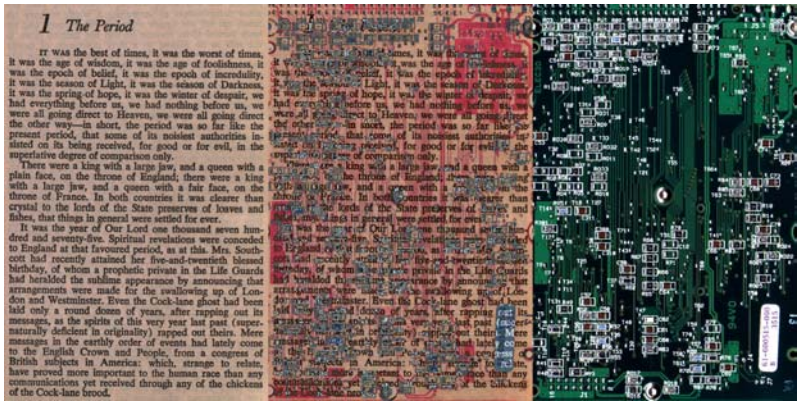
Hybrid Library for a Social Suburbia

Jason Albers



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Digital Dematerialization

The advent of technology and invention has always had a profound impact on human society and how it operates. It is how we define our progress through history: the Bronze Age, the Iron Age, and more recently the Industrial Age and Atomic Age. Currently, our society has undergone a transformation in the last decade into the "Digital Age." Microprocessors are becoming more efficient, cheaper to produce and thus being imbedded in every possible application. Computers are becoming increasingly more important (some would say completely necessary) in functioning on a daily basis. These digital devices are ubiquitous and omnipresent, and are changing the places that we live in dramatically.

This could be stated for almost every major advancement in technology. The automobile has had (and continues to have) some of the most obvious impacts upon our society, the built environment and our culture. What makes our current moment in history – the emergence of the "Digital Age" – unique in respect to other technological advancements is that digital technology is invisible. Also, the uses of this new technology are often as replacements for existing physical systems. E-mail has effectively taken the place of letters for casual correspondence and interoffice memoranda for workplace communication. Physical pieces of paper are being replaced by digital bits of information. Even the workplace itself is being "dematerialized" by the e-commerce industry and the ability to conduct business remotely through the internet. Automated

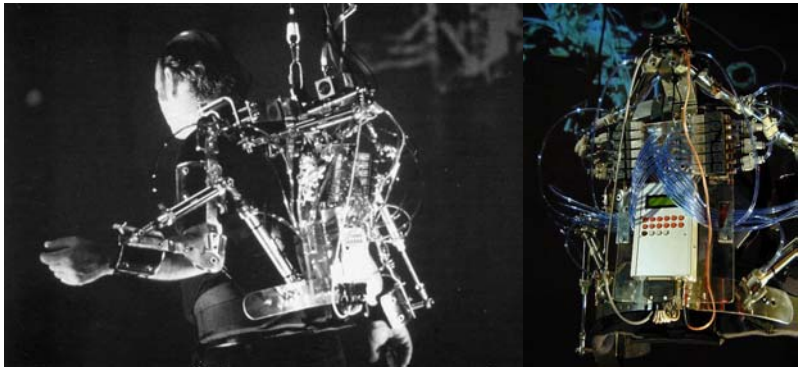
teller machines and online banking capabilities have essentially eliminated the need for person-to-person contact with a bank teller.[i] The overemphasis of this technological revolution has the potential of undermining the importance of the physical world – both the sense of place and social interactions which normally exist in the physical realm. Rather than using advancements in technology as a replacement for traditional techniques, the two should be considered as synergistic parts of a whole. This synergy is a direct result of the mutual interdependence between the physical and the digital, creating an existence in a state of flux for the two components of the system.

Technology/Human Hybrids: "Cyborg"

With this increasingly technological-based society that is emerging, there have been many recent investigations on the relationship between humans and new technology, and how they can synergize into a hybrid condition of coexistence. Scientific improvements in the field of prosthetic devices have involved this notion of high technology melding with human flesh. These devices replace nonfunctional limbs or organs with a technological equivalent, such as William Dobelle's Artificial Vision System, in which a small, glasses-mounted camera is connected directly to the visual cortex of a blind patient's brain, bypassing the defective organ of the eyes, and calibrated to restore a modified form of the patient's sense of sight.[ii] While scientifically innovative and absolutely amazing in their execution, these prostheses are simply designed out of a necessity to replace a malfunctioning physical part of the body.

The approach that Stelarc, a contemporary performance artist, takes on the notion of prosthetic devices is a more dynamic, hybrid relationship between man and technology. Stelarc's theories have taken the current trend of humans living in an increasingly digital world to the extreme by integrating technology and mankind at entirely new and unprecedented levels – all executed on his own body. According to Stelarc, the advancements in technology in our current society have drastically outpaced mankind's ability to cope with it adequately. As a solution, he suggests that we "incorporate technology into the body…technology, symbiotically attached and implanted into the body creates a new evolutionary synthesis, creates a new human hybrid - the organic and synthetic coming together to create a new sort of evolutionary energy."[iii] In attempts to achieve this new "evolution," Stelarc's experiments have involved connecting himself to computers, robotic prostheses, and other electronic devices, continuously increasing their elaborateness, boldness, and integration.

Stelarc's Movatar project is an excellent case study of just how intricate this human-technology interface can become. The Movatar is a back-mounted intelligent prosthesis that has the ability to affect the movement of a human's arms. The lower body is independent of the behavior of this device, and acts as part of the sense organs for the Movatar unit. For his performance with this device, Stelarc would have the freedom to walk, turn and twist with his lower body, but also would be able to activate a series



Stelarc's Movatar device

of floor sensors around him. These sensors would send a signal back to the Movatar, causing it to react and alter its behavior, thus changing how it is controlling Stelarc's upper body.[iv] This creates a communication feed-back loop, continuously cycling and building input signals and output reactions from Stelarc to the Movatar, and then back to Stelarc ad infinitum.

