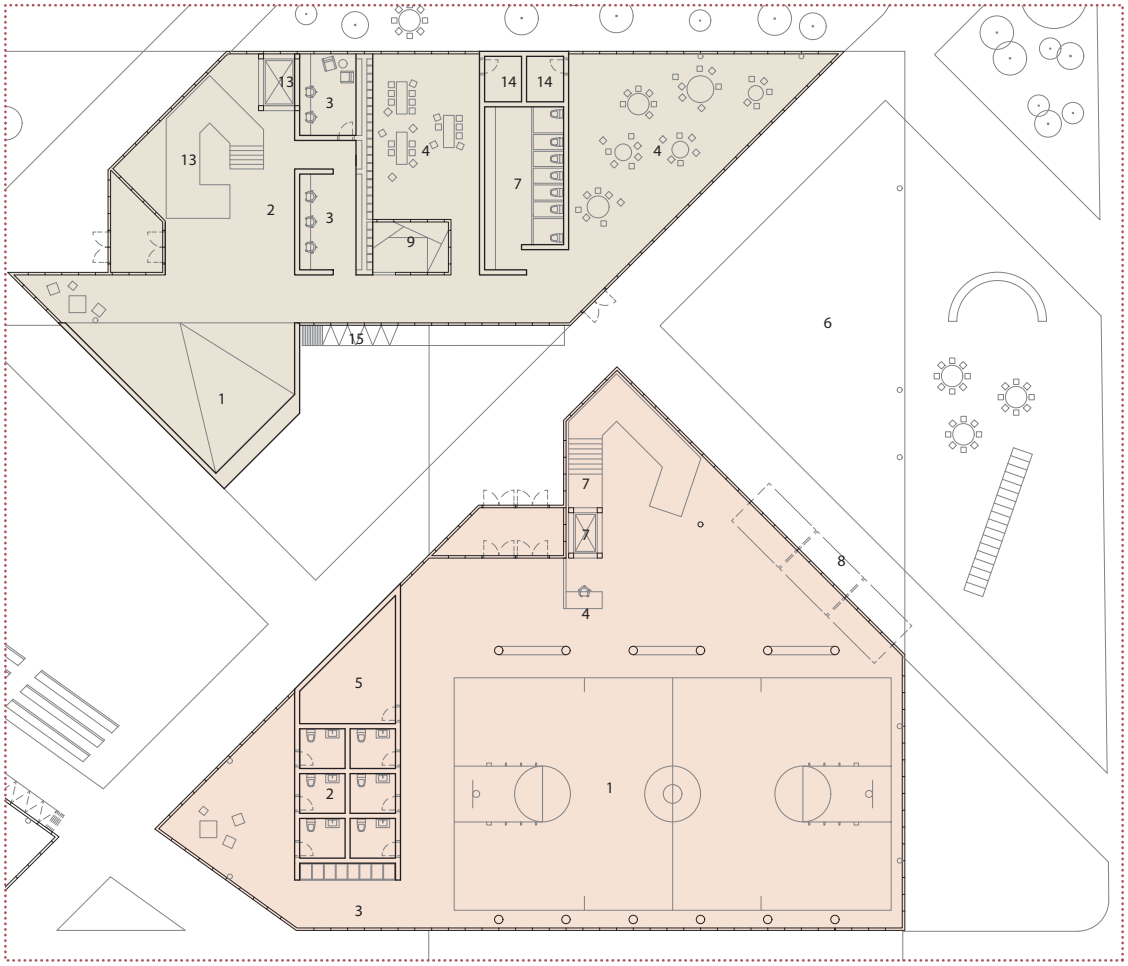


MAKERSPACE

Universal Makerspace (Robie and Almon corner)

4. Lounge / meeting space
6. Quiet / private working space
6. Communal work / meeting / teaching space
9. Exhibition space
10. Void
11. Resource library
12. Digital workspace
17. Washrooms
18. Vertical circulation

