

ABSTRACT

Title of Thesis: GREEN FABRIC:
A CENTER FOR VIRGINIA'S WINE CULTURE IN
CHARLOTTESVILLE

Elijah L. Northen, Master of Architecture, 2005

Thesis directed by: Ronit Eisenbach, Chair, Visiting Associate Professor
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This thesis seeks to place a centralizing node amongst the greatest concentration of Virginia wineries in the city of Charlottesville. While the state of Virginia has maintained its vinicultural heritage from the time of the Colonists, several factors have proven insurmountable obstacles until recent decades. The state now supports nearly 90 wineries, yet lacks any focus within the industry, and marketing rarely stems beyond the fields of production.¹ With nearly 33% of the State's population living in the urban context, reaching the metropolitan areas will not only spur interest amongst city residents, but will magnetize tourists and begin to establish connections on the national market.²

This unique project will examine the bridging of a typically agricultural typology into the realm of an urban environment, thus encouraging the dynamism of the regional industry. By doing so the thesis presents opportunities for practices in ecological, social, and cultural sustainability. The structure will function not only as an educational facility in the vinicultural sense, but as a demonstration of sustainable design in an urban context, melding contemporary technology with a with a historic city fabric, thus dispelling the myth that "green" buildings need to stand alone as icons.

¹ Lee, Allen E. and Hilde Gabriel. Virginia Wine Country III. Kenwick, Virginia: Hildesigns Press 2004. pg5

¹ <http://www.dailypress.com/dp-census2000.htmlstory>

GREEN FABRIC: AN URBAN CENTER FOR VIRGINIA'S WINE CULTURE

by

Elijah L. Northen

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
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Dedication

To Mary Beth

For your dedication to me.

To Lora Northen, Michael Northen and Maya Mcgee:

*Many have shown me how to live as an architect,
But only three have shown me how to live as a person.*

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CHAPTER 1: Moving to the City, an Introduction

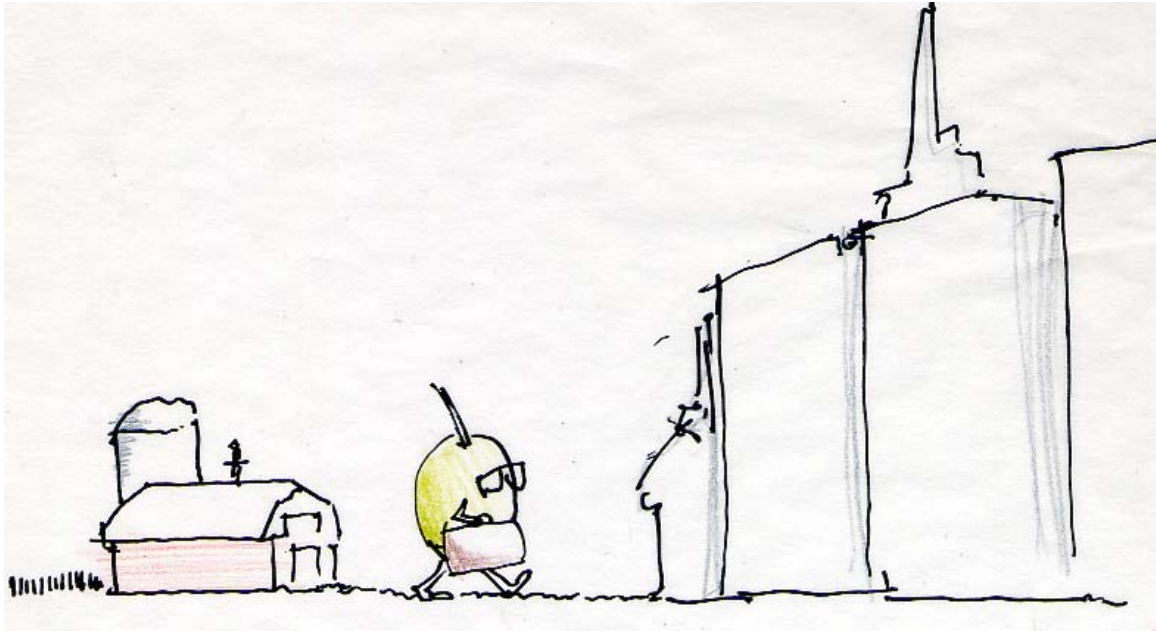


Figure 1: The wine industry comes to the city

I have long been fascinated with the notion of wine as a cultural catalyst. This ancient tradition has bounded societies together for millennia. In recent centuries, with the creation of hardy, cross-pollinated varieties of grapes it has become possible for nearly all corners of the earth to produce this intoxicating drink. While wine serves as a common link between geographical locations, the wine cultures within those regions are as distinct as the foods and the languages themselves. The methods of production, the manner in which they are consumed, and the spaces they inspire have all been subjects of my investigation.

My fascination with the cultural significance of wine lead me to an examination of the local Virginia wine industry. With more than 90 wineries in the state (and more on the way) the market is danger of saturation. The majority of business is done within the wineries themselves, and there is little exportation beyond the mid-Atlantic. Given that the current conditions are a product of isolation, the solution to this dilemma lies far beyond the mere addition of a single winery.

For this reason, I have chosen to design an Urban Center for Virginia Wine Culture in the city of Charlottesville. This center will serve as complimentary addition to the existing wineries, bridging the gap between the field and the city. The primary function of the center will be to promote the current wineries of the state, through museum, dining, and research facilities.

Two additional factors will have an affect on the design of the facility, both which are driven by the city itself. The first is the encouragement of a density in the downtown corridor as set forth in the city's comprehensive plan. Charlottesville is currently in the process of planning and constructing several mixed use buildings in the immediate

vicinity and on the site in efforts to encourage more people to live and work downtown. In keeping with this initiative, the wine center will incorporate a housing component.

An additional emerging factor in the culture of Virginia wineries is the notion of “green” practices in production and architecture. Encouraging the “native” industry of the region by creating a building that embraces one of its oldest practices ties into the notion of a regionalist approach to design. The building will provide an atmosphere that is environmentally beneficial, while paying homage to the city fabric. This will allow me to create a building that embraces not only the past and the present, but the emerging future of the industry.

CHAPTER 2: The Winemaking Heritage

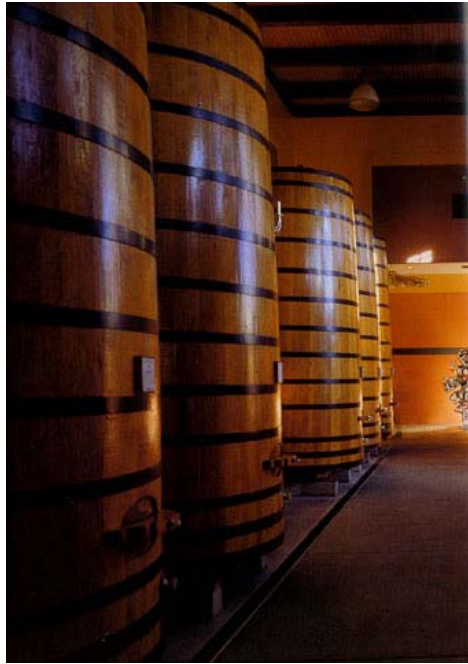


Figure 2: Fermentation barrels at Clos Pegase, Napa Valley

A Global Tradition

It is unclear when the first wine was produced. In the simplest form of the definition, wine is the transformation of the sugars of a grape into alcohol via the natural yeasts on the skins of the fruit. Perhaps prehistoric man left a container of the crushed grapes exposed to the elements for a sustained period of time, creating a bitter, potent substance. While this concoction would have been entirely undesirable by today's standards, it would certainly qualify as a man's first encounter with wine.

We know from representational art that even as early as 3000 B.C. wine was playing a daily role in the religious and medical practices of Indo-European societies. Although recorded history lends credit to the Greeks, the first documentation of the vinicultural process can be attributed to the Romans, who were regularly planting and harvesting several species of grapes.¹ Elaborating on the earthenware practice of the Greeks, the Romans introduced oak casks and methods of pruning; two practices which continue to dominate the industry today.² Despite this early sophistication of practice, these wines would classify as highly undesirable by today's standards, and the quality of the vintage greatly varied from year to year. As with many aspects of the great empire, however, the fall of Rome brought with it a great rift in wine production.

The tradition, as with many, was kept alive within the monasteries of medieval Europe and gradually spread across the continent. The more stable the yearly temperature, rainfall, and soils, the more plausible a region could produce fine vintages. For this reason, several regions in Europe emerged as the foremost producers including France, Italy, Spain and Germany.

¹ Rudolph, Joshua G. [A Winery in the Hamptons: Man and the Agrarian Landscape](#). College Park, Maryland: University of Maryland: Thesis, 1996

² Whaples, David R. [The Connecticut Wine Center and Winery](#). College Park, Maryland: The University of Maryland: Thesis, 1990. pg 6

With the European Conquest and expansion into North America, South America, and Australia, grape varieties were brought to new worlds. In most cases the new colonies bore the burden of freeing the young states from European wine dependence. These “secondary” regions often faced less than ideal conditions, but as the centuries progressed advancements in viticultural technologies provided new opportunities for growth. The cross-pollination of local and European grapes, the engineering of yeasts, and the refinement of the machinery and processes have all contributed to a world that promotes wine production in nearly all corners of the earth.

By the second half of the twentieth century, some of the larger industries including the Napa Valley were on their way to stardom. This can be largely attributed to its highly stable climate year-round. Even today, with all 50 states involved in the production of wine, California produces 90% of the nation’s vintage. Virginia, however, has maintained production for nearly 400 years, making it the longest running wine tradition in the country.

Virginia's Wine Heritage

In the history of the first colony there exist four major divisions of winery development; the Colonial period, the Jeffersonian era, the era of American hybrids and the modern revitalization.

Initially, with the settling of Jamestown, the British had hoped the virgin soil would yield grapes suitable to claim their independence from the French wine industry. In 1609, within the first two years of settling the new land, the occupants tried their hands at producing some of the very first vintages. The European style wines seemed reluctant to yield high quality grapes, and reports of the wine's palatability are less than complimentary. Despite initial failure settlers continued to plant, and by 1619 Acte 12 legislation required all households to plant and maintain ten vines per year.¹ While legal efforts seemed to have no affect on quality viniculture, one crop began to surface as highly successful. Tobacco production was growing so swiftly that by the middle of the 17th century it became the settlement's primary form of exchange.

Despite continued efforts and droves of imported vinicultural experts, the promise of drinkable wine remained unfulfilled with the onset of the American Revolution. With the gain of independence, the new nation was pressed even harder to encourage production from within its walls. Thomas Jefferson, a Renaissance man and wine aficionado, produced no palatable wine during his lifetime, yet inspired the industry with his efforts and appreciation of America's vinicultural heritage. This marks the first documentation of planting in the city of Charlottesville. In 1773 Jefferson commissioned Phillip Mazzie, an Italian viniculturalist to maintain 2,000 acres adjoining Monticello and

¹ Lee, Allen E. and Hilde Gabriel. Virginia Wine Country III. Kenswick, Virginia: Hildesigns Press 2004. pg 8

1,200 acres in the city of Charlottesville, near where the University's stadium stands today.² Although these efforts did not result in quality products, they planted the seeds (quite literally) for the love of wine amongst the region.

The failed experimentations of the seventeenth and eighteenth centuries were not in vain, however, as attempts to plant European varieties gradually cross-pollinated the strands with local grapes. The hardy vines began to adapt to the harsher conditions and the less stable climate of the Mid-Atlantic, creating a new series of American Hybrids. The durable roots and thicker skins allowed the new species to thrive in the rougher climate. Despite the general optimistic attitude towards the future of the practice, several factors gradually brought the state's production to near extinction by the first half of the twentieth century. The Civil War not only destroyed many of the crops, but placed most farmers in Confederate uniforms unable to tend to their land. The economic struggles of the postwar society and the gradual implementation of Prohibition at the turn of the century all but strangled the industry into submission. By the late 1950's 15 acres of planted vines remained in the state, all which were used for table consumption.

Several scenarios, however, were in the state's favor. The postwar culture was such that enjoying a glass of wine was becoming more fashionable amongst the nation's younger population. Additionally the larger wine markets were mostly within a day's drive of Virginia. These economic factors compounded with the naturally hilly conditions of the terrain provided a new interest in the state's potential on the market. The reintroduction of European *Vinifera* in conjunction with the advantages of modern technology began to produce fair results. The equipment itself was becoming more refined and the artificial introduction of engineered yeasts was helping the industry to

² Lee, Allen E. and Hilde Gabriel. Virginia Wine Country III. Kennington, Virginia: Hildesigns Press 2004. pg 15

truly define the scientific process. Success has continued at an exponential rate, from 286 acres in 1980, to 1,310 in 1991, to nearly 3,000 today.³ In order to sustain continued growth, however, the market must expand to compensate for new production. The Charlottesville center serves as a logical extension in the process of Growth, cultivating a heightened awareness of the industry on a more global level, while merging a historic city and practice with a contemporary pedagogical intent.

² Lee, Allen E. and Hilde Gabriel. Virginia Wine Country III. Kenwick, Virginia: Hildesigns Press 2004. pg 26

The Process

To understand the culture that will influence the form of an industrially inspired building, it is pertinent to understand the industrial process itself. While the practice of wine production is often equated to a cycle, the procedure of vinification (the on-goings within the winery building) often lends itself to a linear process. One can compare the procedure with a conveyer belt typology, in which grapes arrive in one end, and a fine bottle of wine comes out the other.

While vinification pertains to the production phase, viticulture begins with the initial decision to plant vines. The slope of the land, the types of soil, and the annual climates all have significant impact on the quality of the final product. In the case of truly great wine, no seemingly minor stone is left unturned. Slopes are chosen to promote proper drainage and exposure, vines are trained to provide the correct balance of sunlight, and spacing is such that each plant has adequate room to mature.

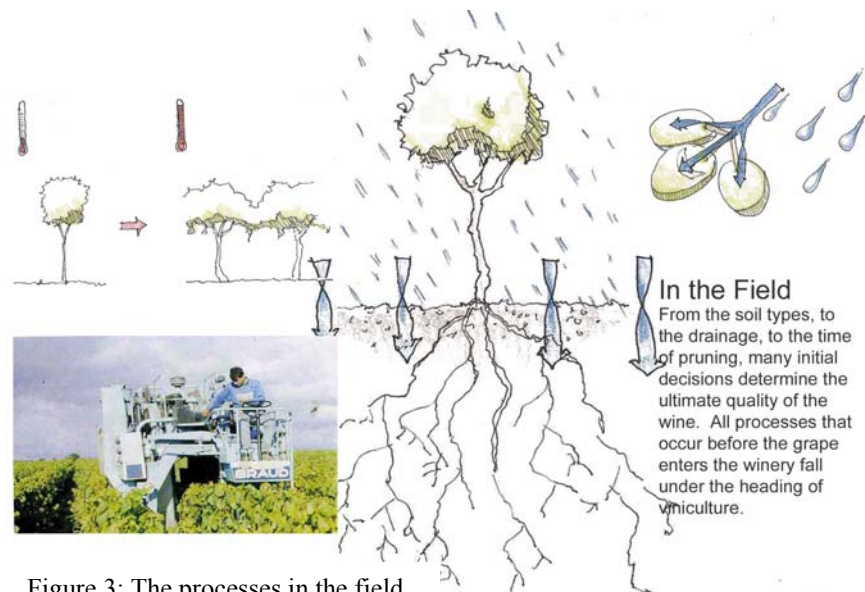


Figure 3: The processes in the field

When grapes are removed, by man or machine, the viticultural process ends and the production phase initiates. Once the skins of the grapes are broken, fermentation begins, so extra care must be taken in the case of a machine harvest. A de-stemming machine often waits outside the winery, separating grapes from the tart stems by means of a rotating drum perforated with grape-sized holes.



Figure 4: External destemming and crushing equipment at Barbourville

Destemming and Crushing

Once the skin of the grape is broken, the natural yeasts in the atmosphere begin to turn the grape's sugars to alcohol. (fermentation)



Once inside, the grapes are crushed to release the juice from the bitter skins, containing high levels of tannins. It is at this point that reds and whites part ways, as red wines enter directly into fermentation, and white undergo pressing. The process of fermentation converts the sugars of the grapes into alcohol via added yeasts. Although present in the oxygen of the air, engineered yeasts are often added to the steel tanks to achieve an ideal conversion over a period that may last from as little as two days to as long as two weeks.¹ The pressing process then extracts further liquid from the skins held deep within the cellular structure. This delicate process seeks to release enough of the

¹ Clarke, Oz. New Encyclopedia of Wine. London: Harcourt, Inc. 2003 pg 12

bitter tannins over the free run juice to heighten the flavor of the wine, without contaminating it with an overly elevated level of acidity.

Fermentation and Pressing



Figure 5: Fermentation tanks and pressing machine

At this point in the practice, many wines part ways, as vintage specific processes take place. Most receive a second fermentation known as malo-lactic fermentation, which converts the harsh malic acid to a milder lactic acid.² It is also at this point that wine blends come to exist. This practice used to be reserved for less desirable wines in an effort to achieve better flavor, but in modern times has produced wonderful new hybrids worthy of praise in their own right.

Maturation is also a discretionary procedure used as a tool to enhance the full body of a product. The choice of whether to age in oak barrels or steel tanks also has lasting effects on flavor. Every detail, from the forest of origin to the age of the barrel plays a part in the precise science of maturation. The length of stay in this phase is a

² Bird, David. Understanding Wine Technology. Great Britain: DBQA Publishing, 2000, pg 66

discretionary practice, lasting for days, weeks or even years. The final step before the bottling phase involves removing any impurities from the liquid. Racking allows the



Maturation and Filtration

The choice of whether to mature a wine in steel tanks or oak barrels greatly determines its ultimate taste.