In essence, each part of the joined Movatar system (both

Stelarc and the Movatar wired up to the hardware

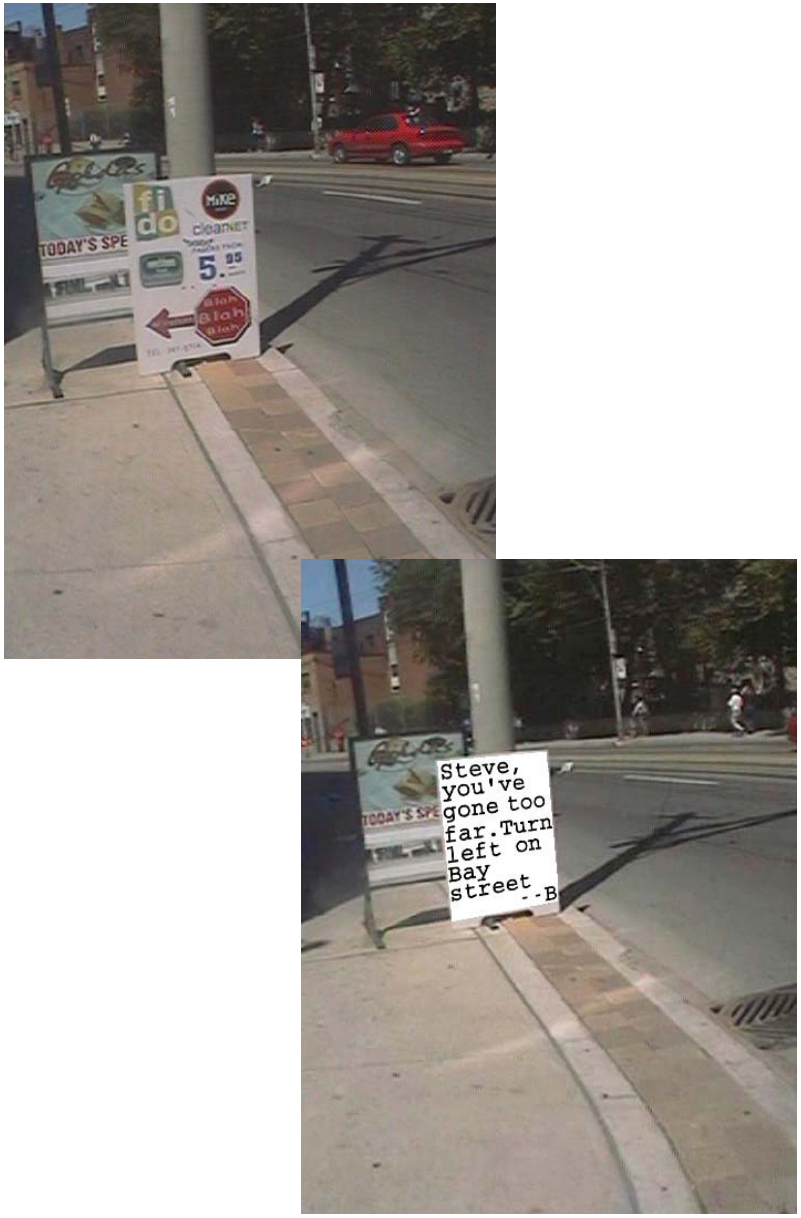
the human and the robotic) becomes a prosthesis for the other. The two elements of the system oscillate between activator and activated, between action and reaction, each one at times being the dominant, controlling element of the system. It is this notion of control that begins to show the revolutionary way that the interface between man and technology has been thought of in this project. Each half of the system has a means of controlling the other; however, it becomes difficult to determine which of the two is in control of the performance overall. During the performance, the two elements act as one, blurring the distinction between body and prosthesis, between man and technology. Together, they form a new system of operation, acting in an entirely different way than each would do separately (if that is even possible, in the case of the robotic device). It begins to develop ideas of creating human-technology hybrids, or a cyborg of sorts. There is reciprocity of communication and cause-and-effect relationships between Stelarc and his robotic prosthesis. They work simultaneously in the same space, on the same body. During these times of interface, the unusual orchestrations result from the human and the machine functioning symbiotically, producing a series of movements that could only be performed by this hybrid entity. If only for a brief

Choreography of the Stelarc-Movatar hybrid

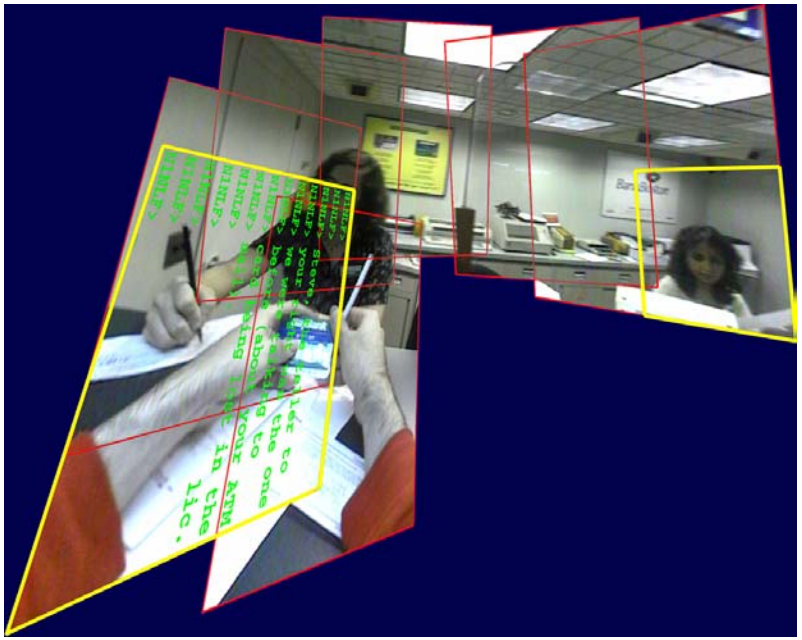
moment, a true human-computer "cyborg-like" creature exists and creates its own method of interacting with the environment, and thus establishing an identity and image – almost having a life of its own.

Another self-made "cyborg" who, like Stelarc, integrates technology with himself is Professor Steve Mann of MIT. Although the concepts behind his developments in this area are quite different and more scientific than Stelarc, the result is still a modification of human existence through technological prostheses. For the past few decades, Mann has developed the WearComp, with Eyetap, as the manifestation of his theories. This device uses an eyepiece containing both a camera and a projection device worn in front of his eyes, and a computer to process these signals. The camera records what Mann would see normally, routes the information through the computer, and sends the signal (now possibly modified) to be projected directly into his eyes. In this way, he can alter his own experience of the environment – enhancing, augmenting and mediating reality if so desired.[v] The device is very similar in its execution to Dobelle's Vision System for blind patients, but rather than replacing a defective part, it augments it. It allows Mann to eliminate unwanted elements of his environment (an advertisement) and replace it with more useful information (a message or reminder). The WearComp is Mann's attempts at

Steve Mann using his latest Wearcomp device



Mediated reality through the Wearcomp - replacing ads with notes



Augmented reality through the Wearcomp - information overlay

realizing his concept of "humanistic intelligence." Unlike artificial intelligence (AI), which tries to replicate the capabilities of the human mind, humanistic intelligence (HI) combines the abilities of humans and computers to function together. "Its goal is to not only work in extremely close synergy with the human user, rather than a separate entity, but more important, to arise, in part, because of the very **existence** of the human user."[vi] According to Mann, a new form of existence is created through the interaction of man and technology. The implementation of this technology is dependent upon the human user, who uses the device to essentially manipulate himself. However, this self-manipulation through technological means only occurs because of the user's desire to do so.