Detail 6: third floor of makerspace



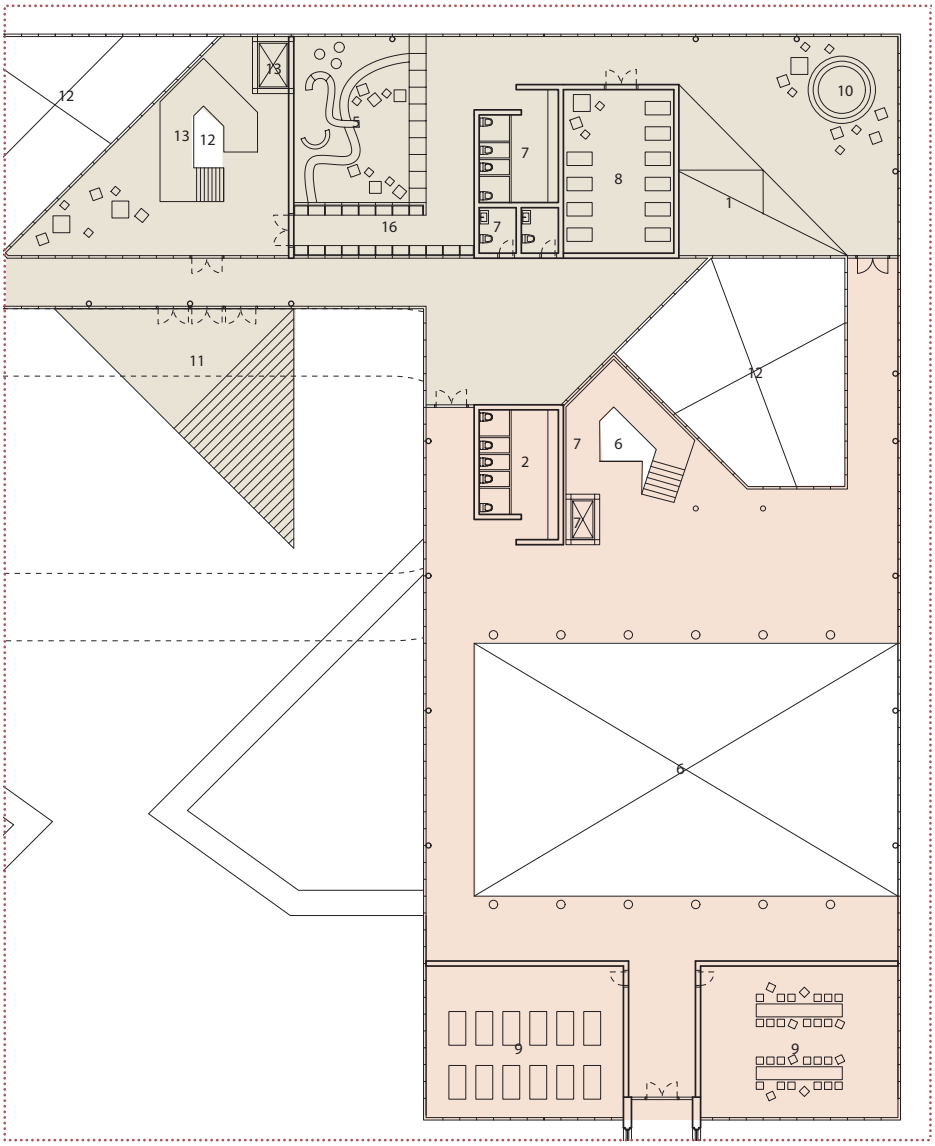
CHILDCARE CENTRE
(Almon and Agricola corner)

1. Interior climbing wall
2. Reception
3. Staff area
4. Classrom
6. Playground (exterior)
7. Washrooms
9. Small reading room
13. Vertical circulation
14. Storage
15. Operable wall system opening onto courtyard

COMMUNITY GYM
(Agricola)

1. Basketball court
2. Washrooms / changerooms
3. Lockers
4. Office
5. Storage
7. Vertical circulation
8. Operable wall system opening onto courtyard

Detail 2: ground floor plan of community gym and childcare centre



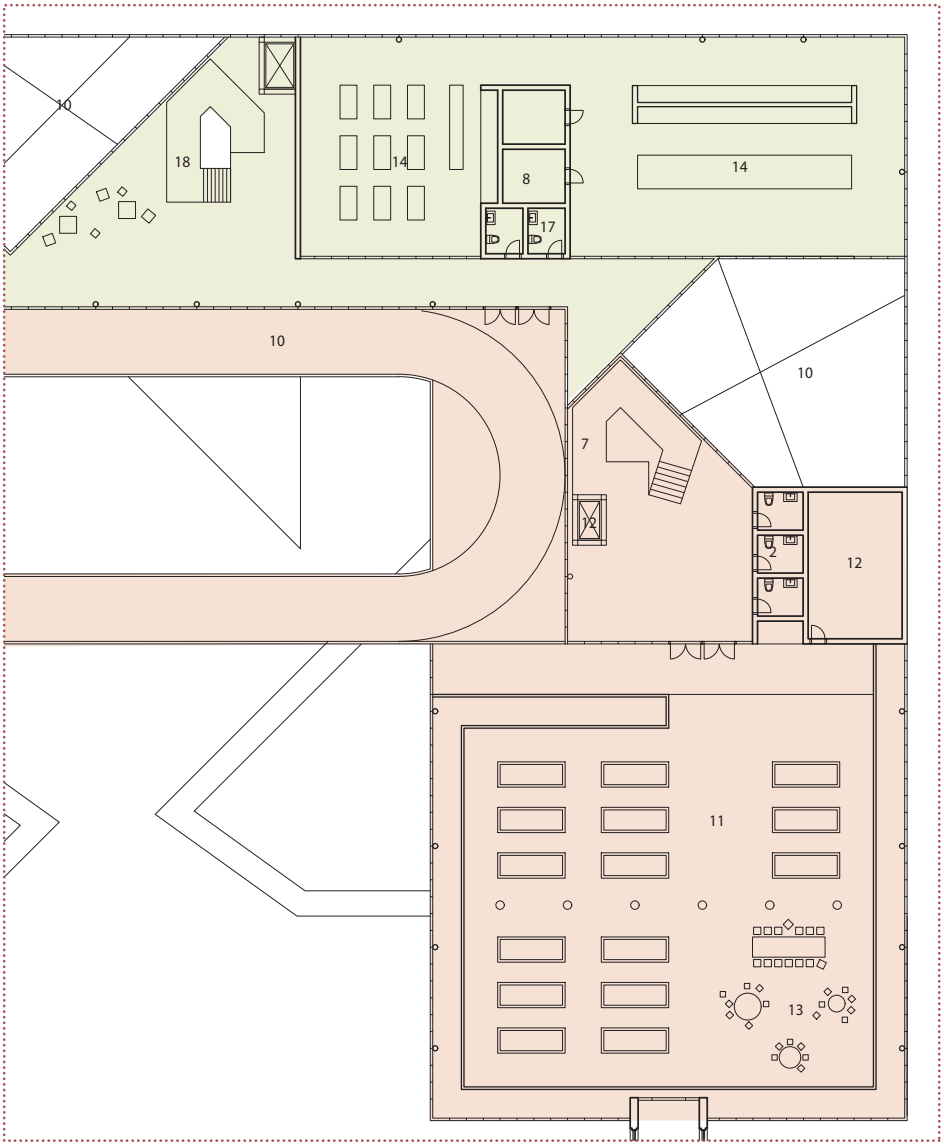
CHILDCARE CENTRE
(Almon and Agricola corner)