From here the filtration process can remove any remaining unwanted particles. This can be done with a centrifuge as pictured on the right.

Finally, the now wine is ready for the bottling and corking process



Figure 6: Aging, centrifuging and bottling equipment

particles to fall to the bottom of the mixture in a delicate manner, but filtering and centrifuging are often used in less expensive products, as they expedite the process. This leads to the bottling phase, which takes place in a chilled, sterile environment. Each step of this process contains dozens, if not hundreds of variations, satisfying the ever-developing science of wine technology.

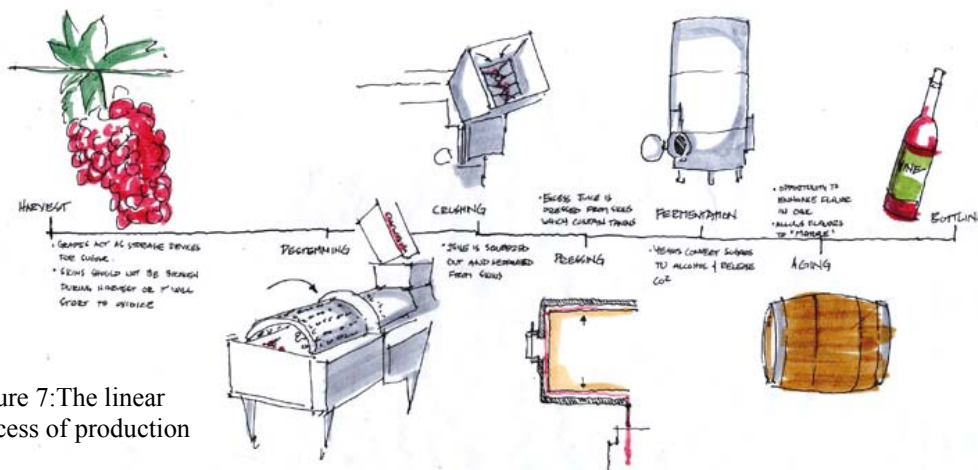


Figure 7: The linear process of production

CHAPTER 3: Historical Significance of the City



Figure 8:UVA
(Photo by Author)

Why Charlottesville: A Brief History of the City and Region

Charlottesville's origins stem from a trade route originally connecting the city of Richmond to the Appalachian Mountains. In 1727, 2 separate land owners acquired plots of land; one in the future location of the University and the other where East Main St. lies today. They measured 800 acres and 1,020 acres respectively. In 1762 an act of congress formally founded the town we know today, yet a true plan for the city was not submitted until 1818. This called for a gridding of streets within a 50 acre plot and a two-acre public space around the courthouse at the north end.¹

In 1819 the University of Virginia was founded one mile outside the main town under the Jeffersonian premise that the agrarian landscape was more beneficial to the academic community.

At about this same time

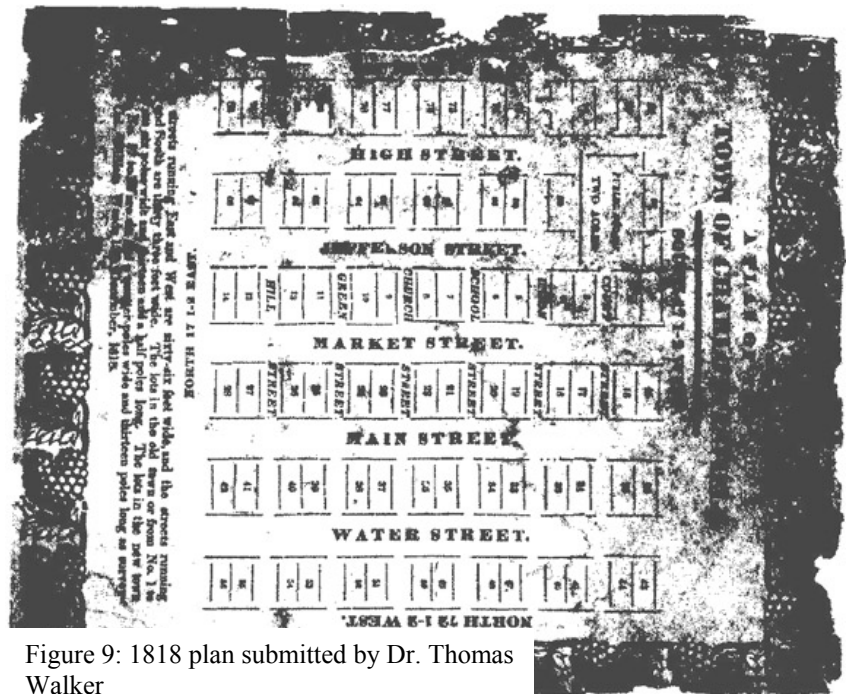


Figure 9: 1818 plan submitted by Dr. Thomas Walker

the eastern end of the city saw a shift in activity from the northern courthouse district to what is now known as Main St. The stage was being set, even in these early phases of the city, for the development of two separate nodes with little connection in between.

¹ <http://www.iath.virginia.edu/schwartz/credit/cpl1818cr.html>

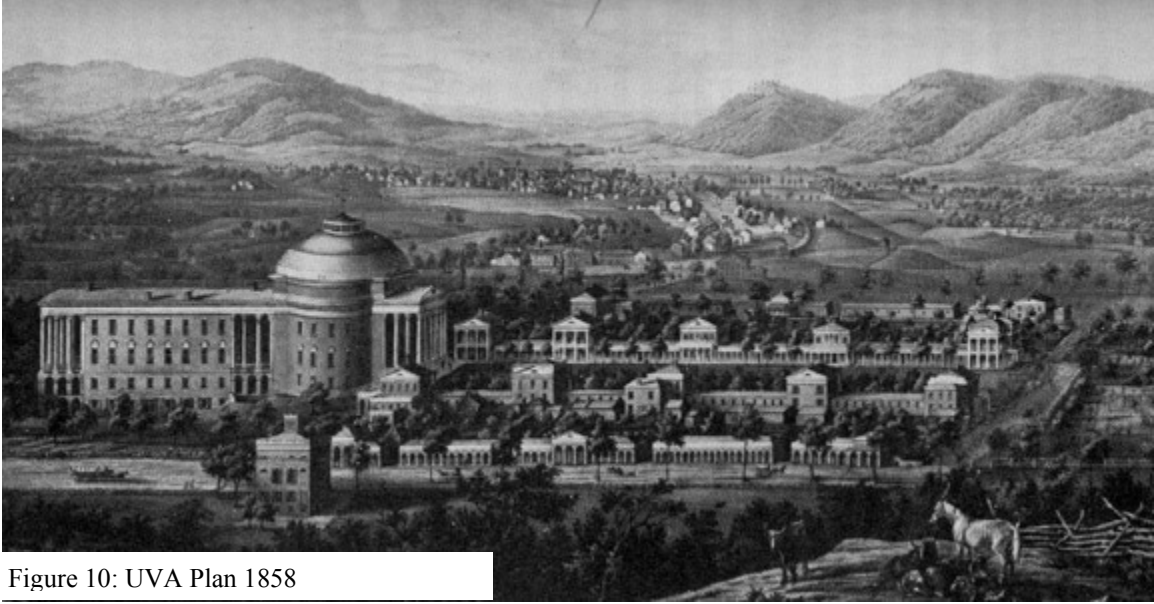


Figure 10: UVA Plan 1858

By the mid-19th century, the C&O railroad found its way into town with a connection point just below Main St. in the original Town grid. This major connection along the Blue Ridge brought a new wealth of commerce and industry to the town, further enhancing development along Main St. The Civil War, quite surprisingly, had little effect on the city with the exception of a major boost in the production of uniforms, and the conversion of many buildings at the University into makeshift hospitals.²



Figure 11: Main Street 1910 (the mall today)

Prosperity continued from the turn of the century through WWII. The railroad industry and the post war economy both enhanced the city's commerce, while the University and the eastern district continued to grow and prosper.

Although the town was in a state of growth, the negative overtone of racism was ever present. During the 1950's and 60's a thinly veiled racist agenda resulted in several urban renewal projects designed to displace the majority of the historic African American community of Vinegar Hill. Since, the community has restored some of its heritage but the effects of the ill-intentioned projects have been long lasting, often creating rifts in the sociology of the community. Following a trend of the Mid-1970's the six blocks of the Eastern end of Main Street were bricked and declared a pedestrian zone in an effort to keep the flow of business activity away from the center of the city and inhibit new development.³ While most of its counterparts have since been re-trafficked, the zone remains one of the last remaining pedestrian streets in the nation.



Figure 12: pedestrian East Main St. today

³ Neighborhood Development Services, *Charlottesville Comprehensive Plan*, online at: <http://www.charlottesville.org/default.asp?pageid=956EDDC2-71BE-4202-A769-505D0110DCCF>

Today the population within the city hovers around 40,000, hindered by height limitations and a pre-established infrastructure. Despite its relatively small stature as a city, it plays home to nearly an equal number of visitors on a daily basis. For this reason, it remains the third most toured city in Virginia.⁴



Figure 13: historic district today

⁴www.allyoucanread.com/newspapers.asp?id=P58

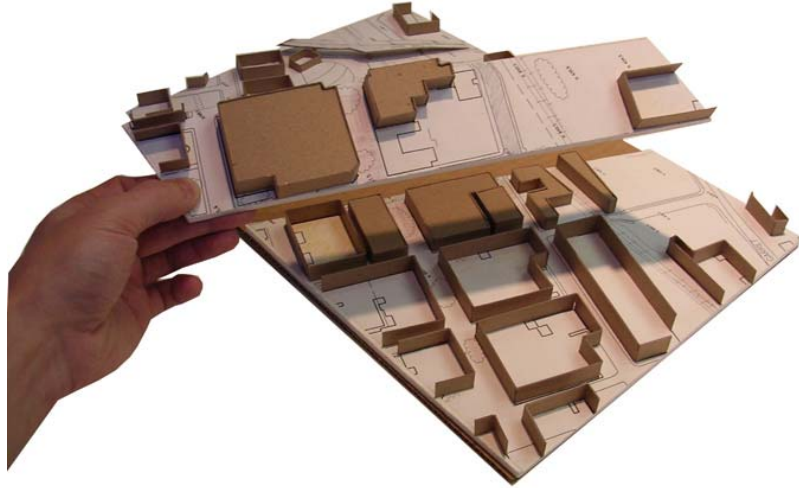


Figure 14: extracting the site

Regional Characteristics

On a regional scale, the city of Charlottesville lies in the foothills of the Appalachian Mountains amongst the greatest concentration of Virginia's wine country.

The 30-mile radius that surrounds the city is home to more than 25 wineries. This region yields well-drained, well-sloped soil ideal for producing high quality grapes.

Winds prevail off the Appalachians towards the southeast and on any given day provide a breeze ranging from 5-15mph. Annual temperatures range from approximately 45° to 85° and precipitation accumulates to about 41 inches per year.¹ This piece of data reflects the challenge of growing grapes in the region. Compared to more stable climates such as Central California, Virginia faces more than a 40°F flux in annual temperature. These extremes result in unwanted frosts and overly-humid summers, both which are harmful to crops.

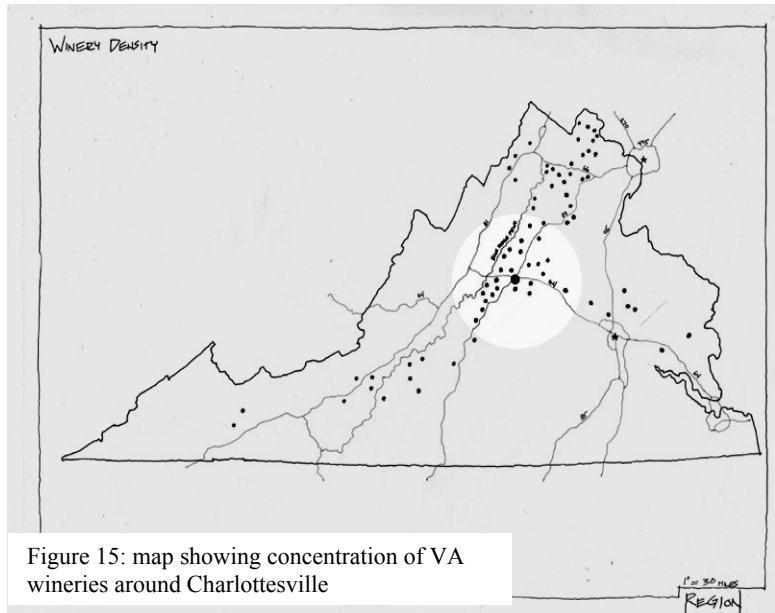


Figure 15: map showing concentration of VA wineries around Charlottesville

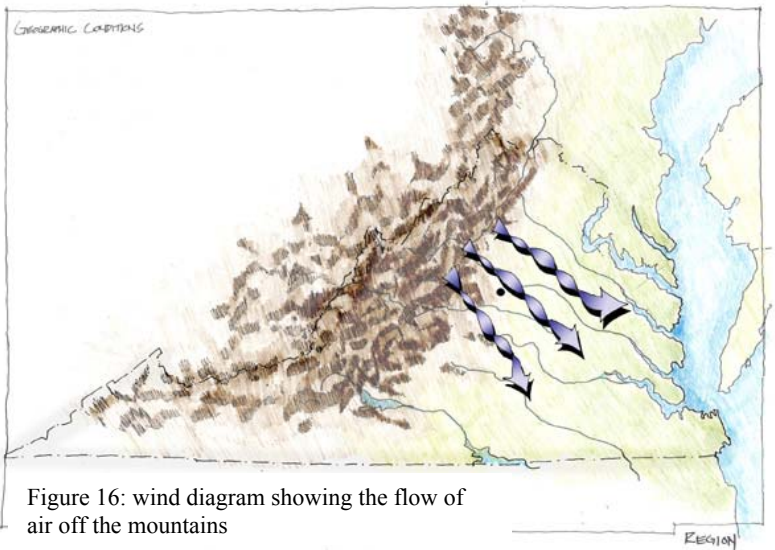


Figure 16: wind diagram showing the flow of air off the mountains

¹ <http://climate.virginia.edu>

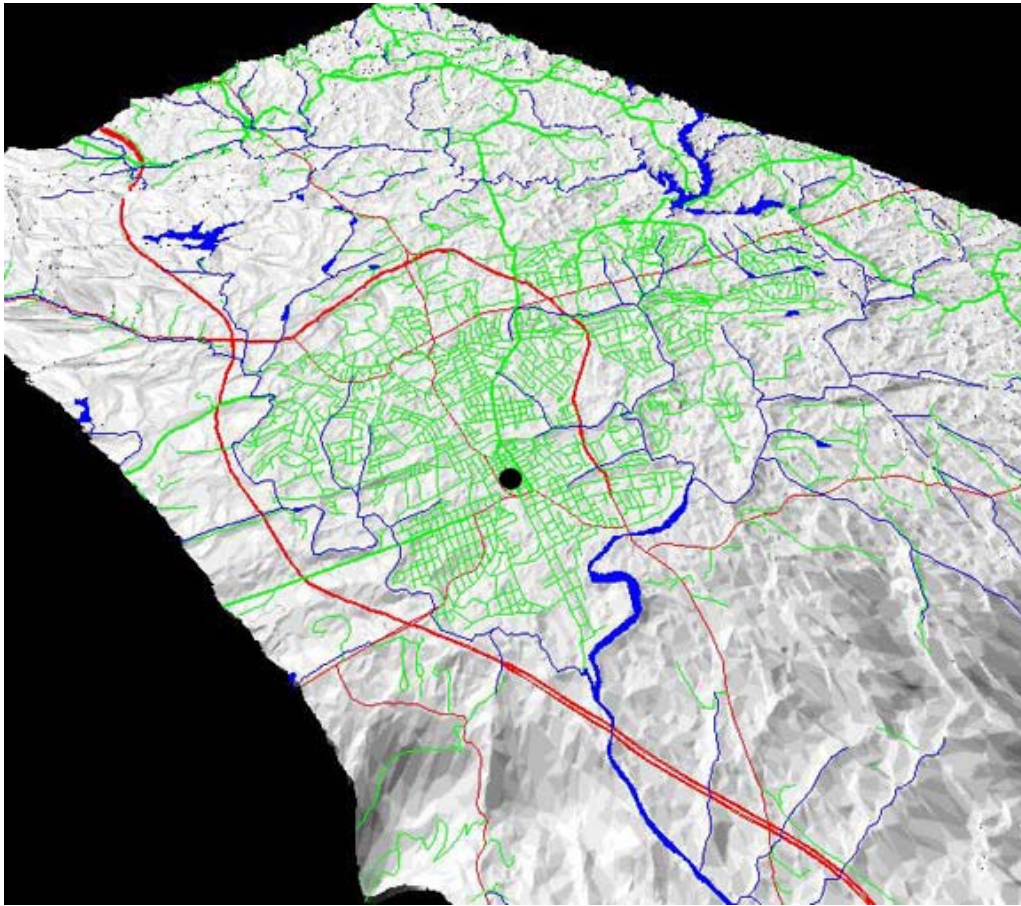


Figure 17: 3-d representation of topography around the city showing the mountains to the west

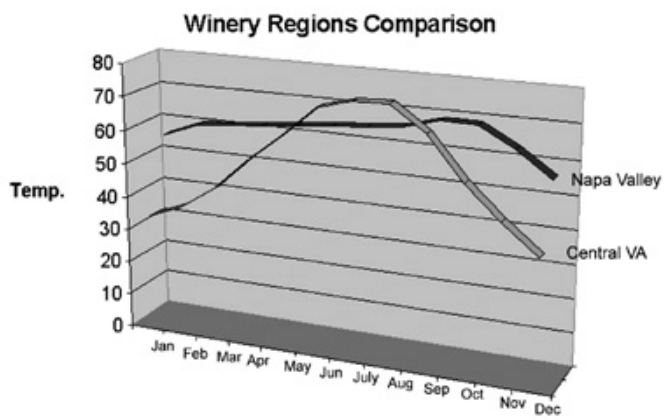


Figure 18: The more stable conditions of central California (dark) make growing conditions easier.