Technology/Environment Hybrids: "Digital Places"

More commonly, rather than technology being incorporated at the scale of the body, the "Digital Age" involves integrating technology into our environments. According to Thomas Horan, the integration of technology with the environment around us results in the creation of "digital places." This term is the focus and title of his book that examines the relationship of the infusion of digital technology in the physical world and how that completely reorganizes the techniques of design, especially in the public setting. Digital technology is everywhere and continues to expand, so he suggests the following:

> *Simply put, we need to create spaces that comprehensively integrate human and technological elements in a manner that both respects and stretches our traditional notions of place, in a way that links both electronic and physical networks, and through a process that engages a spectrum of participants.*[vii]

Horan goes on to discuss that digital technology has created a more fluid continuity through the environment, creating more complex, multifaceted public settings for people to engage in and use in various manners. One such example cited is the inclusion of wireless internet technology into many cafés, coffeehouses and bookstores, stating that these hubs of commercial and social activity retain their sense of place while being reestablished in the digital age.[viii] At its core, the wireless internet café is still a café, partially because the implementation of digital technology is invisible. This is one reason why these establishments need to use signage in the storefront windows indicating that this technology exists in this location. It has no presence at all within the public setting, not even when it is in use. Despite its abilities to create interconnectedness across great distances to many people, the internet has a very singular form of existence which is only made known to each individual user. For instance, in this type of setting, any number of people may be using their laptop computer. However, one cannot determine if an individual is surfing the web

and checking e-mail, or if he is simply composing an English paper and not using the invisible wireless network. Now, all the activity that is actually happening in this place may not be able to be seen. The physical presence of this digital technology is not apparent, and thus not all of the information of this setting is conveyed to its inhabitants.

Information vs. Knowledge

One of the "digital places" that Horan indicates is being transformed through technology is the library. The primary function of the library has been, and continues to be, to store and preserve information and knowledge from throughout history and provide user access to these materials.[ix] This can often be thought of in two simultaneous ways: first, literally as a place that physically contains this wealth of information (books, journals, magazines, etc.) and provides the ability for people to retrieve it; second, symbolically as an institution acting as an icon for human knowledge and the progress of our civilization, cultures and intelligence. This distinction is broken down primarily by the difference between information and knowledge. While very much related, they are definitely not synonymous. The two terms are part of the four sequential phases of learning and intellect in the human mind: information, knowledge, understanding and wisdom. Information can be defined as data, facts and other such raw material that has been processed and is capable of being used (by people). Knowledge, however, is one step up from information. It involves the transformation of information into some sort of meaning or significance. The objective then is to form an understanding by relating this knowledge to personal and/or societal viewpoints within one's mind, and ultimately attain a level of wisdom regarding existence as a whole.[x]

This transition between information and knowledge is a very crucial step in understanding the world, especially in the current digital era. Translating information into knowledge (and then to understanding) requires the involvement of a human mind as a means to organize, structure and record a set of ideas and create meaning from the information. Information today is increasingly being stored electronically or digitally, either initially physical information being converted to digital format or information being created digitally right from the outset. This is in service of saving physical space and retrieval time. Also, many large, historical libraries have implemented grand "digitization" projects in response to the preservation and usability of old, worn and possibly decaying, disintegrating physical resources.[xi] As a result, more and more information is being stripped of its physicality and is dematerialized. This invisible, digital information relies on the processing and meaning provided by mankind to reestablish it in the physical world through human consciousness.

> *The whirling tape drives of the computer, the instantaneous response in retrieval time, the convenience added to the process of research through xerography and facsimile may all facilitate activities for learning and informing. But knowledge, however generously nurtured by these devices, remains established as the principal citizen in the republic of the self.*[xii]

Otherwise, without the interaction with the physical, human dimension, this information stays dormant in its digital format, remaining inert, unused and dematerialized. Only when it is engaged with the human mind does this dormant technology become a charged participant in the process of gaining knowledge.

Searching for Knowledge

As stated before, the process of obtaining intelligence can be considered a sequential progression upwards through information and knowledge towards understanding and wisdom. Thus the knowledge that is gained and the understanding that is reached are very much dependent upon the type of information available at our disposal. In terms of a library, this relates to the methods of searching for and retrieval of the desired information – AKA, the card catalogue. Originally, the way of navigating the library to find

something specific started with sifting through drawers of cross-listed index cards containing the location of any book, magazine or other resource held within the library's collection. Any library patron could begin with either a desired subject, author or title and use it to find the related resources and proceed to pull it from the shelf. As technology has advanced, many – if not almost all – libraries have converted their physical card catalogue to a digital, searchable database of their listings. This conversion can be very beneficial to the parties involved for a number of reasons. It saves space within the library and is more easily updated with newly acquired resources. For the users, it saves time by streamlining and simplifying the search-and-retrieval process. Many of these databases are available for use remotely through the internet, allowing access to people at different locations, defying and expanding the boundaries of the library itself.

However, there are other implications involved with this shift in searching methods. Again, like the "digitization" scenario, the card catalogue is transformed from having a physical presence and tactile qualities to being completely devoid of any materiality whatsoever. This dematerialized device only becomes visible with its activation by user interaction. In this instance, the interrelation between the digital technology and the corporeal is becoming far more complex. Not only is the invisible database dependent upon humans to bring it into existence, but the search and the subsequent journey of the researcher through the library and through the phases of intellect are dependent on the results of the digital technology. Library users control the activation and thus visibility of the technology, which in turn exerts its control over and imposes its selection and "will" upon the users' research. We humans have relinquished the initial, crucial steps of the search for knowledge to a computer algorithm. And since no computer algorithm is perfect and cannot adapt to different situations, another layer of this technology-human interdependence is required. The user must now filter out the erroneous results to focus the search on the resources that are relevant and most desired. Furthermore, the search algorithm's attributes and coding may be capable of modification at anytime. In fact, the very popular internet search engine Google utilizes this phenomenon to its advantage. The search engine is based on the idea of "pageranks" and how many links websites have between each other. The pagerank of a certain website takes into account all the number of links connecting other websites and their pageranks, which relates to the pageranks of their linked websites, and so on. It updates this search algorithm about once a month in order to keep up with the constantly changing internet and the continuous addition of webpage content.[xiii] This "reindexing" changes the results of a particular query so that it supposedly gives the most relevant information available. Yet it also prevents the web page providers from exploiting the system for their own personal or commercial gain. Thus part of the implementation of this technology takes into account the human desire to take unfair advantage of this system. It acts as a means of control over humans, but also is capable of being manipulated by them.