1.Interior climbing wall
5. Playground (interior)
7. Washrooms
8. Nap room
10. Sunken group reading area
11. Amphitheatre seating
12. Void
13. Vertical circulation
16. Lockers

COMMUNITY GYM
(Agricola)

2. Washrooms
6. Void
7. Vertical circulation
9. Multi-purpose room

Detail 5: second floor plan of community gym and childcare centre



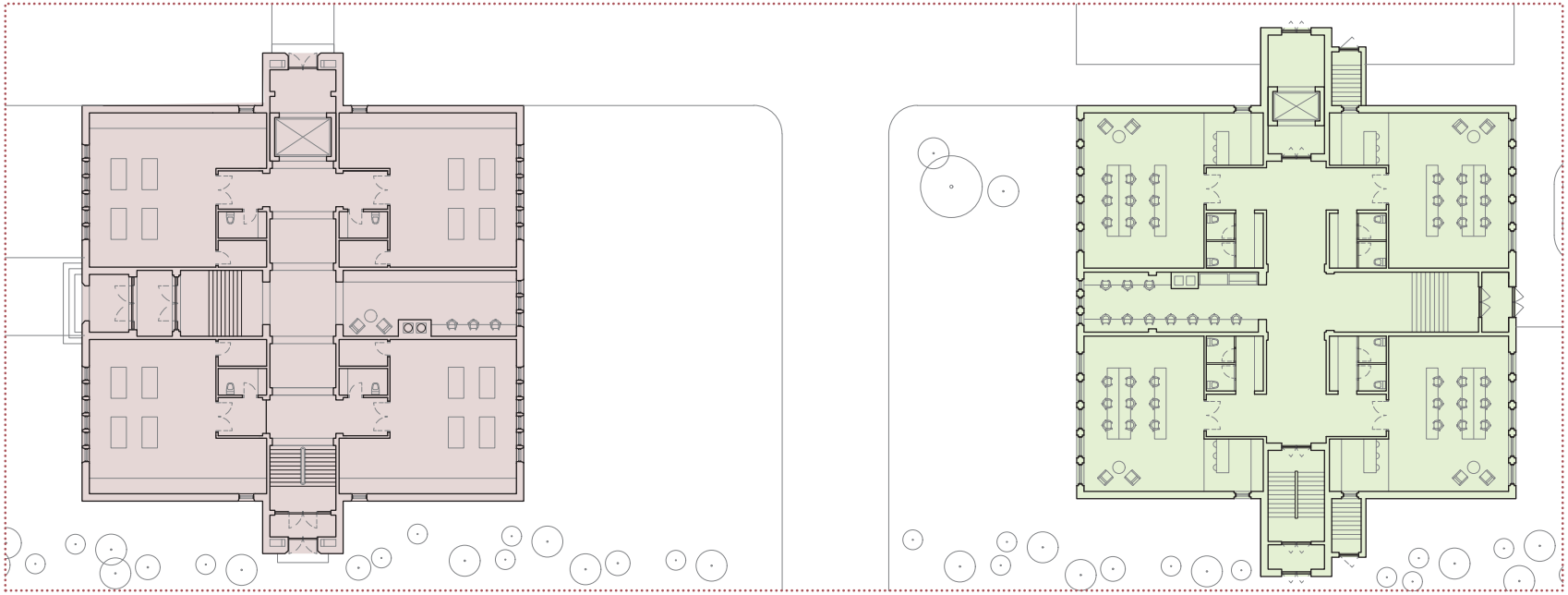
MAKERSPACE
Universal Makerspace (Robie and Almon corner)

8. Storage
10. Void
14. Community commercial kitchen
17. Washrooms
18. Vertical circulation

COMMUNITY GYM
(Agricola)

2. Washrooms
7. Vertical circulation
10. Walking / Running track
11. Community garden
12. Tool shed
13. Outdoor picnic area
14. Garden water supply

Detail 7: third floor plan of community gym (rooftop garden) and makerspace



BLOOMFIELD COMMON SCHOOL

1. Rentable studio
2. Communal kitchen
3. Communal lounge / meeting space
4. Washrooms

W.S FIELDING SCHOOL

1. Rentable individual desk space
2. Rentable small office space
3. Communal kitchen
4. Communal lounge / meeting space
5. Washrooms

Detail 3: ground floor plan of Common building (left) and Fielding building (right)

Cross-Programming

Rem Koolhaas first proposed the idea of "cross-programming" in his text *Delirious New York*, intentionally introducing unexpected programs within buildings of different types, such as running tracks within skyscrapers (Lynch 2018).