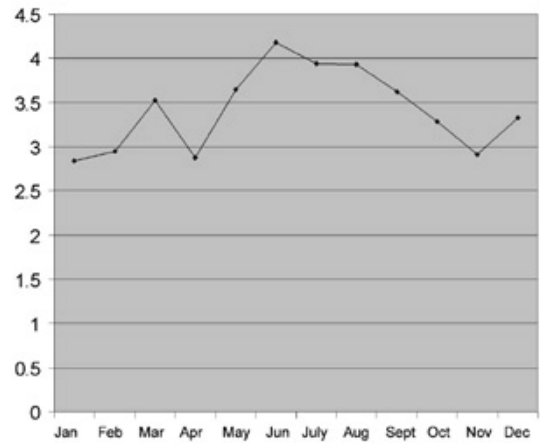


Figure 19: Fluctuation of Central VA rainfall

A City Divided: UVA and the Historic Downtown



Figure 20: the missing link

The contemporary divide between the University of Virginia and the downtown grid stems from the historic development of the two nodes as distinct entities. While the economy has sustained the life of both ends, the link between them has never been particularly coherent, and in recent times has fallen into somewhat of brownfield status. The closely-knit fabric of the eastern grid and the picturesque planning of UVA are linked by a mile of little more than used car lots, liquor stores and surface parking. Few buildings respond to the edge of the street and the scale of the fabric. These factors are enhanced by a freightliner that bifurcates the street, creating a visual and audible barrier. The development of this promenade is vital to sustaining future development in the city and could offset the need for more sprawl in adjacent districts.



Figure 21: the freightliner runs frequently between the two ends of the city.



Figure 22: the unpleasant promenade between the university and the old town

Analysis: The Pedestrian Mall

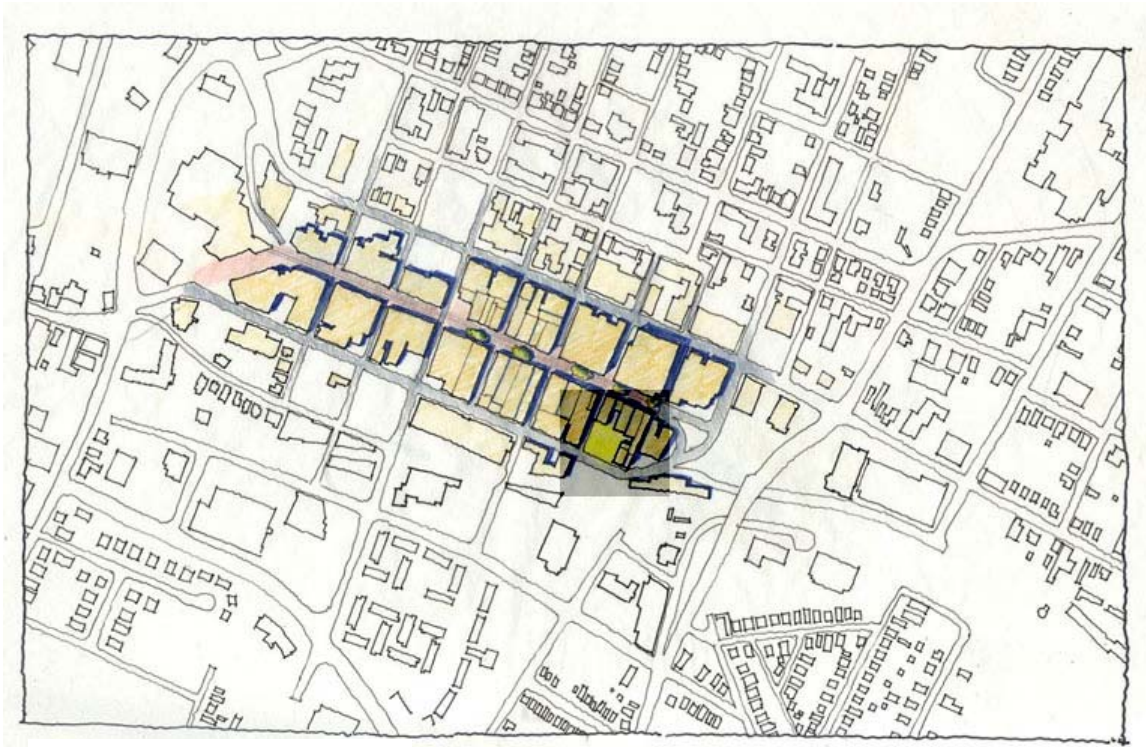


Figure 23: the historic corridor

At the heart of the historic district lies the pedestrian mall of East Main St. Much of the analytical investigation of the site pertains to poor access to the mall, and lack of stability at the southeastern end. The future site of the wine center lies in a zone of overlap that has the potential of addressing these and several other key issues.

By examining the vehicular streets alone, a trend seems to emerge. While the pedestrian zone on E. Main Street serves a noble cause, it prevents access from nearly all vehicular traffic. In fact, it is often not until one parks and leaves his or her car that the individual realizes the wealth of shops and activities that lie inside. Second St. crosses the mall about mid-way, and was opened to traffic in the mid-1990's, but the one-way access it provides does little for the activity of the space.

When examining the space-making devices of the mall, the lack of any anchor at the eastern end also becomes immediately obvious. The Omni hotel on the west end serves as a starting point, but the termination of the mall is not clear. Rather, it simply spills out into an empty and ambiguous space flanked on the east by an overpass.

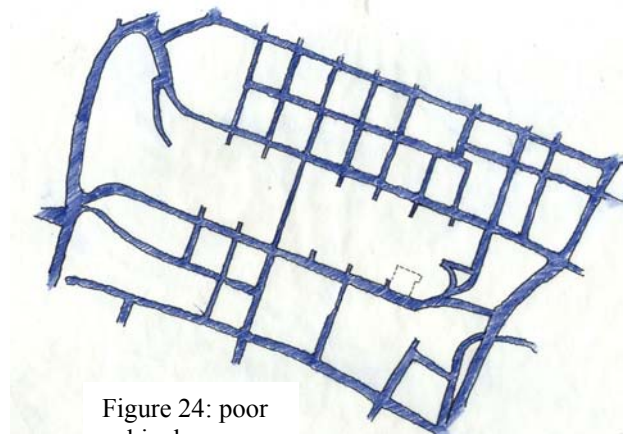


Figure 24: poor vehicular access

The mall itself provides a walkable atmosphere with a good sense of human scale. From end to end, it measures approximately half a mile in length, lined with two-three story mixed use buildings. It measures 61 feet from building face to building face, and the slightly smaller Water St. to the south is approximately 52 feet. The north-south numbered streets that run perpendicular to the mall are between 30 and 35 feet.

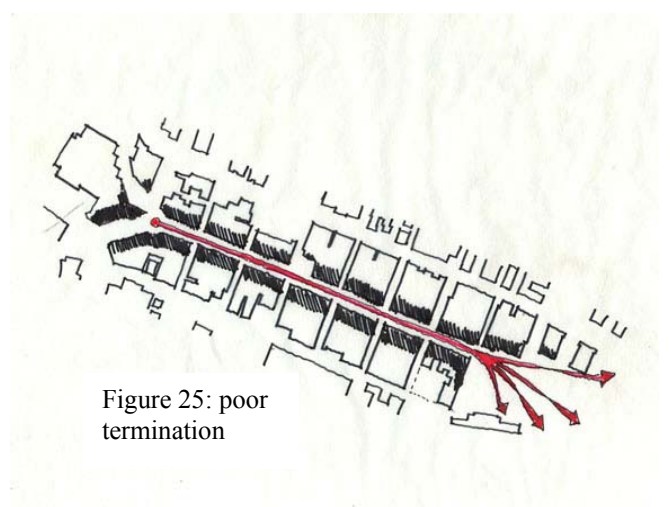


Figure 25: poor termination

The mixed use “I” zoning of the downtown corridor calls for commercial use at the lower level with the encouragement of housing above. Additionally, the chosen site is limited to a height of 7 stories to uphold the historical integrity of the urban fabric.

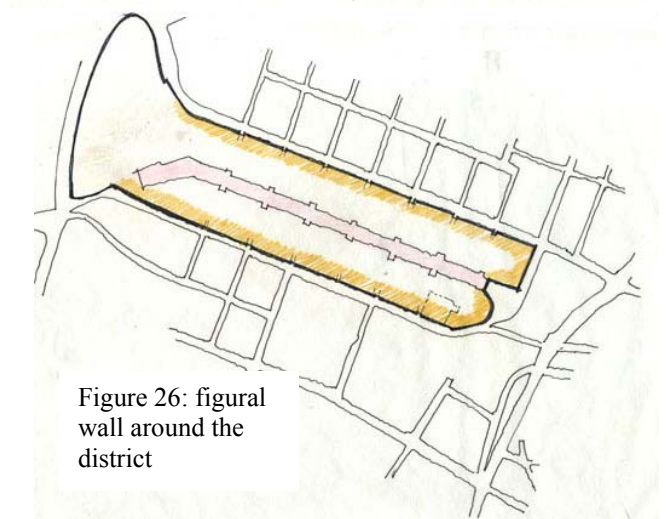
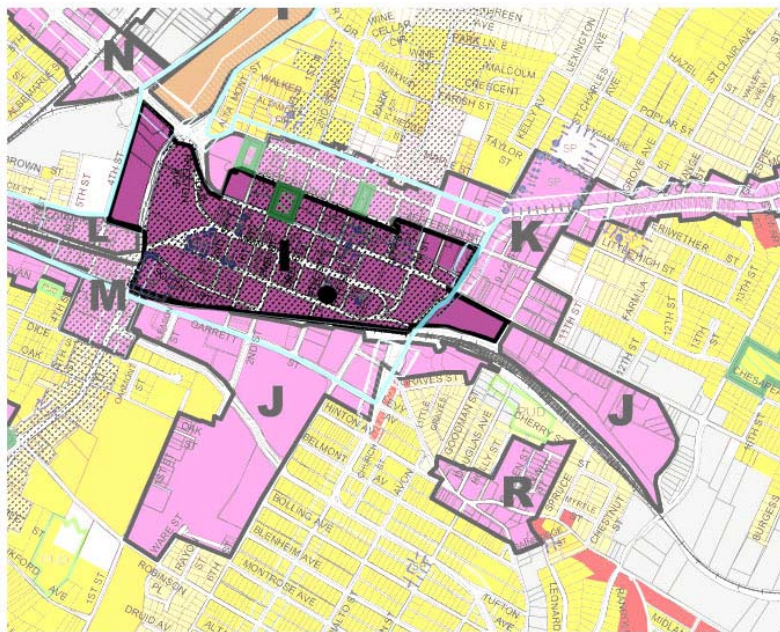


Figure 26: figural wall around the district



MIXED USE

- I** Downtown Corridor
- J** Downtown Extended Corridor
- K** Downtown North Corridor
- L** West Main North Corridor
- M** West Main South Corridor
- N** Central City Corridor
- O** Urban Corridor
- P** High Street Corridor
- Q** Highway Corridor
- R** Neighborhood Commercial Corridor
- S** Cherry Avenue Corridor

Figure 27: The site falls in the center of the image in the “I” zone



Figure 28: The fabric of the mall

Analysis: The Site

The specific site for the wine center falls on the corner of 5th and Water St. in the historic downtown district, anchoring the eastern end of the city. Nestled between the pedestrian mall to the north and the historic vehicular passage of Water St. to the southern end, the block is at the heart of a transitional passage. Bordered to the north and the east by the 2-3-story fabric of the city, the site occupies the lower left-hand portion of the block. It fronts a series of retail spaces to the west and an underutilized park across Water St. to the south. The buildings directly adjacent to the lot will be considered part of the soft site, as they may be removed or replaced to benefit the urban condition and the social sustainability of the intervention. The 20-year-old building on the northwest end of the block prohibits the site from gaining access to the mall. This, coupled with its bland appearance makes it a candidate for revitalization or replacement. Additionally, the rundown shop space at the southeastern end presents an opportunity for adaptive reuse.

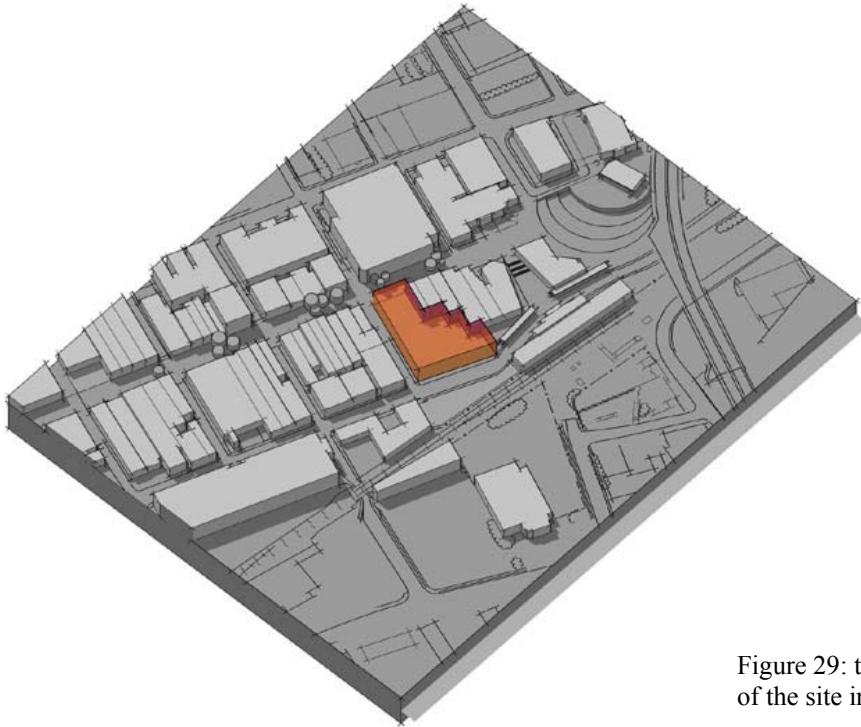


Figure 29: the parameters of the site in context

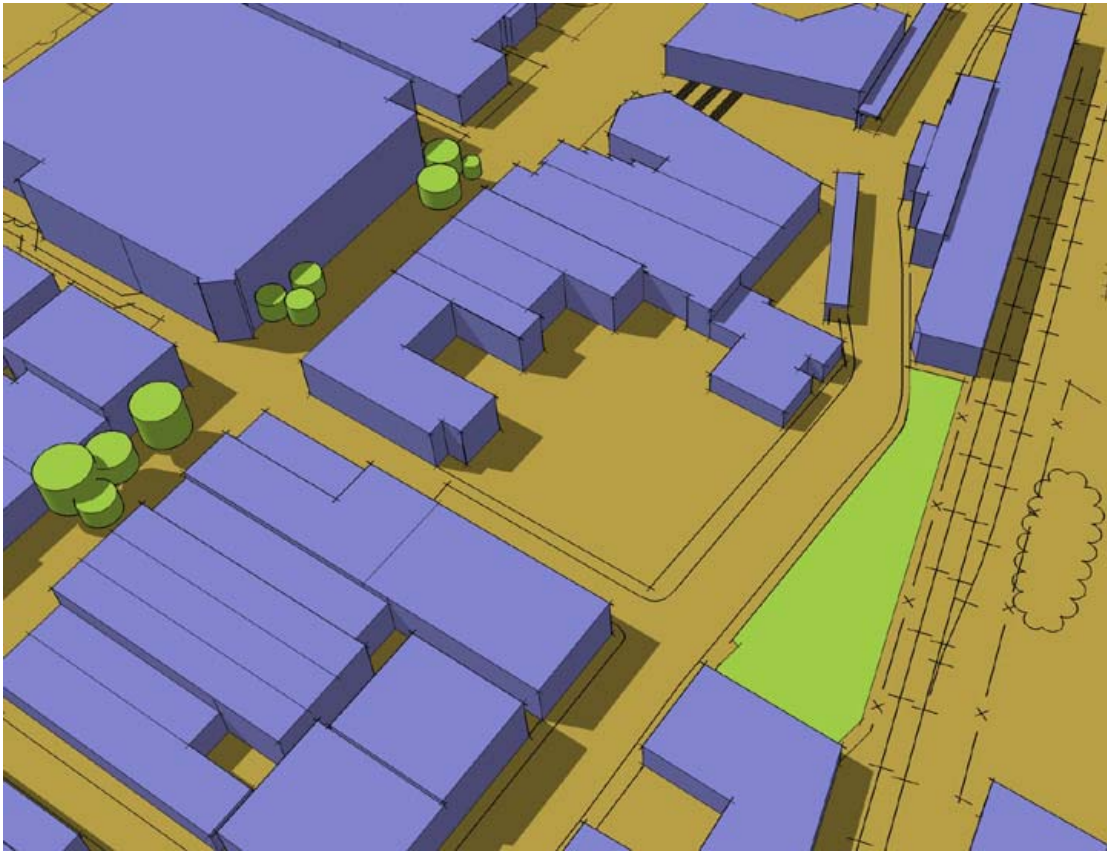
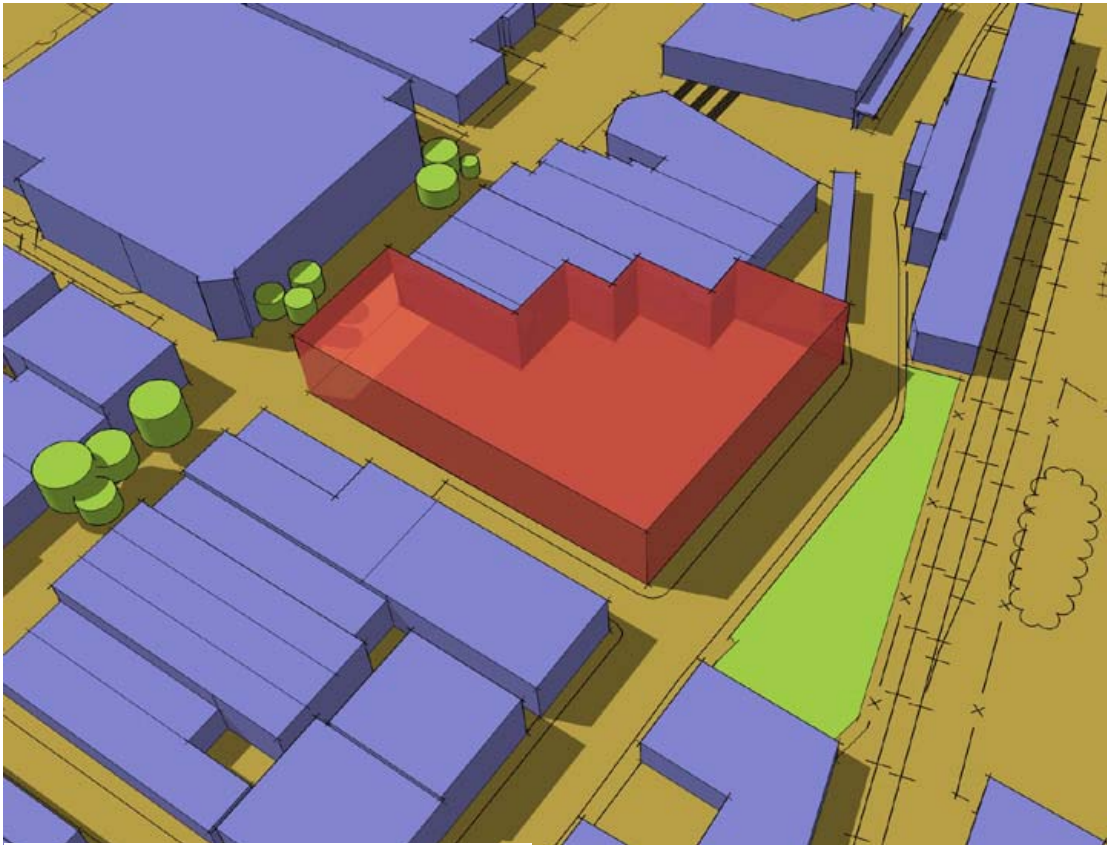