Hybrid Library Design Strategy

Given these complicated factors and intricate relationships, the public library can no longer be designed simply as a warehouse for storing books. The onset of digital technology has changed how the public uses their libraries to gather information and media. The public library needs to cater to opposite ends of the spectrum: physical resources and digital technology; a place to store information and a place to use that information. These hybrid conditions create a much more complex framework for designing a public library.

Thus, the design of a public library was chosen as a further investigation of this thesis because not only does it have to deal with this digital-physical dichotomy, but also because the existence of the public library is in jeopardy. As stated before, much of the resources and components of the library are being digitized, transformed from the physical world to the digital. Also, there have been a number of propositions and investigations into all digital libraries - online digital resource collections that are accessed, navigated and browsed solely through the use of a computer. These trends have the potential of eliminating the physical place of the library. This would deny the other important

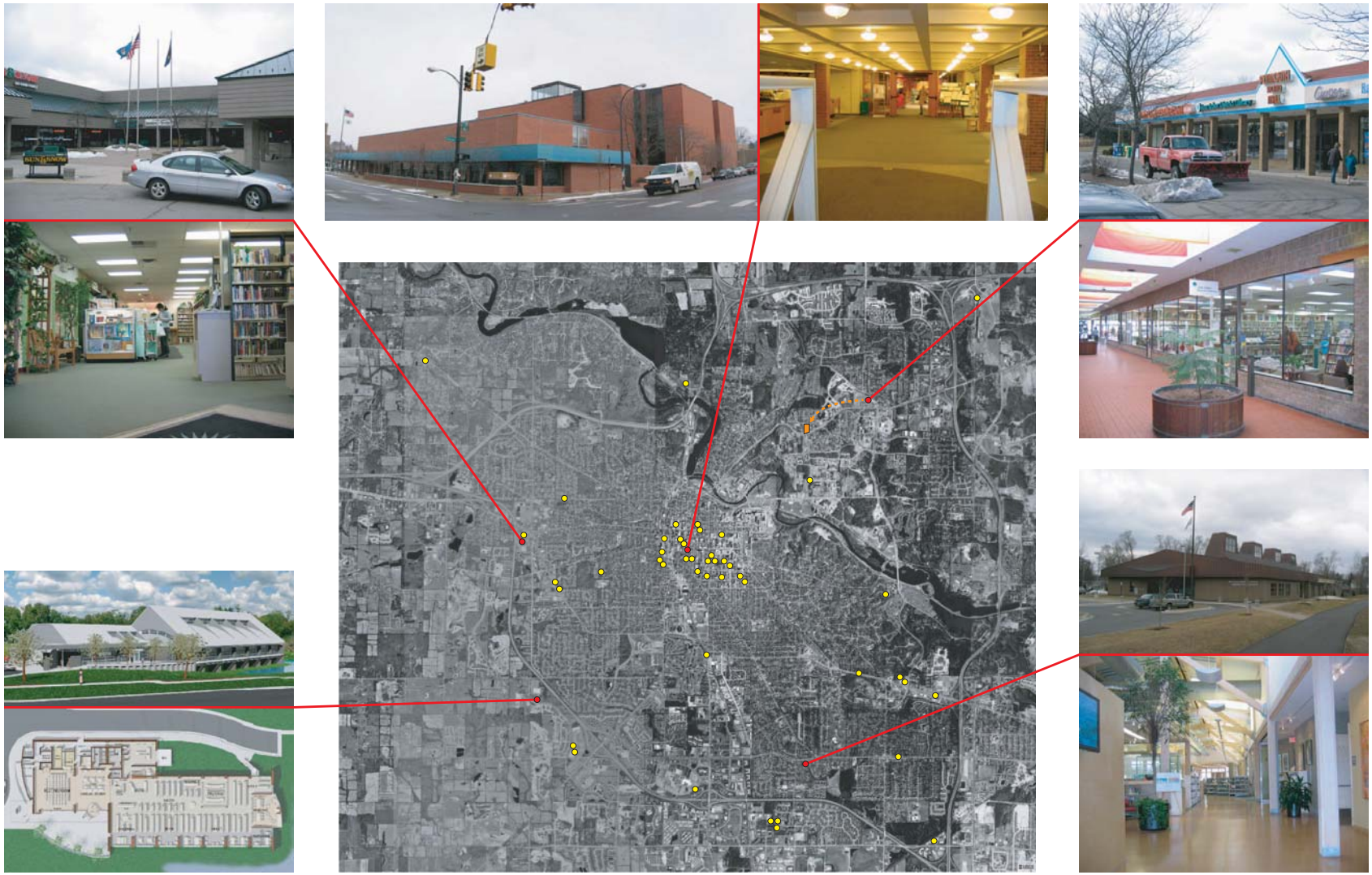
Information-related programs - Ann Arbor library (above) vs. Borders

roles of the library as a social institution, a civic amenity and a place of activity. Thus, the goal of this thesis project is to reinforce and enhance these physical and social aspects in the design of a public library in reaction to the dematerialization of digitization.

Emphasizing the physical and social components of the library is in stark contrast to the traditional notion of this public institution. The usual image of a public library is rooted in an academic or cerebral setting - often quiet, pensive, formal and proper, with certain rules to abide by. A transformation of this standard mode of operation for the library into a place of social interaction and activity begins to invert these qualities, creating a more active and casual setting which is less intimidating and more welcoming to the public. Bookstores, like Borders or Barnes & Noble, have already begun to establish themselves as these more informal versions of a library, where the public can access various media, browse through resources and casually lounge and engage with the information there inside the institution. In fact, the commodification of the book by these commercial enterprises actually demonstrates the importance of the physical artifact and a social setting in which to use it. Therefore, the proposal of this thesis is a reinvention of the traditional library that incorporates commercial and social elements to create an active, extroverted space of social and physical stimulation in addition to the traditional introverted functions of mental stimulation.