This thesis proposes a programmatic strategy that incorporates programs from the past (including some that were not able to find a new home after all three buildings were closed), while also including new programs that will support and provide more access to the makerspace programs based on the strategies used by feminist makerspaces outlined in chapter 3. By pairing unexpected programs, the Bloomfield Centre hub aims to gather together many different people to learn from one another and expose different people to a variety of activities, ranging from playing a group sport to watching a film to woodworking.

Tom Parker, previously a Bloomfield School principal, advocated and organized for different community members to come together at the school in the evenings and weekends to use the facilities to gather and make things together. This can have a profound impact on communities. Parker notes:

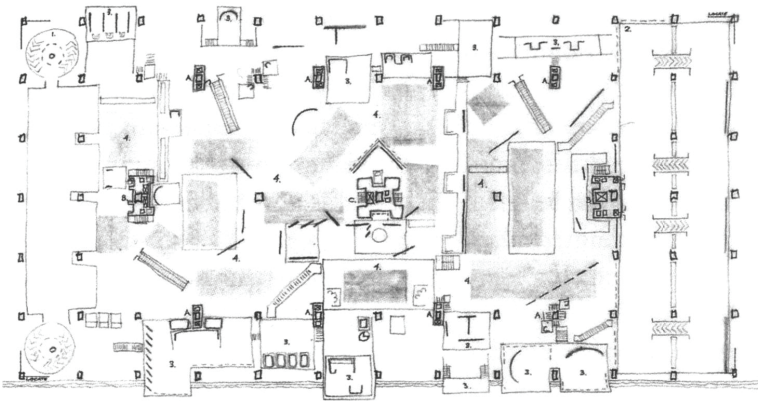
> Men and women in any community can grow to know and respect each other only by doing things together; and on the belief that men and women must learn to cooperate and work together as parents, as educators, and as citizens if they are to succeed in providing better education for their children. (Parker, 1949)

Habitable Public Space

On the site, all the major programs open onto the central courtyard. This courtyard allows people to explore and become exposed to new activities and ideas without the perceived boundaries of interior walls. Someone walking through the

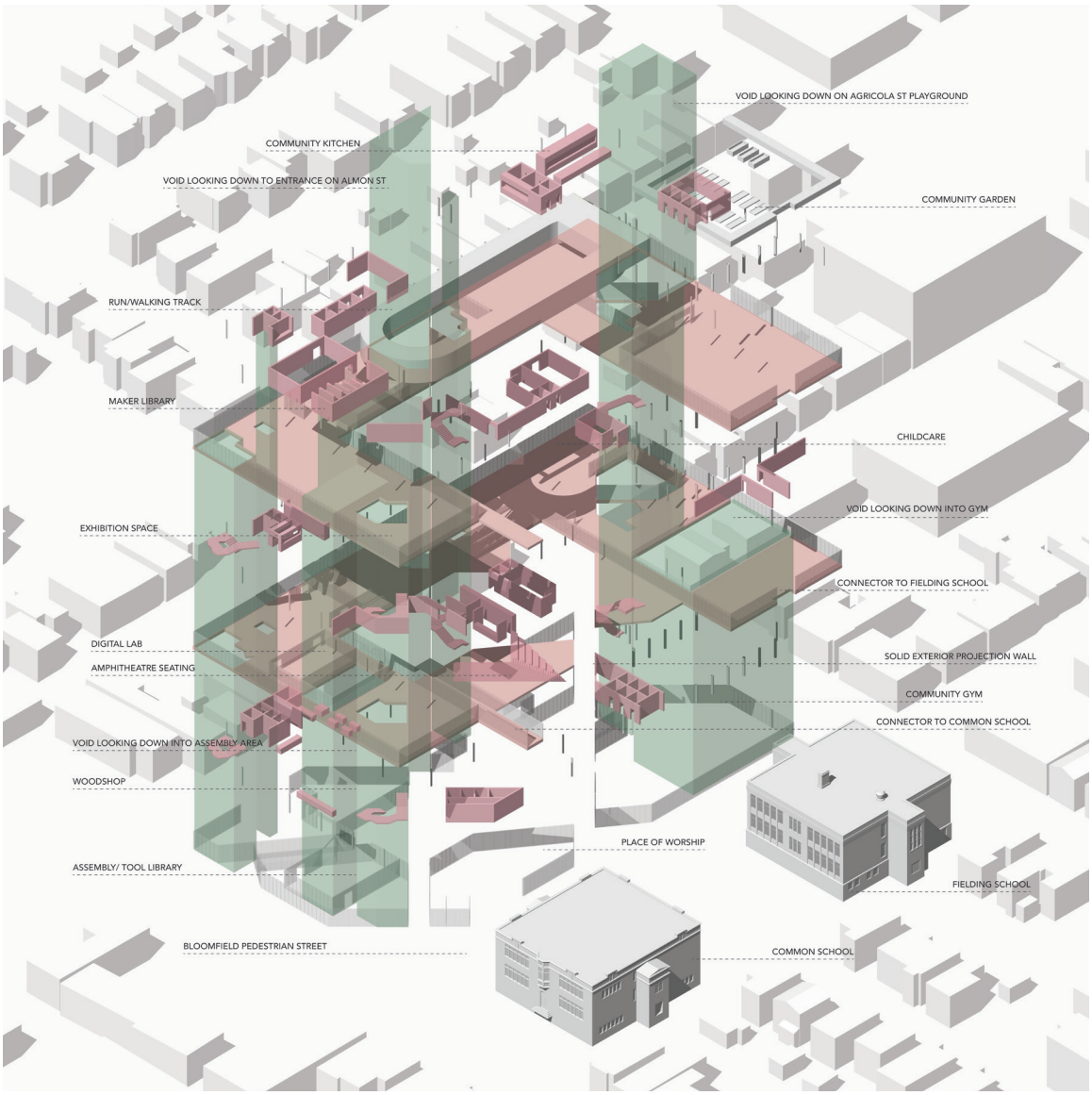
site to catch the bus on Robie Street can get a glimpse of what is going on within the makerspaces.