Figure 30: the current conditions



The current surface parking lot that occupies the parameters of the chosen location slopes from the northwestern edge of the site to the southeastern point by approximately nine feet. The long edge occupies 235' along 5th St. to the west, while the slightly narrower face measures 189' to the south along Water St. Between a three and seven percent slope is recommended for planting vines, which makes the 3.8% slope of the site ideal for growth demonstrations. The design strategy will derive from the various urban conditions that overlap the site. The historic fabric, pedestrian mall, vehicular circulation, and wine tradition will all play a strong role in the molding of this space

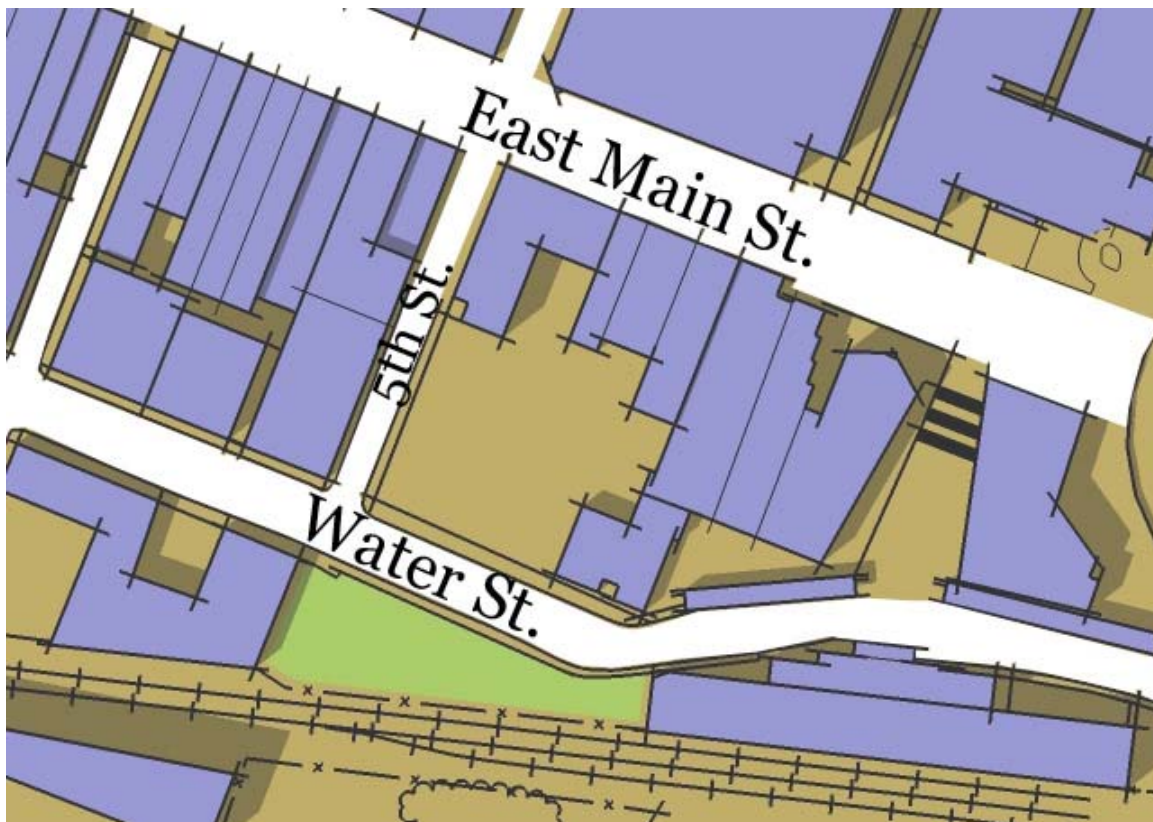


Figure 32: adjacent streets



Figure 33: site dimensions

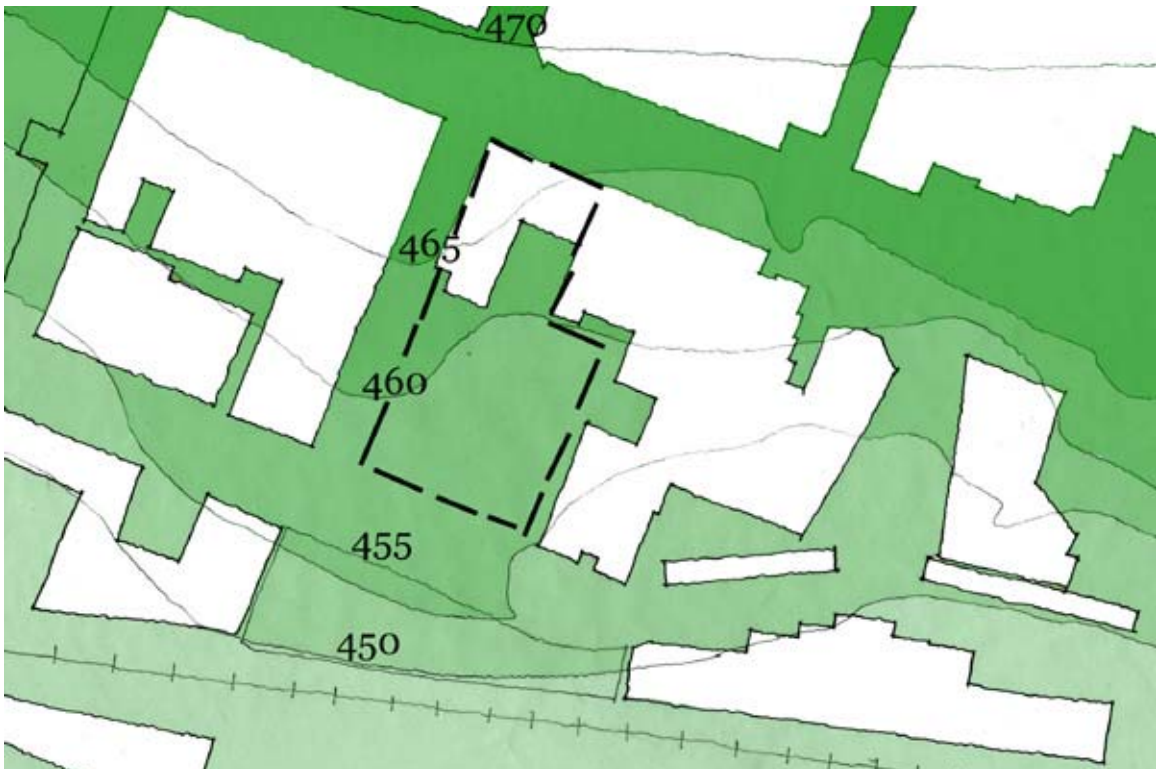


Figure 34: topography drops off towards the south end of the site

As environmental sustainability is a driving force in my design process, solar orientation becomes pertinent. I replicated the solar orientation in three month intervals, beginning with January 1st, 2004. The four diagrams represent the condition at noon, as that is approximately the time of greatest solar gain. At the peak time of day the shading points northwest, generally away from the site.

When examining the sun's path throughout a winter day (following page) we can see that the shadows extend greatly to the northwest and northeast. Additionally, it appears that solar collection is not applicable before 8am or after 5pm. The majority of the site and the adjacent park space remain in the sun throughout the day. Since light is generally coming from the south, all shadows produced by the pedestrian mall fall away from the site.

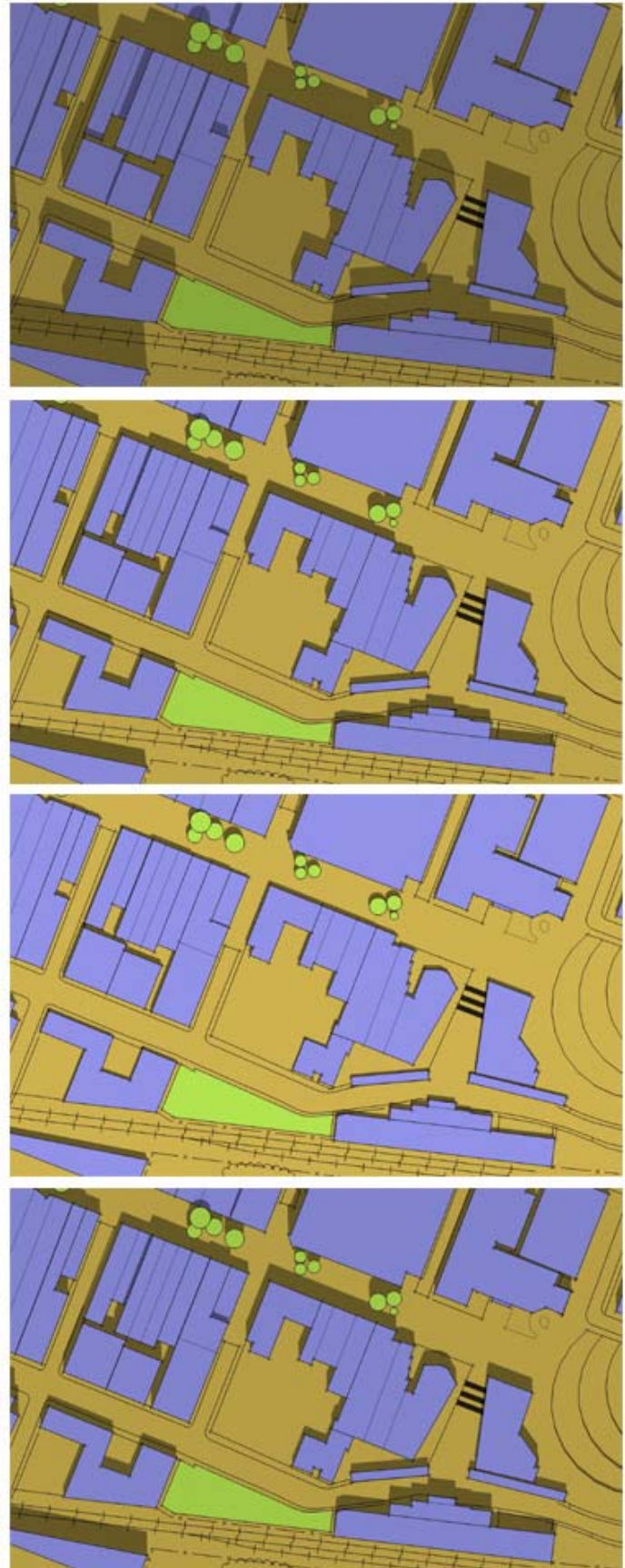
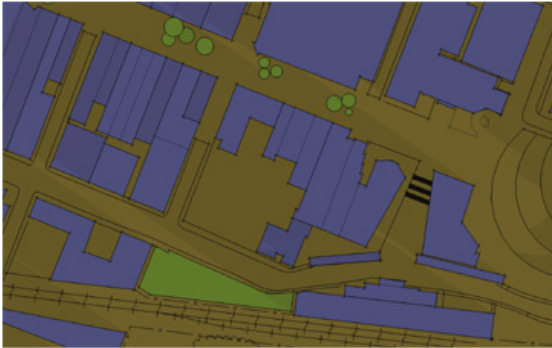
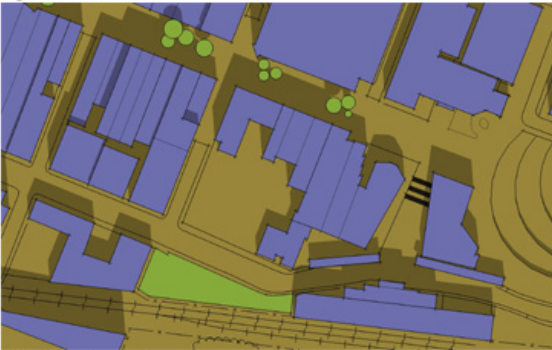


Figure 35: from top; Jan 1st, Apr 1st, Jul, 1st, Oct 1st (all at noon)

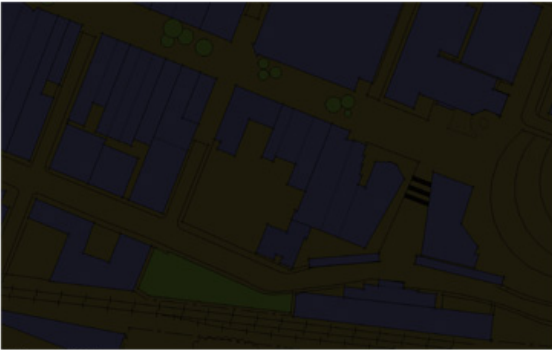
1 Jan, 2004



8 AM



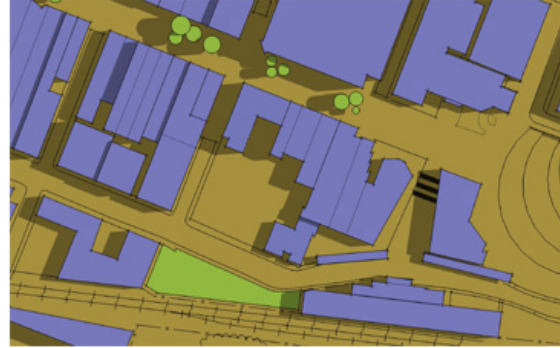
12 Noon



5 PM

Figure 36: Changes throughout the day on Jan 1, 2004

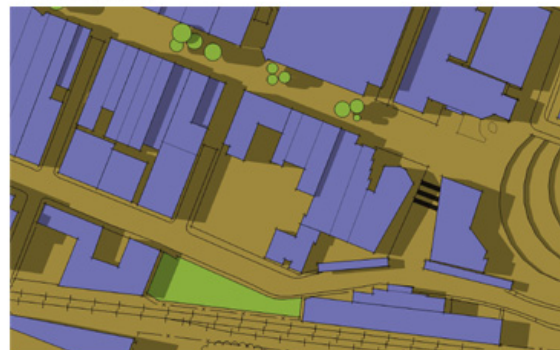
1 Aug, 2004



8 AM



12 Noon



5 PM

Figure 37: Changes throughout the day on Aug 1, 2004

Despite the lack of vehicular access to the mall, the surrounding area provides plenty of parking in the form of two four-story garages. These structures both lie adjacent to the site and will supplement the need for additional parking in the new center.



Figure 38: adjacent parking

In the section we begin to see the character of the site and the nature of the architecture that surrounds the location. The slope of the land drops off towards Water St, and an attractive new storefront faces us along 5th. Although the shops along East Main clearly receive preferential treatment in terms of aesthetics, the general fabric remains continuous along both edges.