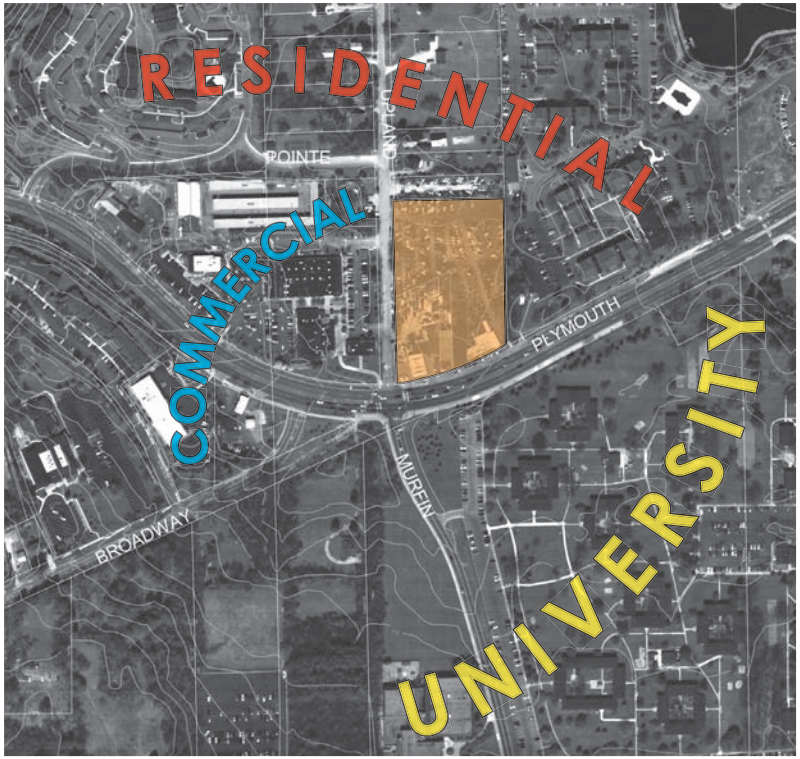
Site Considerations

Analyzing the two media- and information-related programs of bookstores and libraries in Ann Arbor, Michigan shows a discrepancy in how the libraries in the city are treated. As indicated in the diagram, the central and two southern branches of the Ann Arbor District Library system are individual buildings designed specifically for library functions. However, the western and northeastern branches have drastically different characteristics. Each of these two libraries is housed in a strip mall, with only a sign to indicate its existence. They have no identity or presence, which does not demonstrate the importance that this type of civic institution



Proposed site in Ann Arbor, Michigan (orange) in relation to the existing Ann Arbor District Library system (red) and bookstore locations (yellow)

should be given in its community. Furthermore, when comparing the location of nearby bookstores, the northeast branch library is the only one of these related programs in the neighborhood where the public can have access to information or media. This branch of the library deserves greater importance as a civic amenity and its own place to give it an identity within the community. Therefore, the existing branch library is relocated from its secluded corner of the strip mall down the street to the northeast corner of Plymouth Road and Murfin Avenue. This is a much more prominent and active site, located at the intersection of the multiple residential communities, a small commercial sector and the University of Michigan North Campus housing. Despite the site's desirable location, it too - like the northeast branch library - is currently underutilized and undervalued. The site contains a gas station on the corner of the intersection, and an auto parts and repair shop with a large lot of run-down cars in the back. The approaches and views of the site from the adjacent roads give a prominence to the site in this suburban setting. Both Murfin Avenue and Broadway Street approach the site nearly on axis, and Plymouth Road has a slight bend at this intersection, allowing the buildings on this parcel of land to seemingly jut out into the street and into the view of anyone passing by.



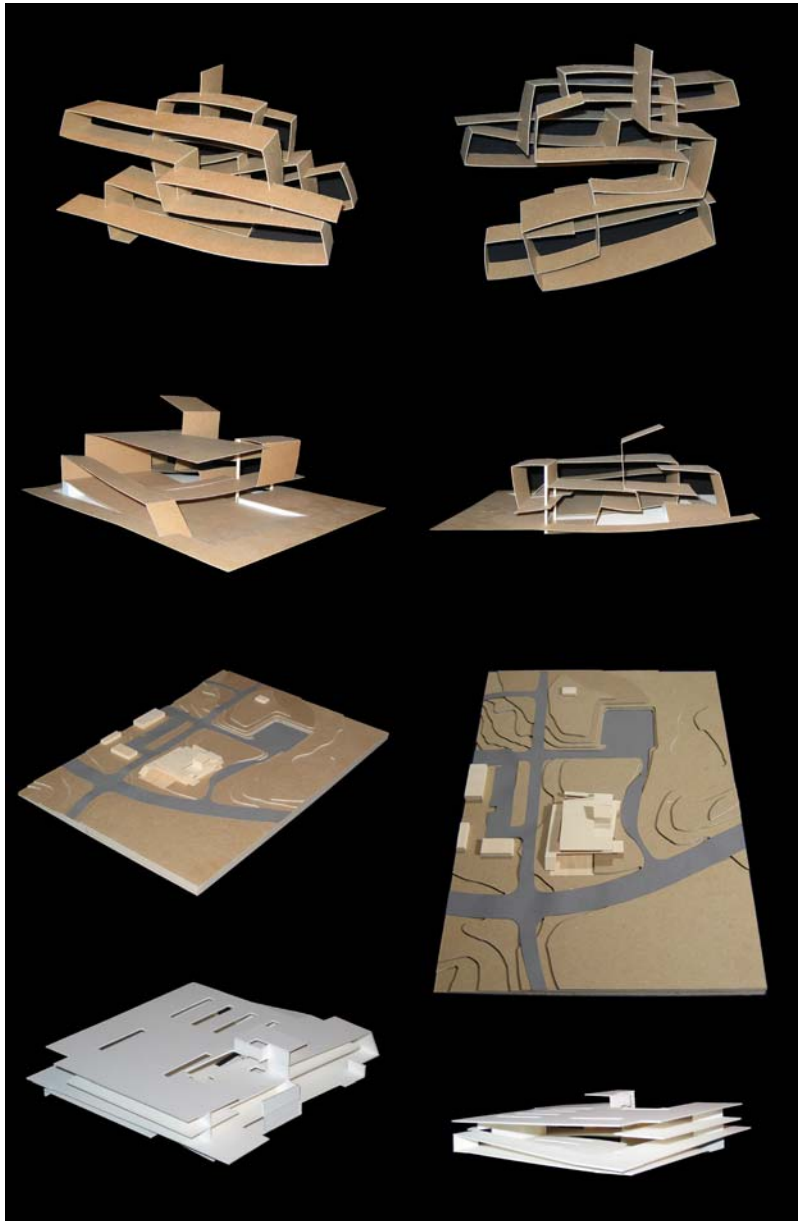
Context and adjacencies of proposed site