The courtyard becomes a shifting game board as all the program activities open and close into the yard depending on the time of day and season. Some programs are organized in a way that allows for overlap and hybridity of activities within the courtyard. As Mathews describes in *The Fun Palace as Virtual Architecture: Cedric Price and the Practices of Indeterminacy*; Price used the fun palace to study temporal architecture which is defined as an entity where programs and activities can continuously adapt to different programmatic needs and indetermined uses (Mathews 2006, 42).

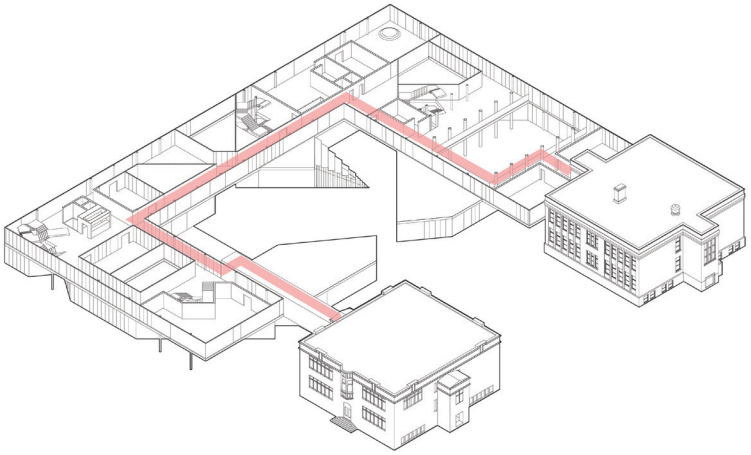


Cedric Price, preliminary sketch of the Fun Palace floor plan, showing areas of variable activity, Mathews 2006, 43

> For the Fun Palace, Price began by restating Joan Littlewood's brief as a problem of a temporal architecture, which would permit multiple events and whose spaces would readily adapt to change. Rather than seek the answer within a formal repertoire of objects and spaces, he considered the problem in temporal terms and sought the solution within the restated problem itself. The Fun Palace would then simply be an entity whose essence was events in continual flux, which adapted itself spatially to accommodate multiple and indeterminate uses (Figure 3). (Mathews 2006, 42)

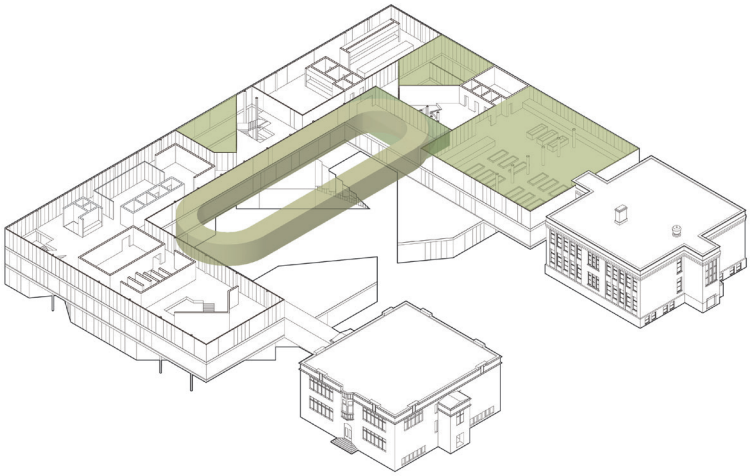


Exploded axonometric showing cross-programming: voids (green), floor plates (peach), solid components (pink)