Figure 39: section through site showing slope and fabric



Figure 40: site from southern end



Figure 41: site from northern end



Figure 42: looking down 5th St. from the mall





Figure 43: soft site building at northwestern edge



Figure 44: soft site building at southeastern edge

CHAPTER 5: Unifying Virginia's Wine Country



Figure 45: synthesis of the industry

Design Goals

The goal of this project is the centralization of Virginia's wine industry into a program that embodies educational, social, environmental and commercial aspects of the culture. The center will promote and distribute products from all 86 Virginia wineries and offer selected vendors the opportunity of renting space to further promote their wines. The urban nature of the project located in one of the most touristed cities in the region will further establish the Virginia wine industry on the national and global markets

This project also embraces the main design goal of the cities which pertains to the activation of the downtown corridor by means of new residential development within the fabric. The mixed-use project will provide new homes downtown linked to the structure of the new center.

Additionally, the center will embrace an alternative attitude towards green architecture, by demonstrating practices that are not merely "sustainable", but healthy for the land. Rather than viewing the industry as a monster that can only be temporarily suppressed by sustainable design, the project will reveal a processes that synchronizes industry and environment into a cooperative reciprocal relationship.

On an urban scale, the center will help to reestablish the commercial viability at the eastern end of the mall, and bridge the connection between Water St. and the pedestrian East Main St. The design will respond to streetscapes, as well as currently underutilized green spaces adjacent to the site. Architecturally, the design will support the aesthetic of the town, while utilizing modern techniques and materials to acknowledge the progressive attitude the center takes towards the industry and sustainable development.

Special Design Challenges

The nature of establishing a historically agricultural community-based function within the parameters of the urban environment is both a blessing and a challenge. This will be addressed by the connection of the urban intervention to the wineries themselves. This link will prevent the center from adapting a “go it alone” stance, and rather build upon the existing community that thrives today. This relationship can be established through the careful distribution of the program which will allow the seemingly polar conditions to endorse each other. Precaution will be taken to avoid an overlap of function that would render the counterparts useless. This matter will be discussed further in the *programming* section.

A site specific challenge arises from the three streets that circumnavigate the block, of which the center will front all three. Buildings with more than two facades on the street generally produce the unique obstacle of designing a building with no back door. Additionally, each face of the structure must correspond to the unique conditions of the adjacent street; one being pedestrian, one vehicular, and one a connector between the two. These streets must all receive distinctive treatment, yet unify the experience of the block as to reestablish the connection along 5th St. between Water and East Main.

The underutilized park south of Water St. also presents an opportunity for redevelopment. The difficulty, however, lies in the two lanes of traffic that separate it from the lot. In this case, the obstacle involves bridging the street to allow for cohesion between building and open space, establishing them as a single sequence.

An important issue that must be addressed within the building lies in the grouping of program. The functions of this design will include educational, social, commercial, and research oriented practices. In addition, private activities including administration

offices and conference areas must be factored into the process. The degree to which these functions overlap yet remain distinctive entities is crucial to the success of the project. The composite nature of this venture presents opportunities for fascinating and dynamic spaces, yet runs the risk of ambiguity and redundancy if not properly orchestrated.

Finally arises the issue of adapting a sustainable policy in a town with a strong historic fabric. In general, contemporary “sustainable” buildings stick out like a sore green thumb. The challenge of this particular project stems from the need to utilize these technologies within the context of the historic fabric. The remedy to this challenge, however, lies in many of the “low-tech” solutions that many historic structures already embody including large windows, natural light, and local materials.

Sustainable Factors: Environmental, Social, & Cultural

Often times in today's world of environmentally conscience design, the word sustainability comes to our lips void of any precise meaning. Despite the commendable efforts of today's architects, the term often relegates its presence to the form of a single solar panel atop an office building on the side of a highway. One of the primary

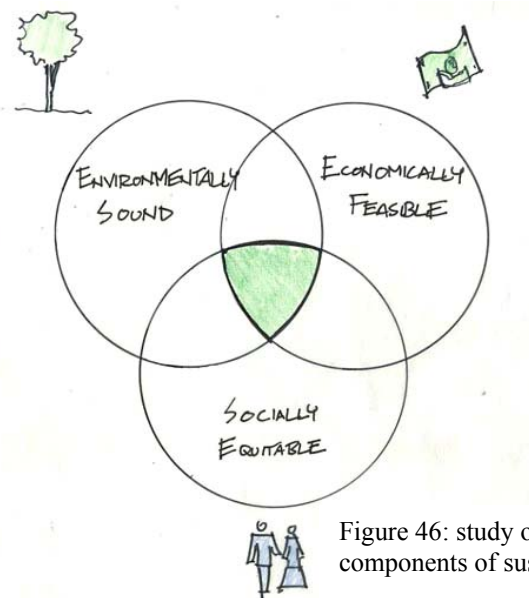
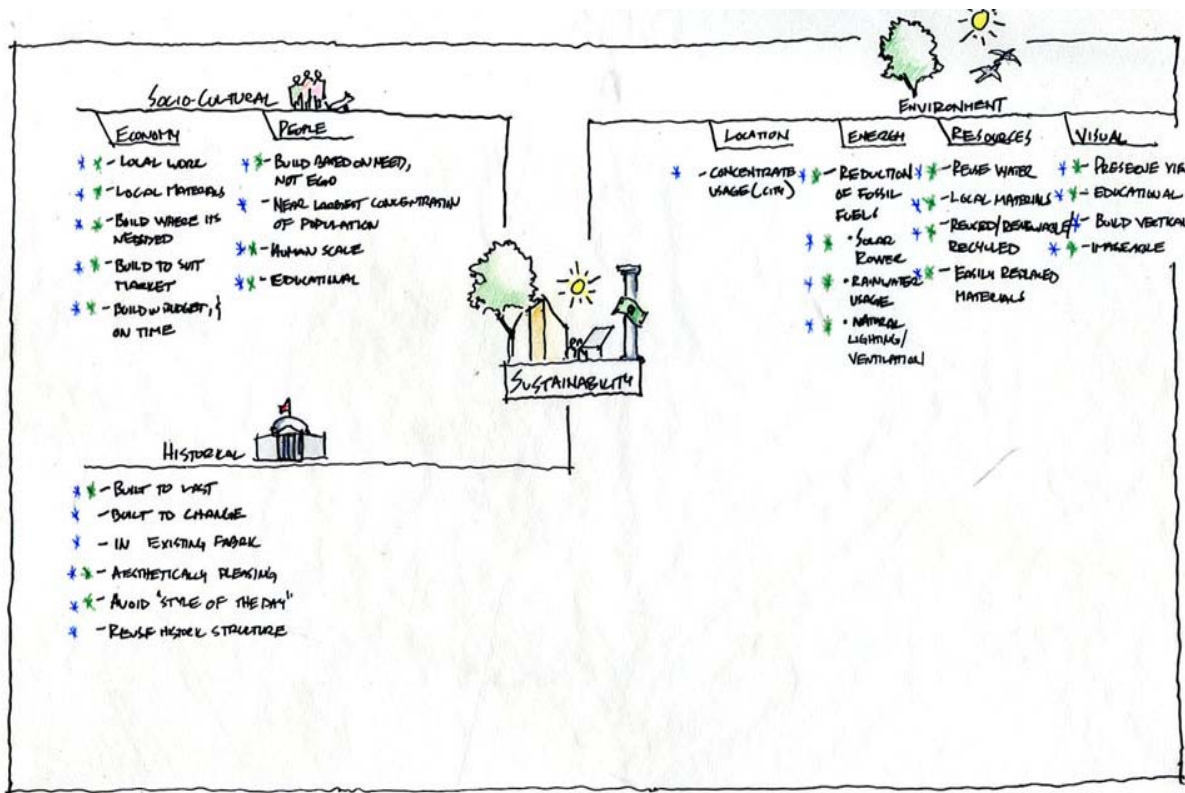


Figure 46: study of components of sustainability.

goals of this thesis seeks to breakdown the components of sustainable design into quantifiable measures that may be used to create responsible environments at all scales.

In simple terms the word can be broken down into three main categories: social consciousness, cultural awareness, and ecological preservation (green architecture). Often, the term “green” finds its way into the mix, and the first two classifications are all but overlooked. A responsible designer must react to all three conditions simultaneously, regardless of how many cisterns and solar collector she has at her disposal.



Norman Foster's *Carré d'Art* in Nîmes is often praised for its overt approach to green architecture. Admittedly, the field of louvers that extends from the front of façade is a fantastic lesson in ecologically friendly building, but what's truly remarkable about this design are the culturally sustaining factors it houses. Foster took the opportunity to build directly adjacent to the historic fabric, as opposed to the proposed site outside the city.

He placed the museum amidst similar typologies, supporting the historical nature of the particular area. Additionally, while the building is adorned with modern clothes, it pays homage to the relative scale and size of all adjacent historic structure. What's truly sustainable about this building is the magnificent way that it blends into the culture and fabric of the city, while exerting its own attitudes on aesthetics and function.



Figure 47: Carré d' Art façade

The objectives of the wine center are similar in nature. While responding to ecological conditions and demonstrations of green vinification are pertinent to the project, the boundaries of sustainability must expand much further to embrace the full meaning of the word. The promotion of a 400 year-old culture, for instance, lies at the heart of the design intentions. Filling in the gaps of a historic city, rather than developing new land also factors into the project. While green architecture is generally the easiest to recognize of the factors of sustainability, it is often choices of site selection, history, and economy that truly sustain a city and its institutions. My goal for the wine center is to create a building that clearly demonstrates green practices in the urban environment while remaining respectful of its context.

Environmental Effectiveness:

As William McDonough is famous for saying, “Being less bad is no good”. This quote speaks to the fact that proponents of “sustainability” are generally putting a bandage on a situation to keep it from getting too bad too fast. This type of thinking however, predisposes that industry and the environment are destined to be at odds, and too produce more industry is to destroy the environment. While this is often the case with our current global conditions, it is a pessimistic viewpoint that merely seeks to prolong our own self-destruction. What if, for instance, the only byproduct of a tennis shoe factory was clean drinkable water, and the components of the built structure and the product were entirely biodegradable? This is entirely possible, yet we live in a world where efficiency is the only measurable determinant, so this option is not seen as plausible. If we take a moment to think of our decisions not only globally, but over a substantial period of time, many other factors come into light. The lifespan of our investments and the conditions under which are children must live are just a few. With this type of thinking, we can produce built environments that exist cooperatively with the natural condition, and are not only sustainable but are ecologically effective. As Albert Einstein once said “The world will not evolve past its current state of crisis by using the Same thinking that created the situation”.

Green Architecture:

The green features of the building will fall into one of two categories: Those that pertain to the needs of the building and those that support green vinicultural practices. Natural day-lighting, water collection and filtration, green roofs, and solar collection are alternatives that all speak to the need to supplement the building's intake of natural resources. The methods of construction and the materials used also highlight aspects of the built environment. While these practices are ideally conducted in an agricultural setting, I am interested in investigating their development in the urban realm.

The reuse of irrigation water and the correct shaping of vines, on the other hand, both point to sustainable practices within the field of winemaking. These aspects of harmonizing with nature are compatible with the notion of winemaking, allowing the expression of the building to accurately portray its functional qualities. In other words, a building that deals with the processes of the earth is well suited to support ecologically-effective elements.

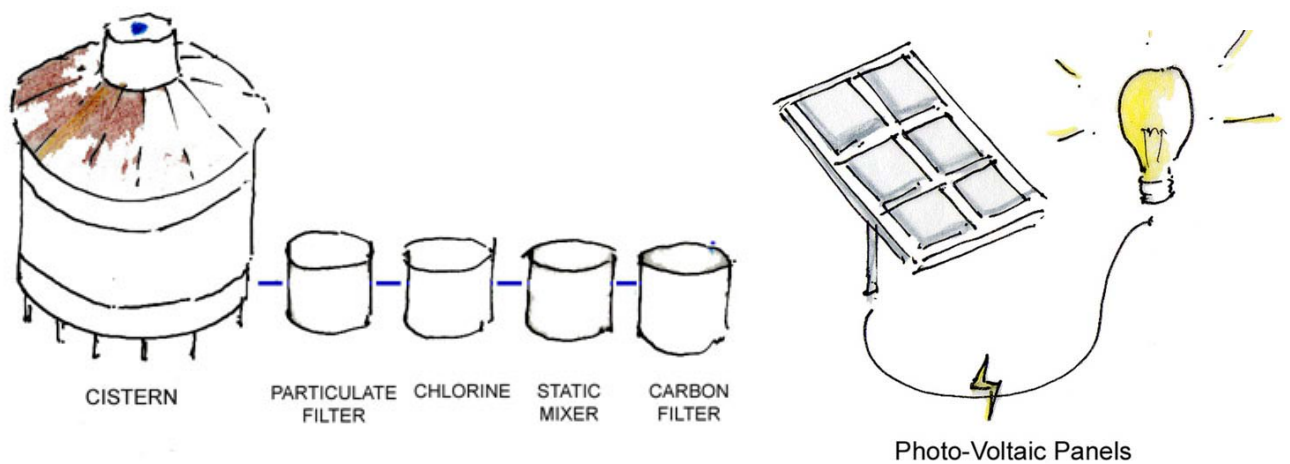


Figure 48: examples of environmentally sustainable practices

Cultural Sustainability:

The notion of sustaining the culture of Charlottesville is less of an iconographic concept, but is vital to the further growth of the city. While landmark buildings can inspire awe, they often rely on “normal” urban fabric to stand out, and can rarely be reused. Therefore, the goal of this thesis is to create a building that stands out for its innovative approach to green architecture, but respects the urban context through its form.

The proposal of this thesis further supports the economy of the city, by recognizing a saturation in the local wine market, and giving it an outlet with which to expand. In this sense, a recognition of the market and its current needs is a culturally sustaining practice.

Finally is the issue of adaptive reuse. Both creating building that can be reused and revitalizing existing beneficial structures can be economically beneficial. While one approach to sustainability relies on light materials that can easily be recycled, this method requires solid structures that are meant to last and be reused.



Figure 49: the reusable structures of East Main St.

CHAPTER 6: Precedent Studies

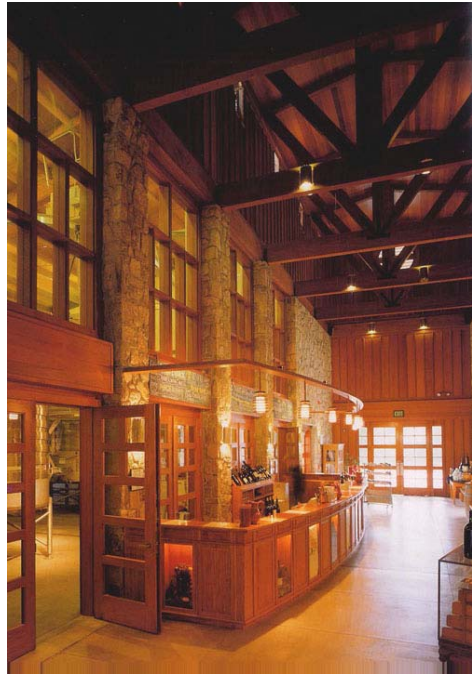


Figure 50: reception hall at
Sinskey Vineyards, Napa

The Wine Center

The wine center as a typology seems the obvious precedent, yet the ambiguity of the title often lends itself to buildings that contrast each other quite drastically. From wine outlet stores to buildings that house winemaking classes, the default title seems to have little meaning beyond simply “a building associated with wine that is not a winery”.

The *Yamanashi Wine Center* in Japan, linked to an adjacent vineyard, however, provides a service similar to the Pedagogical goals of the Charlottesville project. The sunken central lobby of the building serves as an educational space, as well as a space for entertainment. Walls lined with instructional information on winemaking surround the grand space, which supports casual restaurant style seating suitable for leisurely sipping a glass of wine. The more functional spaces including offices, conference rooms, and the laboratory surround the exterior of the central space, linked by a common hallway.



Figure 51: lobby from conference room



Figure 52: exterior

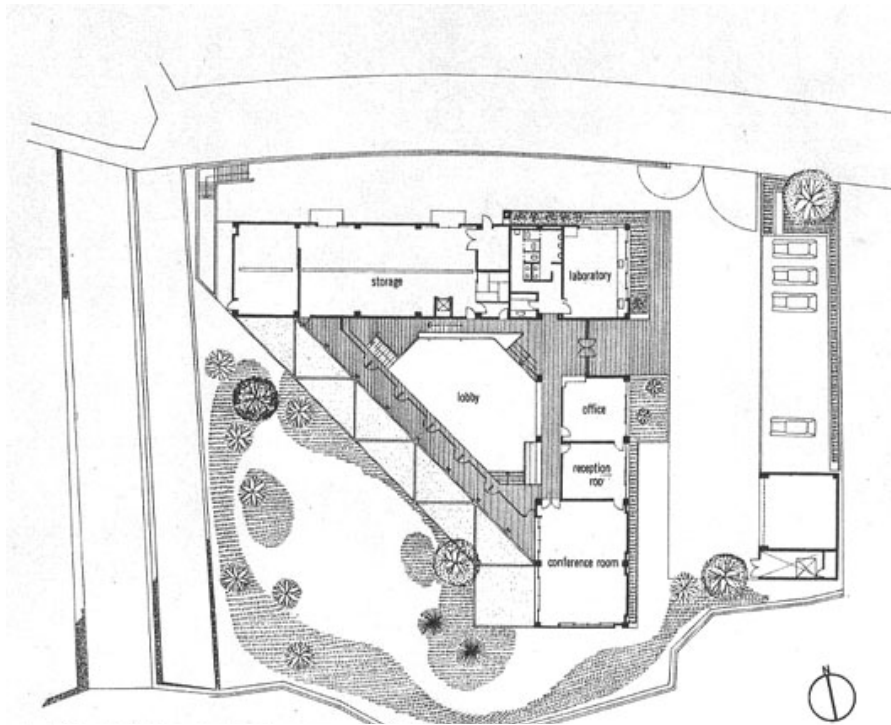


Figure 53: Yamanashi Plan (no scale)

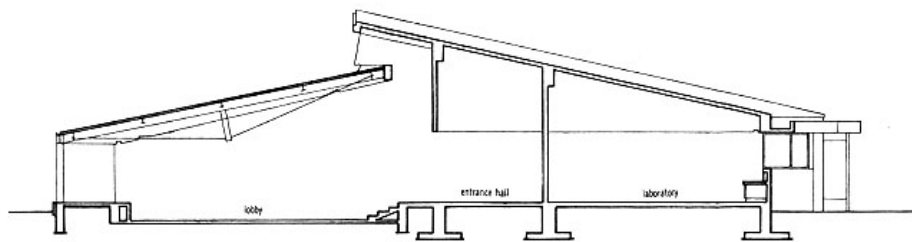


Figure 54: Yamanashi section (no scale)

The Urban Cultural Center

The notion of wine as a cultural icon lends the building typology to one not merely of a center for wines, but a center for societal identification. Raphael Moneo's *Casa de la Cultura de Don Benito* in Spain tightly organizes this typology into an urban infill site, similar in scale to the Charlottesville condition. One of the keys to the success of a cultural center is an adjacency to usable exterior space. By introducing an adjacency between the entrance to the building and the plaza across the street, the architect instantly provides the Don Benito cultural center with usable exterior green space.