Plymouth Road street frontage - south elevation

Site approach from Broadway Street

Site view from Murfin Avenue - southwest corner

Existing auto-graveyard on the site

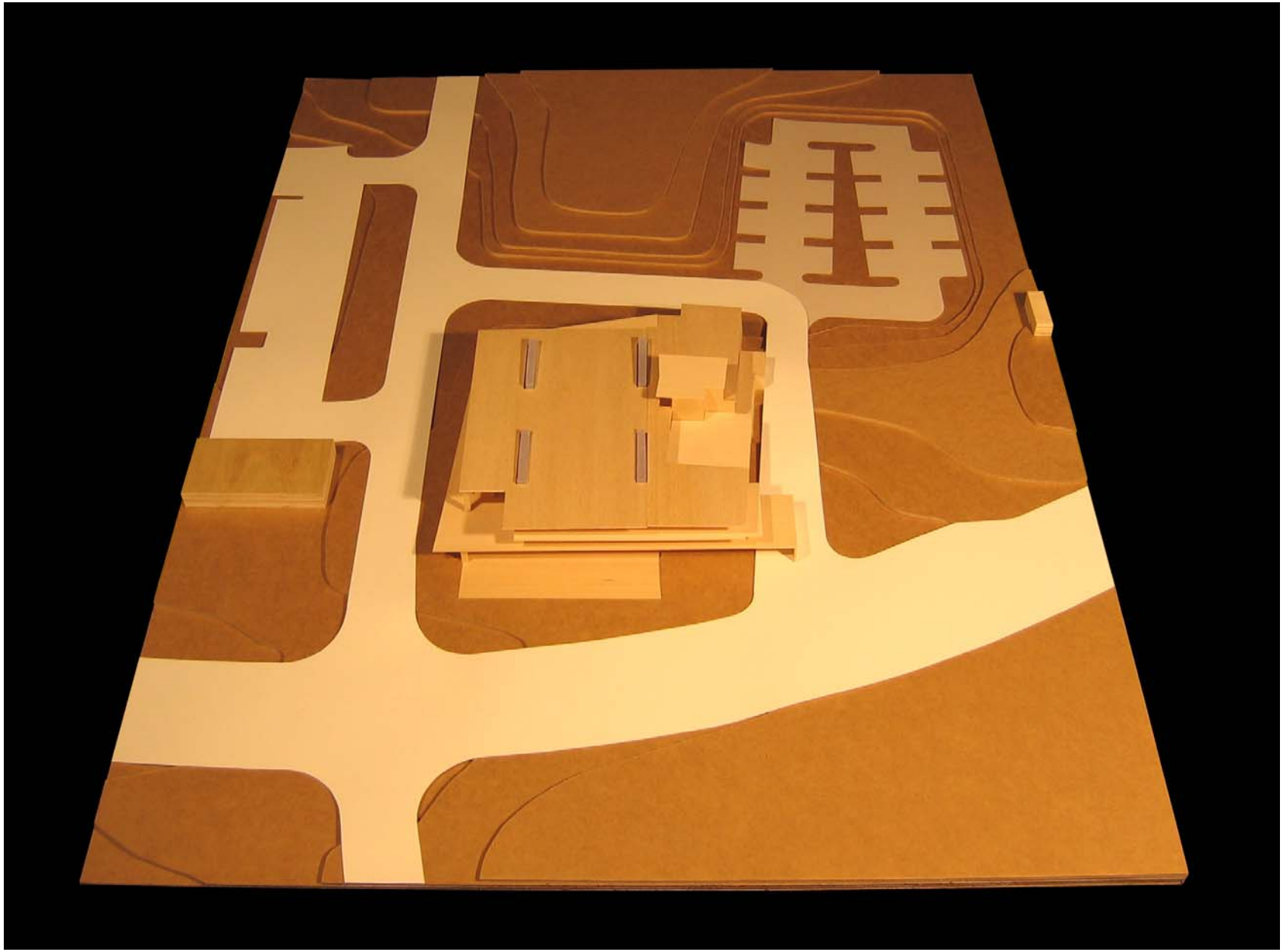


Progression of study models

Architectural and Site Design

The positioning of the project on the site takes advantage of the great views and approaches, but also begins to contradict the traditional suburban mentality of site planning and design that it is set within. In order to give more importance and prominence to the library, the building is pulled out to the corner of the intersection, giving it public street frontage along a main artery, Plymouth Road. Because of this, the parking lot is placed just behind the northeast corner of the library and is recessed into the ground, acting as a formal counterpoint to the building's mass in plan and in section. This is the reverse relationship of usual suburban developments - like those neighboring the site - where the building is placed behind an expansive slab of asphalt, clouded by a sea of cars. Also, the parking lot is composed of a grass paving system and a large bosque of trees, so that it acts simultaneously as a parking lot and a garden. The vehicular circulation also plays with this somewhat contentious relationship between the building and its suburban setting. The one-way entry from Plymouth Road is integrated into the library, moving cars through and next to the building. This entry also utilizes the suburban mentality by incorporating a drive-thru window for patrons to pick up their resources that they requested online from their homes. This main driveway continues directly around the north side of the building, creating its own urban, city block condition. The circulation around the building gives visibility to all sides of the library, so that there is no "front" or "back." This objectifies the building, reinforcing and promoting its importance as a physical place and a civic institution.