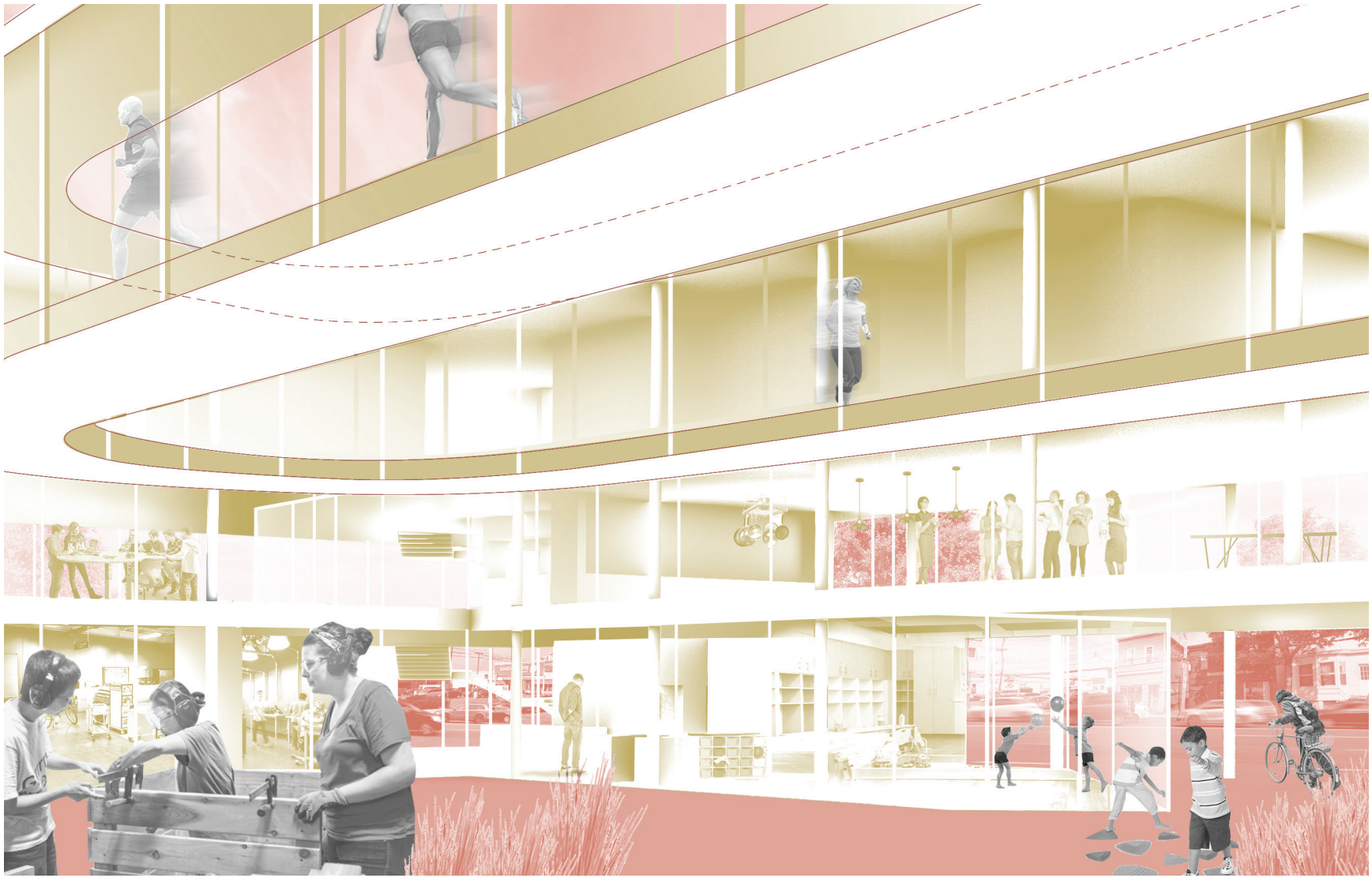


Axonometric highlighting main circulation on the second floor looking into the courtyard

On the 3rd floor, all major programs are looped together by a walking/ running track that overlooks the courtyard. The main walking track is accessed by a stair or elevator located in the community gym. The 3rd-floor track entrance is connected to a large rooftop community garden with a variety of bed sizes and heights. This garden looks onto the playground along Agricola Street and the central courtyard.



Axonometric highlighting walking/running track, rooftop community garden and voids



Rendering of courtyard activities looking up towards the walking track

By providing habitable public spaces intertwined by public pathways and shortcuts, the aim is to allow people with varying desires the ability to participate to the level they are comfortable with.

Visual Connectors

Each of the major programs inhabits spaces that are designed with multiple levels and layers of connectivity in mind. Both the large woodshop and the fabrication lab/tool library on the ground floor of the makerspace have double-height spaces that allow for other types of makers and children in the adjacent daycare to observe the activities below. Cutting through the building with pathways and fully glazing the walls looking onto the courtyard, a sense of observation and safety is achieved.