The building itself speaks well of both the program and the context. The tightly knit skin and form of the building respond to the large programmatic requirements within the limitations of both horizontal and vertical growth. Light wells are used in the dense urban condition to allow natural illumination to reach the inner spaces. Largely, the more public program lies either within the central atrium space or along the front edge facing the street.

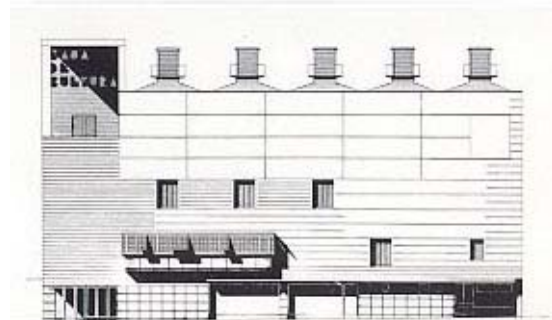
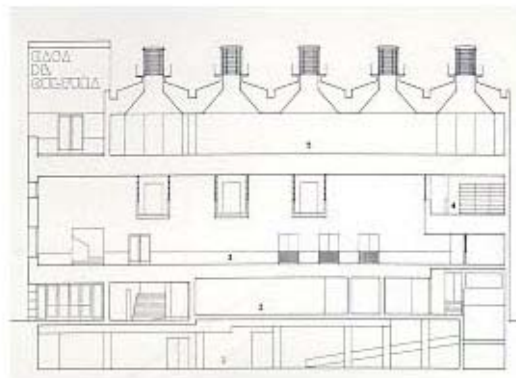
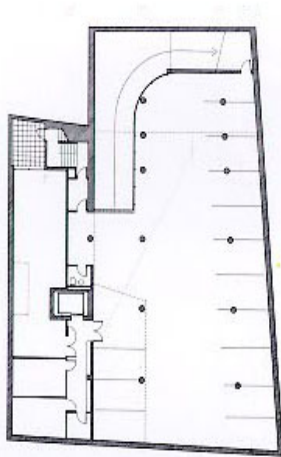
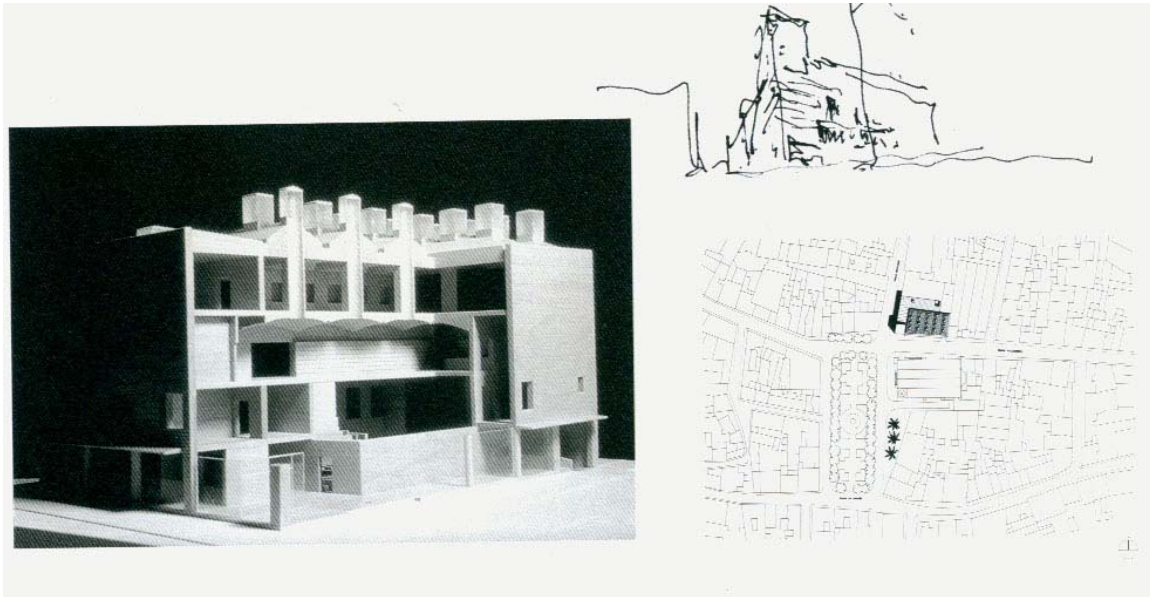
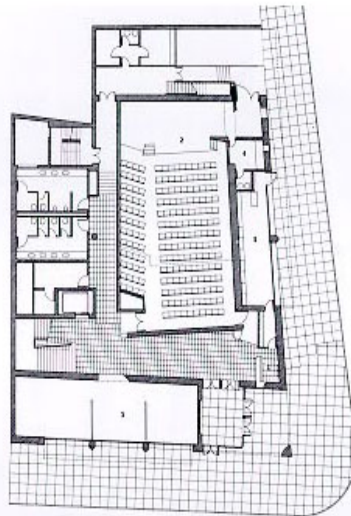


Figure 56: building section

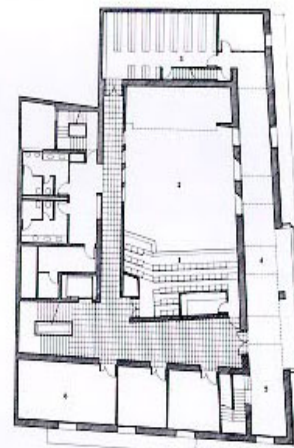


Planta sótano. Cota 3.59 / Basement floor plan. Level 3.59



Planta baja. Salón de Actos. Cota +0.00 / Ground floor plan. Lecture Hall. Level +0.00

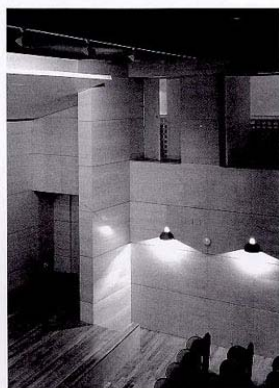
- | | |
|---------------------------------|--|
| 1. Información | 1. Information |
| 2. Salón de Actos | 2. Lecture Hall |
| 3. Espacios temporales | 3. Temporary exhibition |
| 4. Comedor | 4. Dining room |
| 5. Información técnica y fiscal | 5. Technical and financial information |



Planta primera. Anfiteatro. Cota +1.10 / First floor plan. Amphitheater. Level +1.10

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|---------------------------|------------------------|
| 1. Anfiteatro | 1. Amphitheater |
| 2. Fachada Salón de Actos | 2. Lecture Hall facade |
| 3. Jardín | 3. Garden |
| 4. Biblioteca | 4. Library |
| 5. Acceso Biblioteca | 5. Library entrance |
| 6. Aula | 6. Classroom |

Figure 58: floor plans



The Museum

The Museum of the Earth in the Finger Lakes of New York visually replicates the processes and appearance of the planet that it serves. This environmentally responsible structure noticeably depicts the process by which water filters back into the Earth, through means of a rain collecting roof, retention devices, and a series of gardens. Affiliated with Cornell University, the program offers educational classes in areas of geological and paleontological studies.

The formation of the interior as an archeological dig is perhaps the most intriguing notion. This subterranean museum snakes down several levels, occupying the visitors with exhibits that respond to the architecture. The spaces gains access to natural light mainly through means of an open plan with glass exterior wall surface. The beauty of this building lies in the self-explanatory nature of the architecture that acts in a symbiotic relationship with the artifacts within.



Figure 60: ramped gallery digging into the Earth



Figure 61: museum plan

Wine and Art

The process of wine making meets a museum of modern art in the case of the Hess Collection of the Napa Valley. Two seemingly opposed practices, one industrial and one delicate, meet in this unique program that unifies an antique structure with a modern addition. The wine process itself runs concurrent with the art exhibition, exposing itself through glass at times as a work of art itself. The three levels of the building separate the three levels of program (art gallery, wine production, and wine history), while allowing them to merge at opportune times for a poetic experience. The recent addition includes an entry space that connects these conditions.



Figure 62: The wine process displayed as art (above left)

Figure 63: The entry space with the three levels of program. (above right)

Figure 64: Art exhibit space. (left)

CHAPTER 7: Functional Considerations and Program

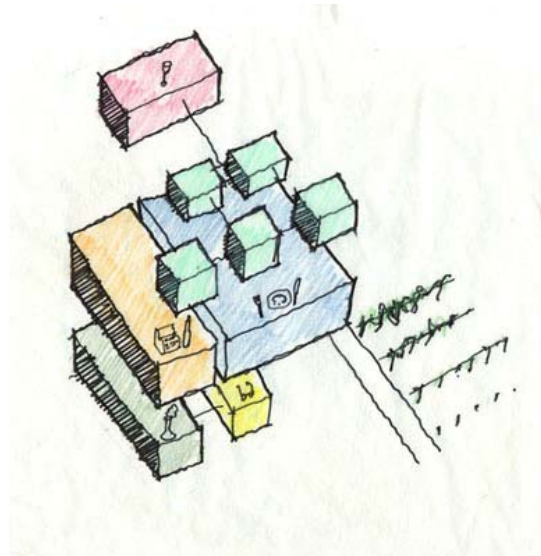
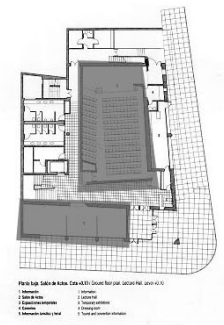


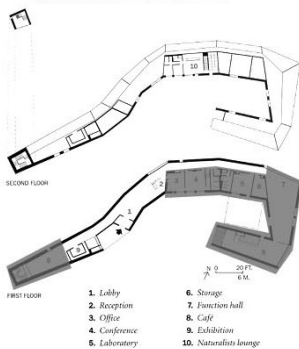
Figure 65: parti of Australian Wine Center

The Composite Program

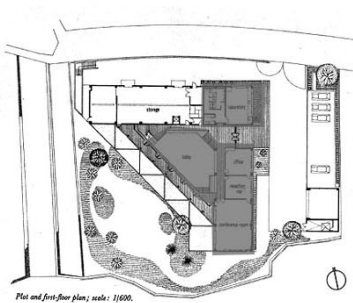
The nature of this project as an extension of the rural winery in the urban context begs one major question; where does one program end and the other begin. The composite nature of the events that will take place at the center also requires investigation. To resolve this issue, 4 building typologies were examined and key principles we extracted from each.



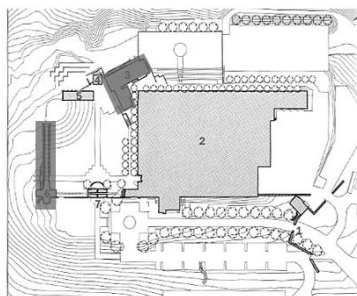
THE CULTURAL CENTER- forum space, exhibition halls, conference areas, office



THE SCIENCE MUSEUM- laboratory, interactive exhibits, classrooms



THE WINE CENTER- tasting space, exhibit space, laboratory, office



- 1. Entry gate
- 2. Production/offices
- 3. Visitors
- 4. Bell tower
- 5. Loggia
- 6. Tasting
- 7. Entry arch

THE WINERY- tasting room, dining facilities, wine shop

Figure 66: a collage of program

The combination of these programmatic elements manifests itself in the following list of spaces:

- ATRIUM SPACE FOR SPECIAL EVENTS.....8,000 sf
This space will serve as the primary flex space in the building and may be linked to other functional spaces such as galleries. The intent is for the atrium to be centrally located so that it may be utilized for special events and festivals. There should be designated areas for vendors to set up during the festivals.
- RESTAURANT.....6,000 sf
The restaurant will be best served on a street edge so that it may stay open when the other facilities are closed. It will provide a permanent space for tasting and additional dining facilities
- WINE SHOP.....2,500 sf
The shop should also be located on a street edge to maintain the condition of the shopping district. This venue will be responsible for selling and distributing wines and related products from all VA wineries
- EXHIBITION: HISTORIC.....4,000 sf
This portion of the museum component will highlight tools and practices from the history of VA winemaking and walk the visitor through the chronology of the industry.
- EXHIBITION: HANDS ON SCIENTIFIC.....6,000sf
This experiential portion of the exhibition will engage the visitor in a hands on experience that explicitly portrays the science of winemaking. Portions of this component may be adjacent to exterior space to allow for greenhouse type demonstrations. It may also be near the laboratories to give the public a glance of the scientists at work.
- GUEST APARTMENTS.....4,000sf
The apartments will serve invited guests who are staying for an extended period of time to give lectures or do research. Additionally, they will support the mixed-use fabric of the district
- CLASSROOM.....1,500 sf
These will function in coordination with UVA to offer classes in viticulture. They should be near the classrooms to provide access for students.
- LABORATORY.....1,500 sf
The laboratory will serve both as a research center and a demonstration tool for visitors. It will specialize in research regarding growing conditions in Virginia.
- OFFICES.....1,000 sf
For administration purposes.

CONFERENCE.....700 sf

EXTERIOR SPACE

This will provide both formal space for outdoor activities, and informal areas for casual activities. These exterior areas will also serve as demonstrations of sustainable vine growth and groundwater filtration to extend the hands-on exhibition outdoors.

MECH/ STOR.....2,500 sf

37,700 sf

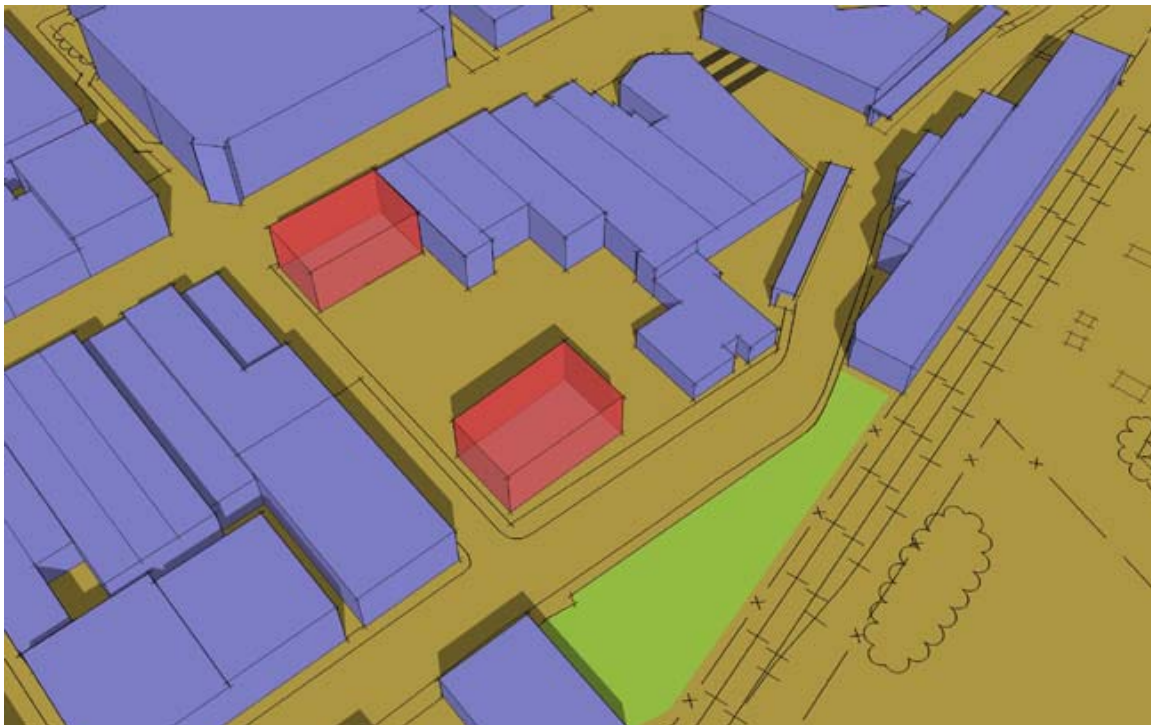


Figure 67: the restaurant and the shop will work well on the street edge

Once factors of circulation , double-height spaces and exterior green space area determined, this will result in a two-three story building within the confines of the approximately 29,600 sf site.

The wineries of Virginia are a vital part of its heritage, and an overly ambitious wine center could have the adverse effect of drawing attention away from them, rendering them not worthy of a visit. For this reason, there will be no production facilities within the Charlottesville location. This will encourage tourists who enjoy the urban experience to embark on a follow-up visit to the rural setting, in search of a tour of the production facilities and a more subdued rural environment.