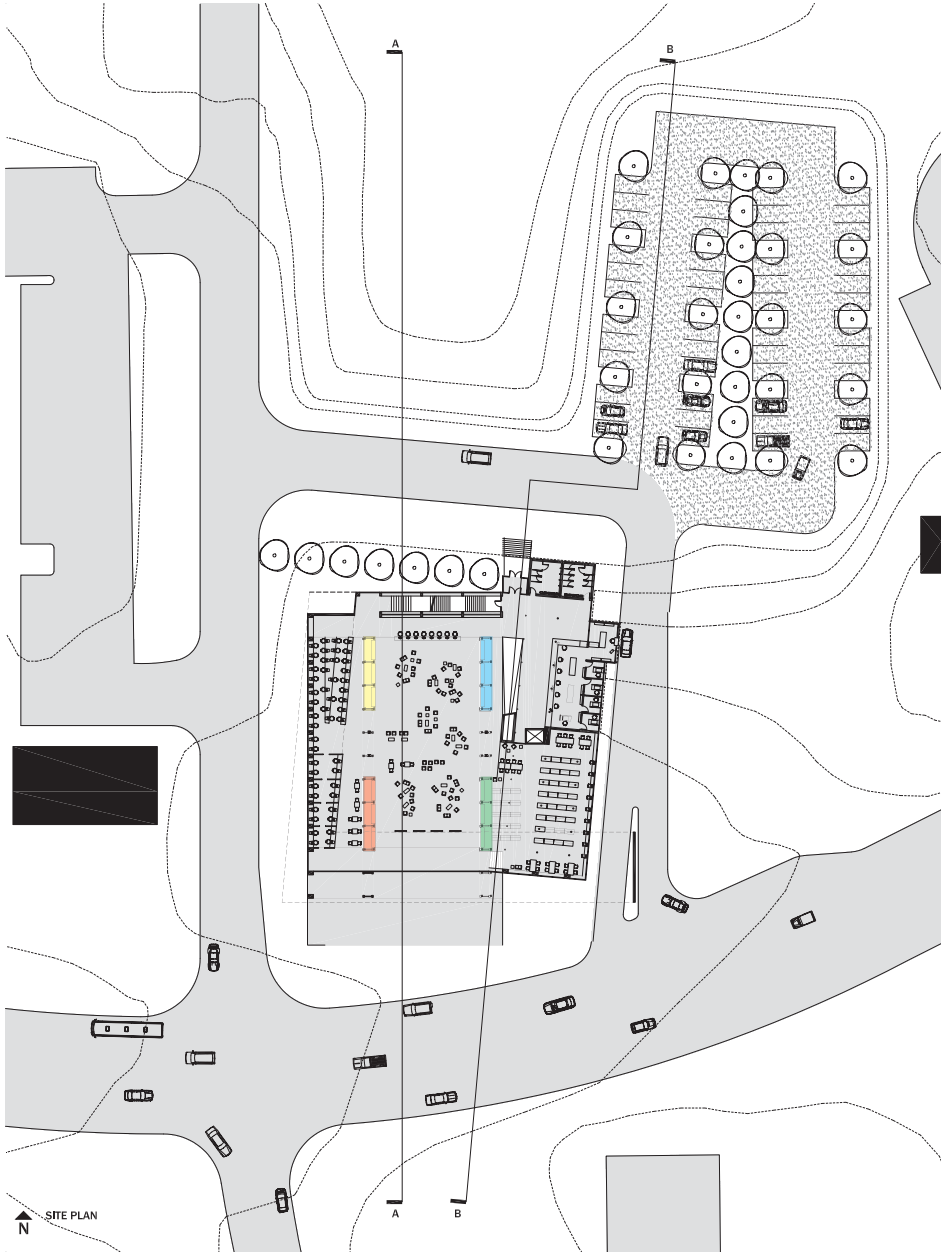
The architectural design of the building began as study models investigating the hybrid existence of the library's digital-physical dichotomy, which materialized into a complex sectional relationship between a series of forms that intersect and overlap spatially and visually. The final design concept continues with these strategies and incorporates the important social role of the library by organizing the building as the intersection of two major forms: the large-scaled, extroverted social/public space that faces the street, and the more traditional, introverted library programs that

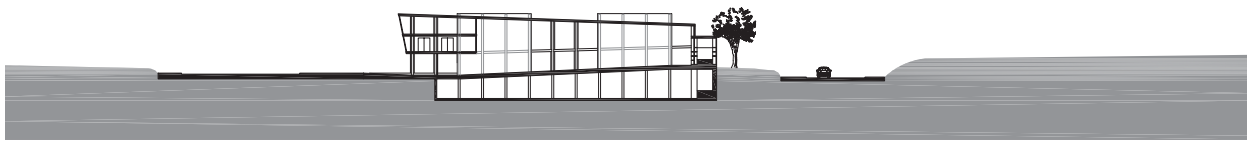


Final site model

are housed in the more contained volume that intersects it at a slightly skewed angle on the east side. The activity in the main public space can be viewed, and in some spaces heard, from the smaller-scaled, traditional library areas; the two different worlds are capable of looking into one another. The intersection of these two forms is where the main entry and vertical circulation occurs in the building. The main entry is located on the north side of the building, on the opposite side of Plymouth Road, in order to serve the parking lot, but also so that the building envelope on the south remains sealed off and protected from the busy street and so that the building's other façades have to be engaged before entering. The vertical circulation continues upward, spiraling around the main central space, to the roof of the building. At the end of this procession is a terrace overlooking the parking lot/garden from above, where the cars merge with the trees and plant life to create a view filled with a rich, activated mosaic of various colors.

The main central space would cater to social interactions among patrons, becoming a public gathering space that is active and vibrant. This space is also multifunctional and mutable with movable furnishings, acting as an auditorium, a theater, or an event space for the library to hold movie screenings, book signings, and other activities. Within this space are four colored glass voids containing related, commercially-oriented programs that serve and activate this space, and also establish the structural system with large vertical steel trusses. The red void holds food vendors, serves drinks and coffee, and has small eating tables nearby. The yellow void contains a magazine/newsstand which also sells office supplies for library patrons, such as paper, notebooks, blank CDs, etc. The blue void acts as an information kiosk, staffed by people who provide schedules for activities, local tourism information, and sell tickets and registration for events held within the library. The green void is a recreation station, where patrons can check out and buy board games, playing cards and other small scale forms of entertainment





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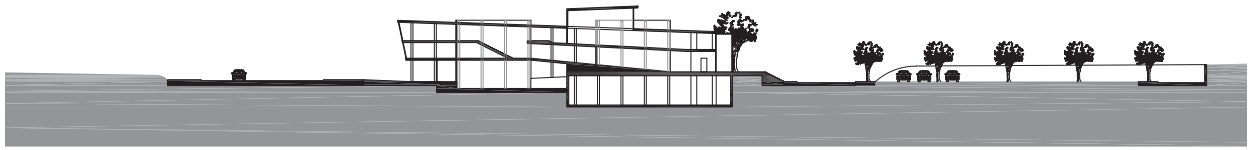
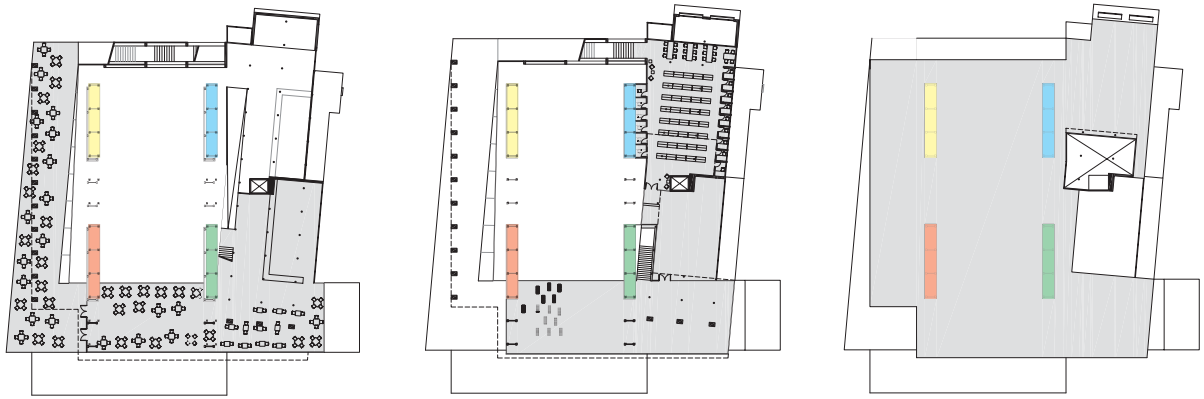