CHAPTER 5: CONCLUSION

The Bloomfield Centre remains vacant, without plans for re-establishing its status as a community anchor in North End Halifax. As time goes on, the Common School and Fielding School continue to deteriorate. This thesis imagines the Bloomfield Centre as a place that both looks to its past use of education, making and play, and also toward a new potential of prioritizing creative community space. The Bloomfield Centre proposal implements the use of cross-programming, degrees of transparencies and connectivities to increase access by way of providing support programs and activities to the community makerspace programming as a result of the study of both the historical activities on the site and analysis of feminist makerspaces. This research focused on understanding the site to its full capacity, as well as strategies to minimize barriers to women and non-binary people when engaging in community makerspace activities.

Ideas around observation and exposure were essential when developing this proposal and the forming of its architecture. The visual connectors, diagonal paths, voids from the exterior, double-height spaces within the buildings, were all design strategies to increase the exposure and encourage community members to become aware of the resources and programs available to them, as well as encourage newcomers to join in on makerspace activities, once a male-dominated and closed-off space.

REFERENCES

Andersen, Lars, Peter Bo, Kim Danholt, Nicolai Halskov, Hansen Brodersen, and Peter Lauritsen. 2015. “Participation as a Matter of Concern in Participatory Design.” *CoDesign* 11, no. 3-4: 250-61.

Barack, Lauren. 2018. “Makerspaces Necessitate Greater Mindfulness Of Gender Bias In STEM.” *Education Dive*. June 20. https://www.educationdive.com/news/makerspaces-necessitate-greater-mindfulness-of-gender-bias-in-stem/525932/.

Bean, Vanessa, Nicole M. Farmer, and Barbara A. Kerr. 2015. “An Exploration Of Women’s Engagement In Makerspaces.” *Gifted And Talented International* 30, no. 1-2: 61-67.

Boon, Jacob. 2018a. “Province Passes on Bloomfield Centre.” *The Coast*. January 26. https://www.thecoast.ca/RealityBites/archives/2018/01/26/province-passes-on-bloomfield-centre.

Boon, Jacob. 2018b. “A lack of imagination on Bloomfield: Parent Caroline Arsenault is upset the province passed on HRM’s offer to buy the decaying property for a new school.” *The Coast*. January 30. https://www.thecoast.ca/halifax/a-lack-of-imagination-on-bloomfield/Content?oid=12350494.

Condello, Annette, and Steffen Lehmann. 2016. *Sustainable Lina.* Switzerland: Springer International Publishing.

Dalhousie University GIS Centre. 2018. Aerial photographs of Halifax.

Double Union. 2019. “Double Union is a Space for Your Projects.” *Double Union*. https://doubleunion.org.

Dougherty, Dale. 2012. “The maker movement.” *Innovations: Technology, Governance, Globalization* 7, no. 3: 11-14.

Dougherty, Dale. 2013. “The maker mindset.” *In Design, Make, Play,* edited by Margaret Honey, David E. Kanter, 25-29. New York: Routledge.

Drexel University Excite Center. 2018. “Making Culture - Excite Center.” *Drexel University.* https://drexel.edu/excite/engagement/learning-innovation/making-culture-report/.

Dubé, Jacques. 2018. “Bloomfield Property Process Update”. Halifax Regional Council. Item no. 6. https://www.halifax.ca/sites/default/files/documents/city-hall/regional-council/180130rci06.pdf.

Faulkner, S., and A. McClard. 2014. “Making Change: Can ethnographic research about women makers change the future of computing?” *Ethnographic Praxis in Industry Conference Proceedings*, 187-198.

Faulkner, S. 2014. Women Who Make: Undercounted as Makers and Underwhelmed by Makerspaces. Computer 47 no. 12: 30-31.

Flinn, Sean. 2005 “Spaced Out.” *The Coast.* December 29. https://www.thecoast.ca/halifax/spaced-out/Content?oid=958473.

Foster, Ellen K. 2017. “Making Cultures: Politics of Inclusion, Accessibility, and Empowerment at the Margins of the Maker Movement.” PhD diss., Rensselaer Polytechnic Institute.

Godfrey, Beth. 2015. “Making Gender: Technologists and Crafters in Online Makerspaces.” Master’s thesis., Georgia Institute of Technology.

Google Earth. 2018. “Map of Bloomfield Centre and its surrounding neighbourhood.” Accessed September. https://www.google.com/earth/.

Google Earth. 2018. “Map of Bloomfield Centre and its surrounding streets.” Accessed September. https://www.google.com/earth/.

Google Earth. 2018. “Map of Halifax Peninsula, Nova Scotia.” Accessed September. https://www.google.com/earth/.

Hackermoms. 2018. “Our History.” https://hackermoms.org/where-we-came-from/.

Halifax Municipal Archives. 2019. City of Halifax Fonds. Bloomfield High School. Retrieval Code:102-38-1-24.

Halifax Municipal Archives. 2019. Lou Collins Fonds. Retrieval Code:CR 30E.61.13.

Halifax Regional Council. 2011. *Halifax Regional School Board Request - Bloomfield Property.* Halifax, Halifax Regional Municipality.

Halifax Regional Council: Corporate Real Estate. 2018. *Bloomfield Property Process Update.* Halifax, Halifax Regional Municipality.