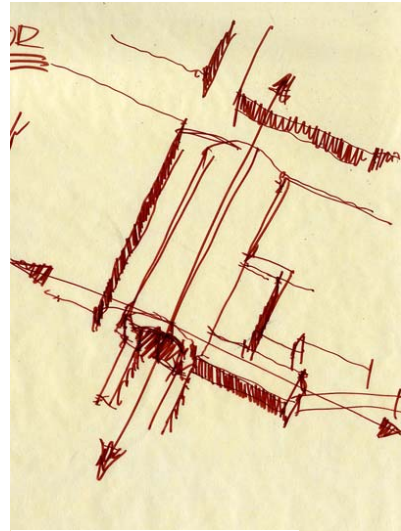


Figure 68: diagram of connections

Urban Site Interventions

The to support the thesis as an anchor to the east end of the pedestrian mall several major intervention strategies have been implemented. On a more city-wide scale, the connector of West Main Street that runs from UVA to the pedestrian mall will be redeveloped with a denser urban fabric that addresses the street in more direct manner. By creating a true boulevard between the two nodes, the mall will gain access to more clientele, and de-emphasize the need for the automobile as means of arrival.



Figures 69 & 70: current conditions of connection (above)
Proposed revitalization (below)



With respect to the mall itself, an anchor at the east end has been proposed in the form of a new transit center. This will not only provide visual and physical stability to the end of the mall, but will promote the end as an arrival point of activity. It will further encourage arrival to the mall by means of public transportation, and alleviate the need for more parking garages. For the purpose of enhancing the urban intervention stages of the thesis, the transit center will be accepted as a future addition to the end of E. Main St, and the wine center will be developed with this in mind.



Figure 71: new transit center proposal plan with amphitheater terminating the axis and the transit center below-left (WRT Architects)

SITE PLAN: MALL EXTENSION, TRANSIT CENTER & AMPHITHEATER
DOWNTOWN MALL EAST END EXTENSION • 5/21/03 WORKSHOP



Figure 72: new transit center model and section. (WRT)

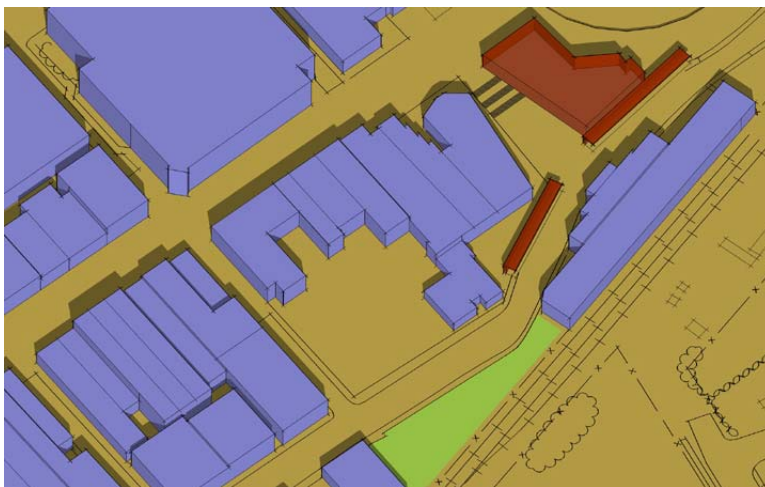


WEST ELEVATION

Urban interventions pertaining specifically to the site involve the manipulation of buildings that can be categorized as “soft site”. In other words, it has been determined that particular buildings many be removed or replaced to better benefit the urban condition and support positive growth. The poorly articulated office building to the north, for instance, may be removed to allow the wine center to provide a more positive edge on the mall. Additionally, the run down stores to the southern end of the site may be rehabilitated to support the urban fabric. It is important to note that no buildings on the historic register (pre-1950) will be removed in the process. Additionally, 5th St. will be reopened to traffic to provide better access to the amenity.



Figure 73: adjacent buildings that may be removed and the transit center that is to be added (below)



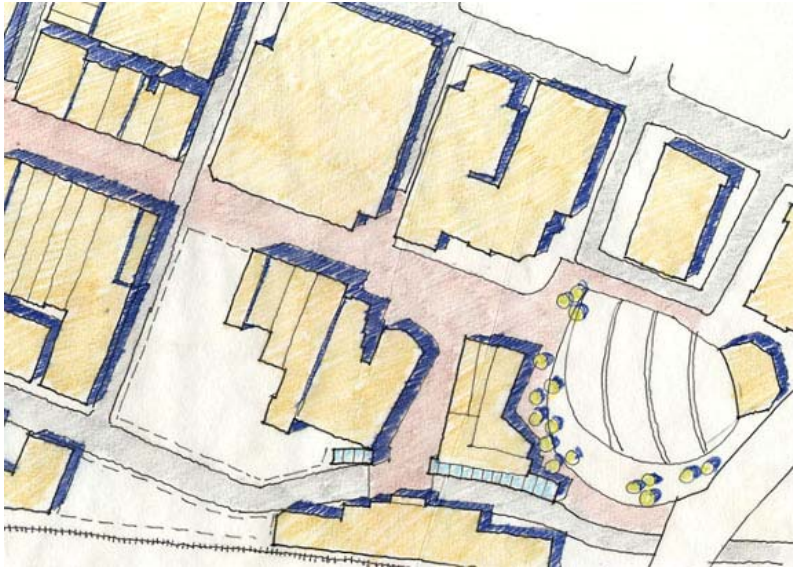


Figure 74: site with adjustments made

Initial Parti's

In order to obtain a wide spectrum of design options, I generated three parti's based on the clear articulation of a unique design strategy. These include a green parti, a culturally sustainable parti, and a parti based on connectivity. The intent was such that aspects of these strategies could be combined to form a single design strategy during the schematic design phase of the project. However it is necessary to represent as many ends of the spectrum as possible to realize the potential of the site.

The idea of an overtly sustainable building drove the first schematic parti. It is organized along a series of bars that highlight particular aspects of sustainability related to function. On the western end a massive water-channeling roof brings all the rainwater to the mall edge, at which growth demonstrations are given. The garden, rather than the building fronts the mall, giving hierarchy to the urban green space. On the southern end of the site, the roof extends over the road to embrace the adjacent park, bringing it rainwater that will enter a series of ponds. Finally a glass skin wraps the whole bar of public use, promoting the building as a learning tool. This juxtaposes the more earth-bound section that houses the administrative functions of the building.

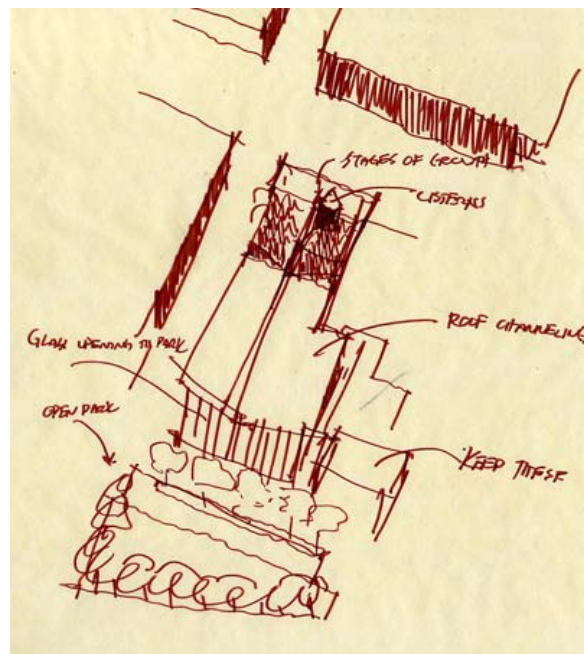


Figure 75: sketch of "green" parti



Figure 76: axon of “green”
bar parti

The second scheme is a reaction to cultural sustainability, operating as more of a contextual piece than an overly green building. The parti takes preemptive measures towards adaptive reuse, creating a structure that can be reconfigured at the end of the wine center's lifespan.

Furthermore, the modularity of the building and its ability to recreate the existing urban

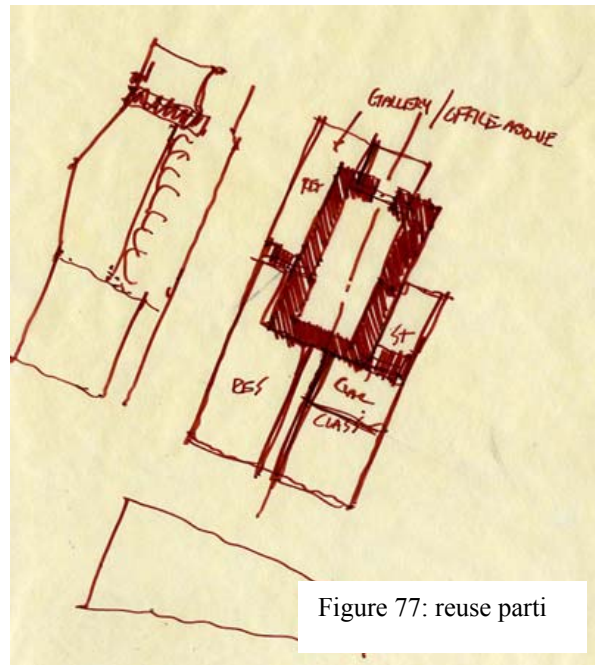


Figure 77: reuse parti

fabric allow for an easily adaptable structure that can satisfy the mixed-use nature of the historic corridor. This scheme relies more on the courtyard typology than the bar formation of the previous parti. Additionally, this scheme would be build out of materials that last through several generations, as the first may rely more on the forty year cycle.



Figure 78: reuse parti axon

The third site parti utilizes the adjacent streets and accentuates their connectivity through a series of gestures. As stated earlier in the analysis, the pedestrian mall is isolated by poor vehicular access and limited views from Water St. The diagram of the third scheme begins to illustrate a grand connection between the two along 5th St. This would act as an outdoor wine market on summer days, and begins to pull the exterior spaces into the building. The

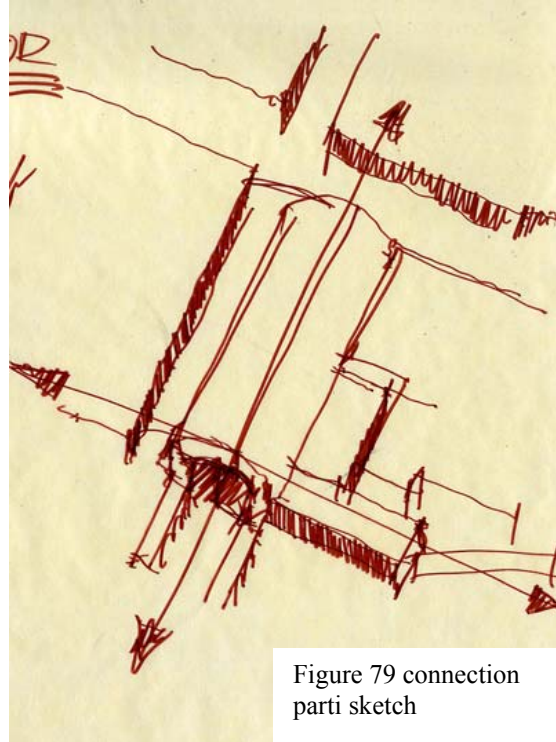


Figure 79 connection parti sketch

The adjacent park is pulled into the scheme through the visual connection of a pavilion placed at the terminus of 5th St. Along Water St. to the south are two linear gallery buildings that further accentuate the passage past the site.



Figure 80: connection parti axon

CHAPTER 9: Design Proposal

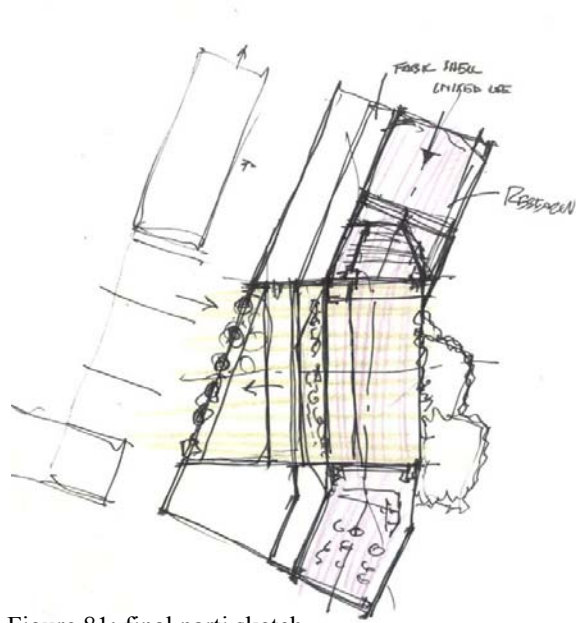


Figure 81: final parti sketch

The chosen parti arose from a further examination of the three “ecosystems” of the project; that of nature, that of the city, and that of the wine making process. The idea to weave these three processes together allowed the separate ecosystems to begin to inform each other both spatially and programmatically.

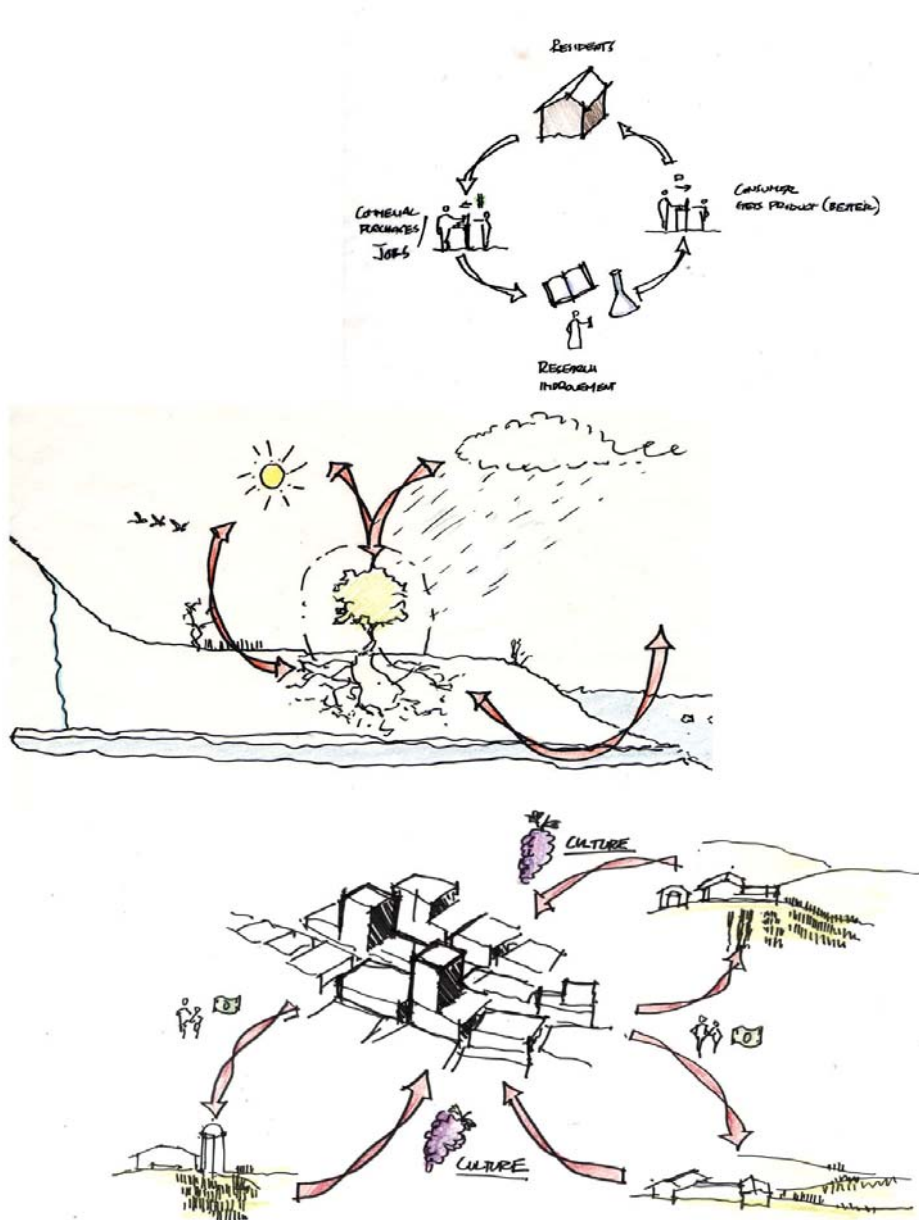


Figure 82: the three ecosystems

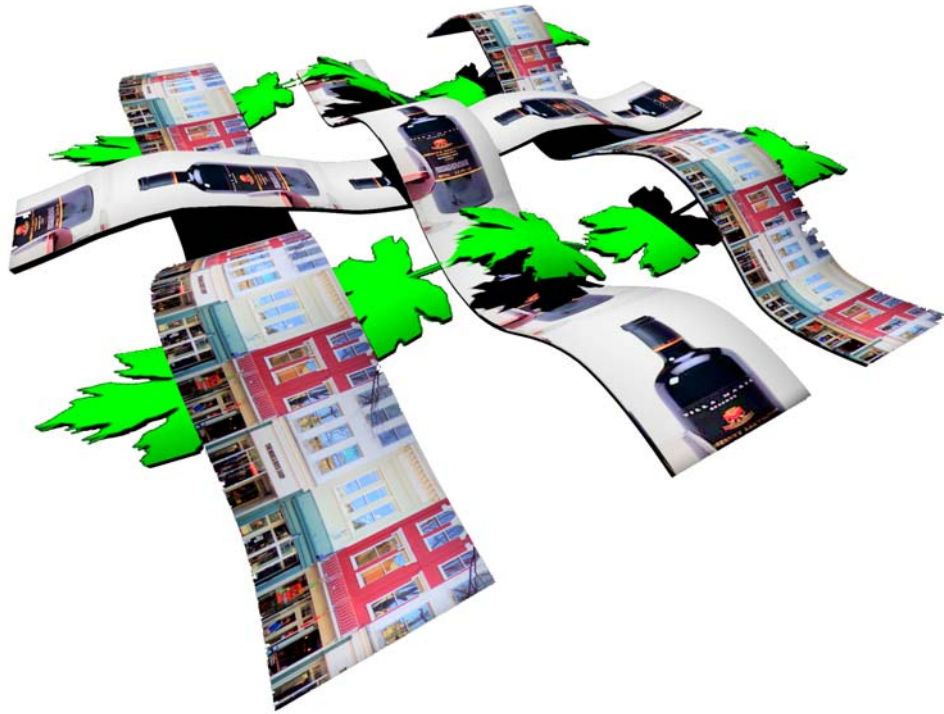


Figure 83: weaving the systems

Knitting these elements together on the site began with the conditioning of the city ecosystem, which does the city justice through its urban edge and careful programming. The restaurant, wine shop, and museum entry hall are all placed within this realm, providing pedestrians with an uninterrupted urban experience along all three main faces of the building.

The natural ecosystem manifests itself in the form of a vineyard courtyard placed centrally within the structure, bringing light, air, and most importantly wine to the rest of the building. This courtyard is then raised 15 feet and rotated in the direction of the cardinal points to provide an educational illustration of ideal lighting conditions. Additionally, the vineyard is sloped at 12 degrees to demonstrate the percolation effects of a vineyard that receives effective rainwater runoff from an adjacent roof. This green space then pushes itself westward through the building to the exterior wall, at which point

the passerby can observe this condition from the exterior of the building. It is at this one location that the urban fabric is broken.

Finally, the winemaking process snakes through perpendicular to the green space, starting at the northern edge of the site and landing at the southern point on Water St. This collection of spaces includes the exhibits, the processing, the vineyard, and the tasting room. Spaces such as the vineyard, which occur in an overlapping condition, pertain to both the natural ecosystem and the winemaking process.

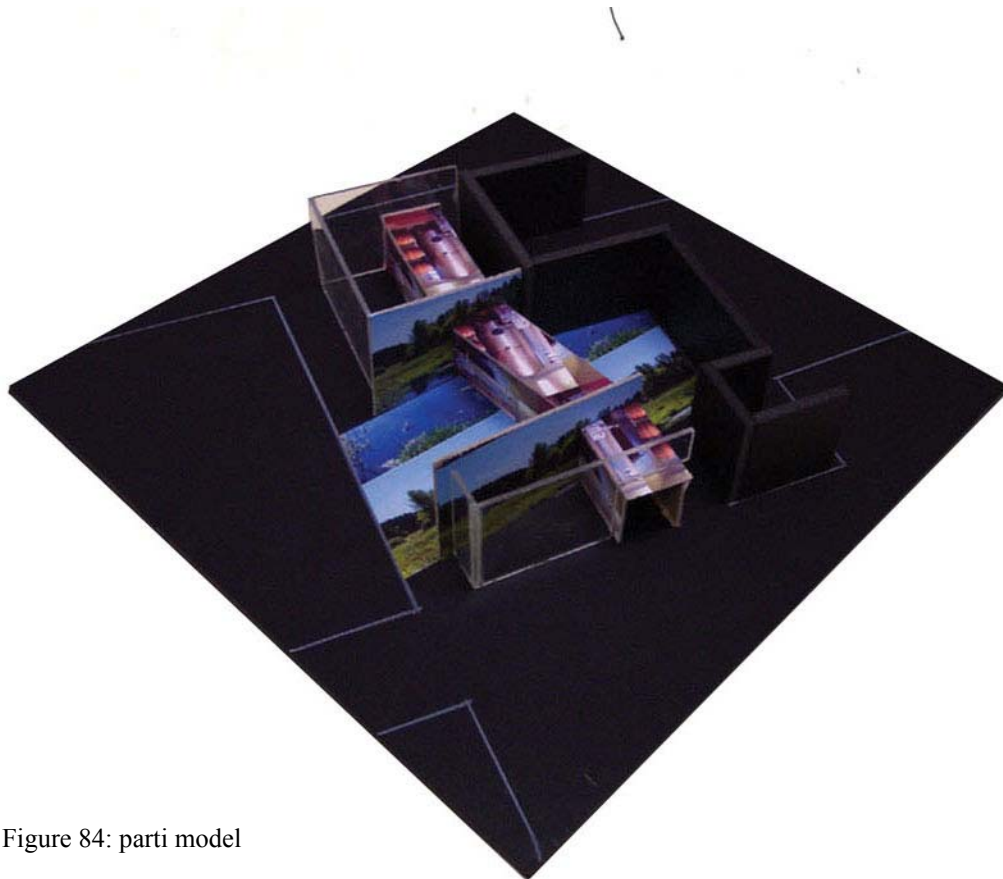
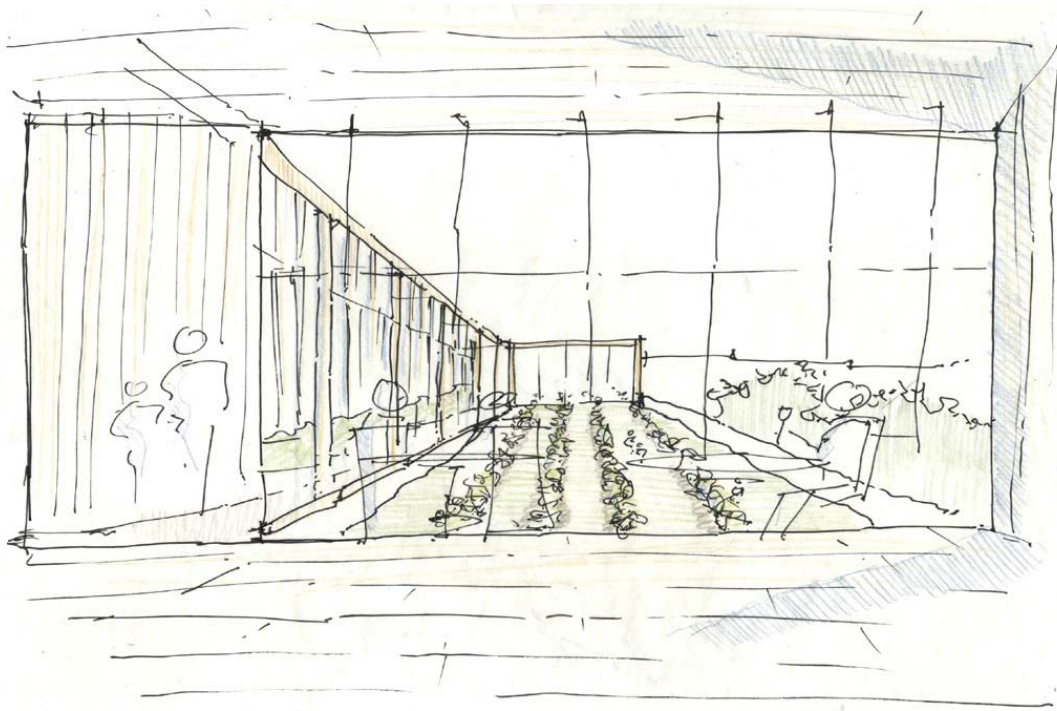


Figure 84: parti model



Figures 85 & 86: concept sketches of tasting room (above) and entry hall (below)

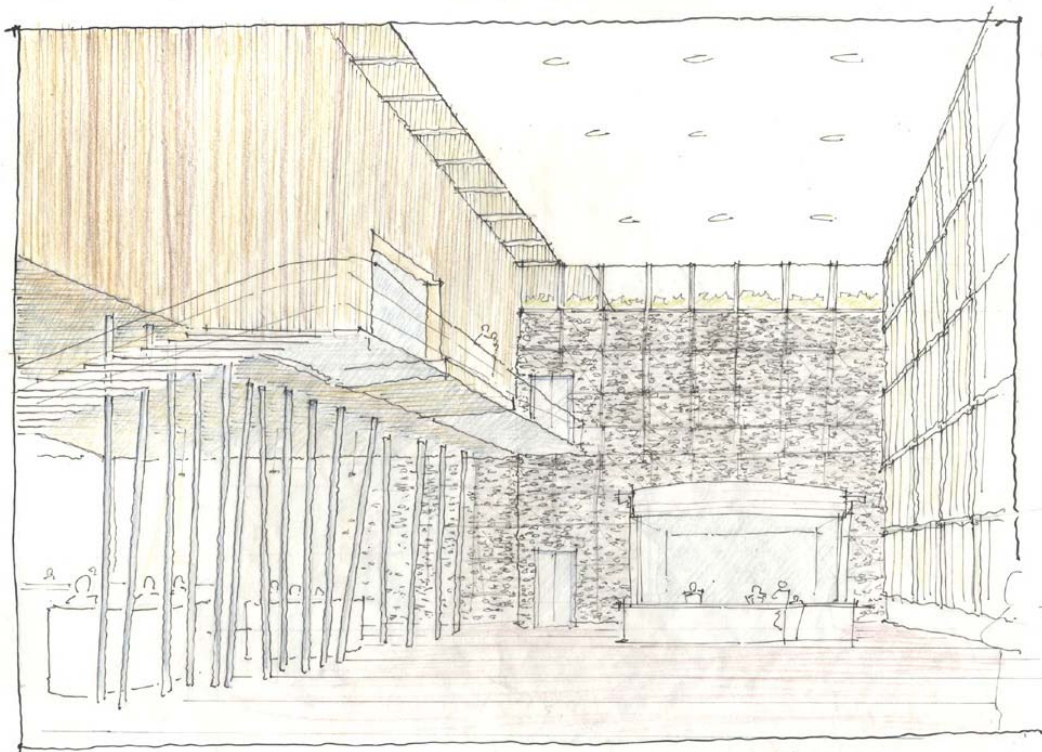




Figure 87: process model

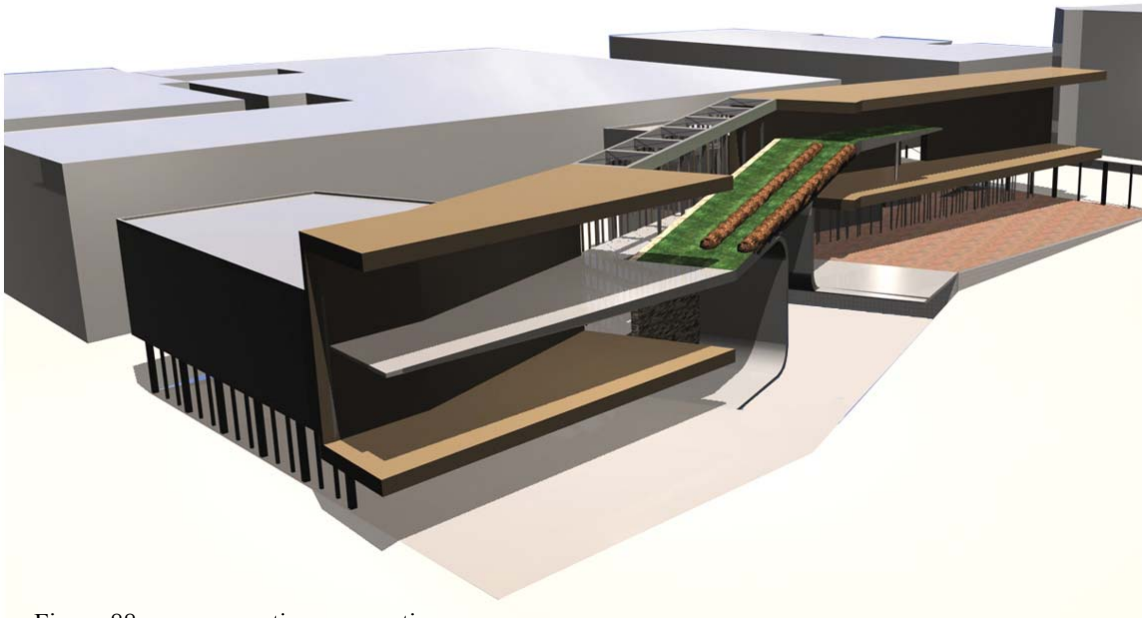


Figure 88: process section perspective



Figure 89: transverse section through building (above) with details of the tasting room (right) and the vineyard (below)

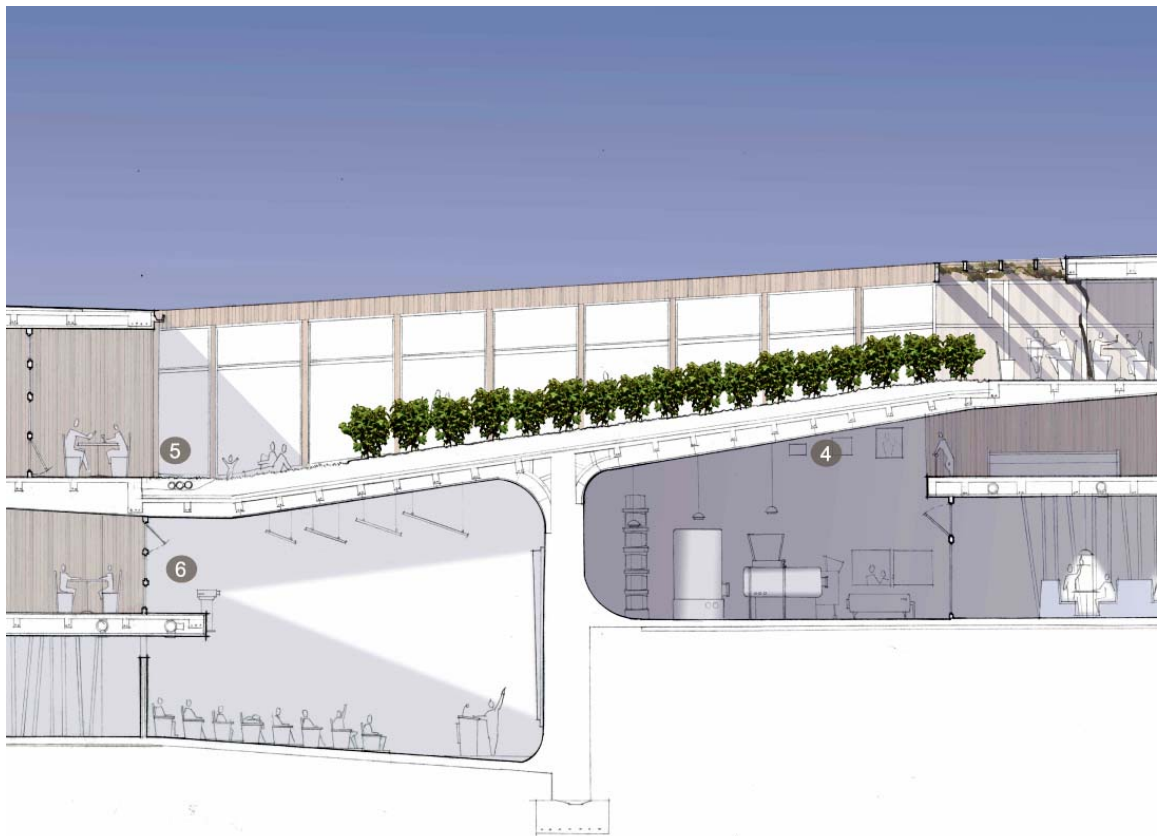




Figure 90: longitudinal section through vineyard with detail (below)



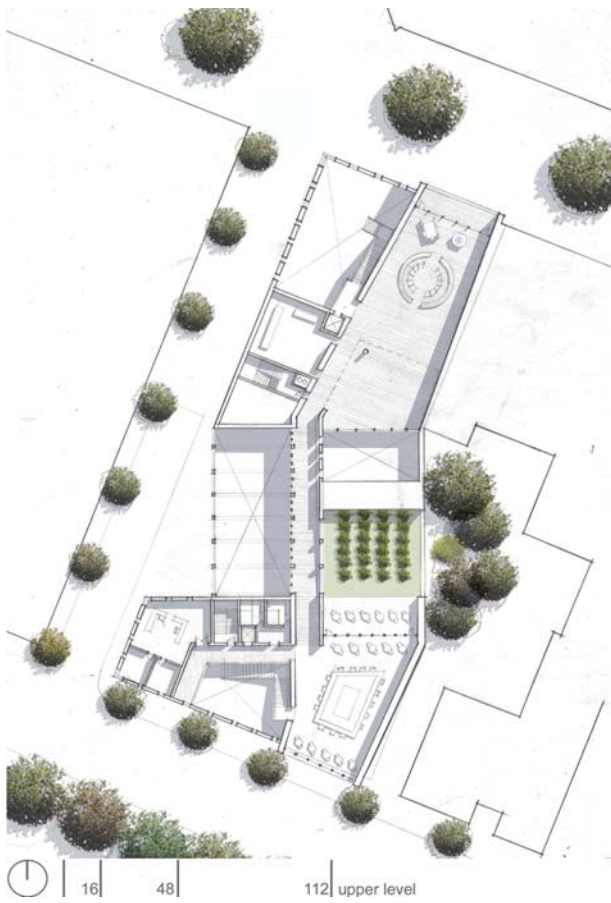


Figure 91: counterclockwise from top left: upper level, main level, lower level.





Figure 92: aerial perspective from south



Figure 93: counterclockwise from top:
aerial perspective from northwest, entry
façade on Main St., entry hall.



Figure 94: view from tasting room



Figure 95: view from the museum



Figure 96: view from the catwalk

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