Henry, Liz. 2014. “The Rise of Feminist Hackerspaces and How to Make Your Own.” *Model View Culture.* February 3. https://modelviewculture.com/pieces/the-rise-of-feminist-hackerspaces-and-how-to-make-your-own.

Holcomb, Courtney. 2018. “Meet Double Union, San Francisco’s Feminist Hacker/Maker Space.” *Culture Trip*. https://theculturetrip.com/north-america/usa/california/articles/meet-double-union-san-franciscos-feminist-hackermaker-space/.

HRM Heritage Planning. 2007. *Bloomfield School Evolution of the Site*. Halifax, Halifax Regional Municipality.

Imagine Bloomfield. 2012. “About Imagine Bloomfield.” https://imaginebloomfield.wordpress.com/about/.

Koolhaas, Rem. 1994. *Delirious New York: A Retroactive Manifesto for Manhattan.* New York: Monacelli Press.

Lewis, J. 2015. "Barriers to women's involvement in hackspaces and makerspaces." *Access as Spaces.* http://access-space.org/wp-content/uploads/2015/10/Barriers-to-womens-involvement-in-hackspaces-and-makerspaces. pdf.

Library and Archives Canada. 1919. Bloomfield Common School, Halifax, N.S. MIKAN no. 3305709. Accessed 2019.

Luck, Rachael. 2003. "Dialogue in Participatory Design." *Design Studies* 24, no. 6: 523-35.

Lynch, Patrick. 2018. "Spotlight: Rem Koolhaas." *ArchDaily*. November 17. https://www.archdaily.com/449282/happy-birthday-rem-koolhaas-2.

Maker Media. 2018. "About." https://makermedia.com/about.

Makerspaces. 2018. "What Is a Makerspace? Is It a Hackerspace or a Makerspace?" https://www.makerspaces.com/what-is-a-makerspace/.

Mathews, Stanley. 2006. "The Fun Palace as Virtual Architecture: Cedric Price and the Practices of Indeterminacy." *Journal of Architectural Education* 59, No. 3. 39-48

McCann, L.D. 2012. "Halifax." *The Canadian Encyclopedia.* September 24. https://www.thecanadianencyclopedia.ca/en/article/halifax.

Melo, Marijel C. 2018."The Shadow Rhetorics Of Innovation: Maker Culture, Gender, And Technology." PhD diss., University of Arizona.

Meyer, Anna. 2018. "Feminist Makerspaces: Making Room For Women To Create." *The Riveter Magazine*. February 14. https://www.therivetermagazine.com/feminist-makerspaces-making-room-for-women-to-create/.

Nieusma, Dean. 2004. "Alternative Design Scholarship: Working Toward Appropriate Design." *Design Issues* 20, no. 3: 13-24.

Noonoo, Stephen. 2018. "Maker Culture Has A 'Deeply Unsettling' Gender Problem - Edsurge News." *Edsurge*. June 14. https://www.edsurge.com/news/2018-06-14-maker-culture-has-a-deeply-unsettling-gender-problem.

Pagano, Danielle. 2018. "Girls Or Geeks? Gender Bias In Makerspace Culture." *MIT J-WEL*. https://jwel.mit.edu/news/girls-or-geeks-gender-bias-makerspace-culture.

Prototype PGH. 2018. "Company." https://prototypepgh.com/mission.

Public Archives of Nova Scotia (PANS). 1878. Hopkins Atlas. Microfilm 958. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1895. Insurance Plan. Microfilm 955. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1911. Insurance Plan. Microfilm 959. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1914. Insurance Plan. Microfilm 959. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1918. Assessment Plan. Microfilm 960. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1919. Othographic drawings of Bloomfield Common School. Microfilm 13562. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1922. Othographic drawings of Bloomfield Bungalow School. Microfilm 13226. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1929. Othographic drawings of W.S. Fielding School. Microfilm 13226. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1951. Insurance Plan. Microfilm 962. Accessed 2018.

Public Archives of Nova Scotia (PANS). 1971. Insurance Plan. Microfilm 23130. Accessed 2018.

Public Archives of Nova Scotia (PANS). n.d. Notman Collection. no. 1983-310 number 21982. Accessed 2018.

Rees, Angela. 2017. “Feminist Maker Spaces.” *Taccle 3 Coding*. http://www.taccle3.eu/en/blog/2017/03/14/feminist-maker-spaces/.

Reger, Adam. 2018. “Creating Space For Equity In Making.” *Remake Learning*. https://remakelearning.org/blog/2018/03/01/space-for-equity-in-making/.

Rothschild, Joan. 1999. *Design and Feminism: Re-visioning Spaces, Places, and Everyday Things.* New Brunswick, N.J: Rutgers University Press.

Spacey, John. 2016. “What is a Maker Culture?” *Simplicable*. December 13. https://simplicable.com/new/maker-culture.

Stevenot, Kristal. 2009. “Architecture for Continuous Use: How the Adaptive Reuse of Halifax’s Bloomfield Centre Can Preserve Collective Memory and Revitalize Place.” Master’s thesis, Dalhousie University, School of Architecture.

Withrow, Alfreda. 2005. *An Historical report on Bloomfield Schools, Robie and Agricola Streets*. Halifax, Halifax Regional Municipality.