BUILDING SECTION B-B

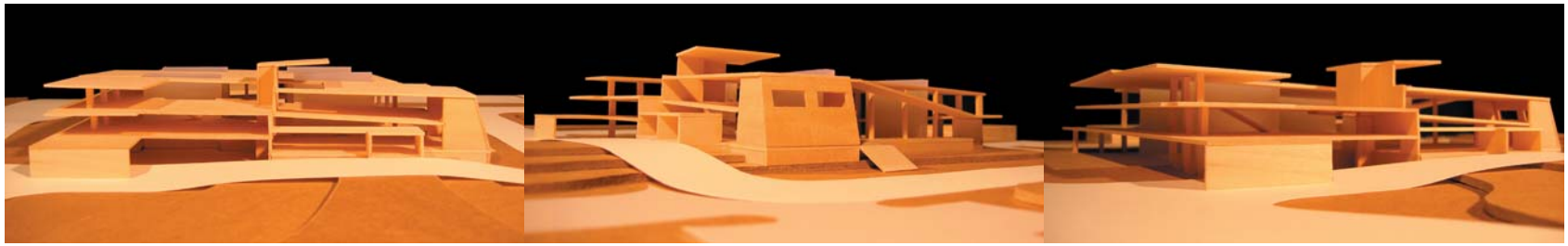


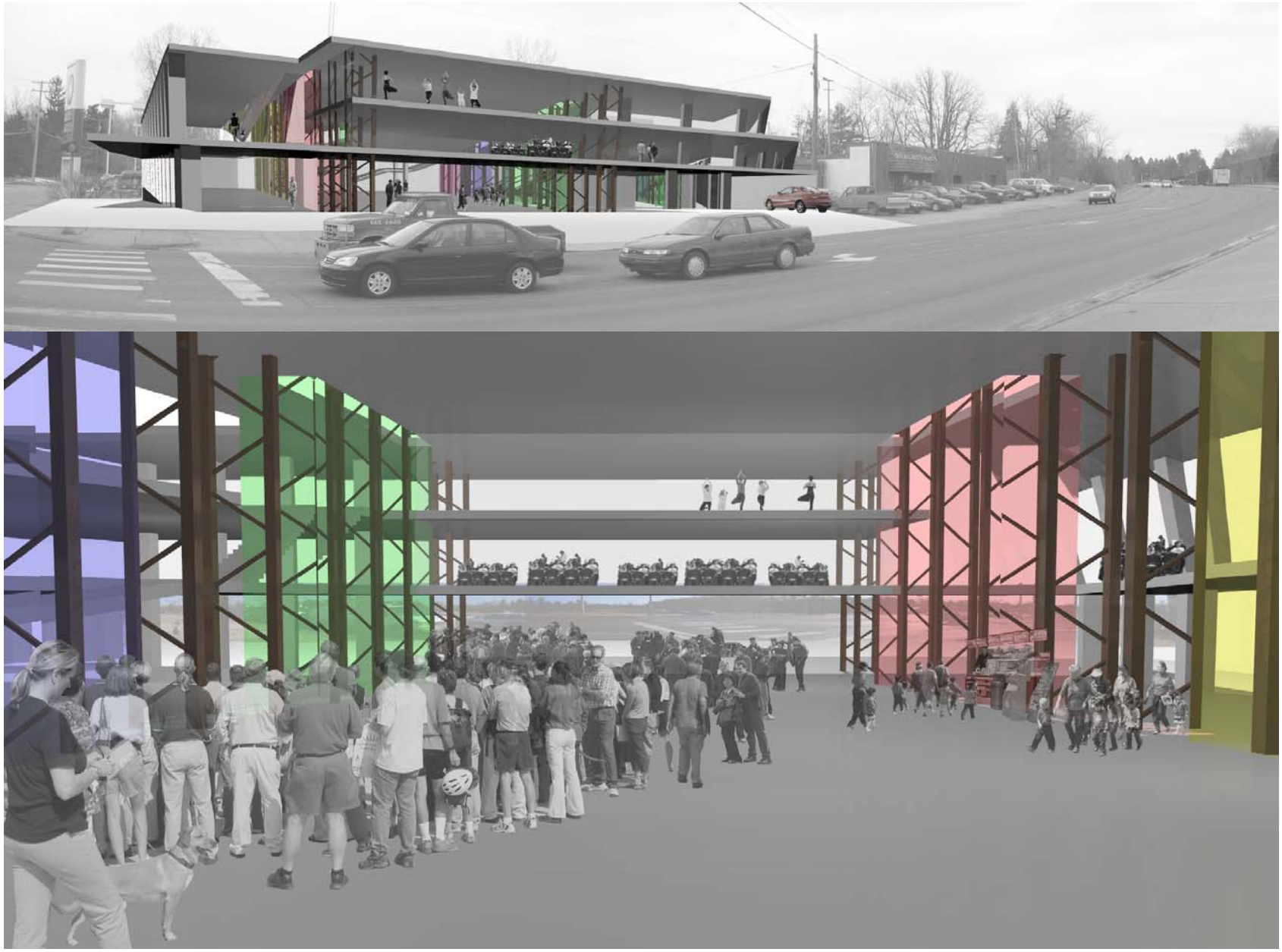
BUILDING PLANS

to use in the large gathering space. These components charge the space with activity, which attracts the public and encourages social interaction.

The traditional programs of the library that promote mental stimulation (book stacks, reading carrels, etc.) are contrasted to this social atmosphere, and thus are housed in the secondary volume, sunken into the ground and placed in the back to protect it from the loud, busy street.

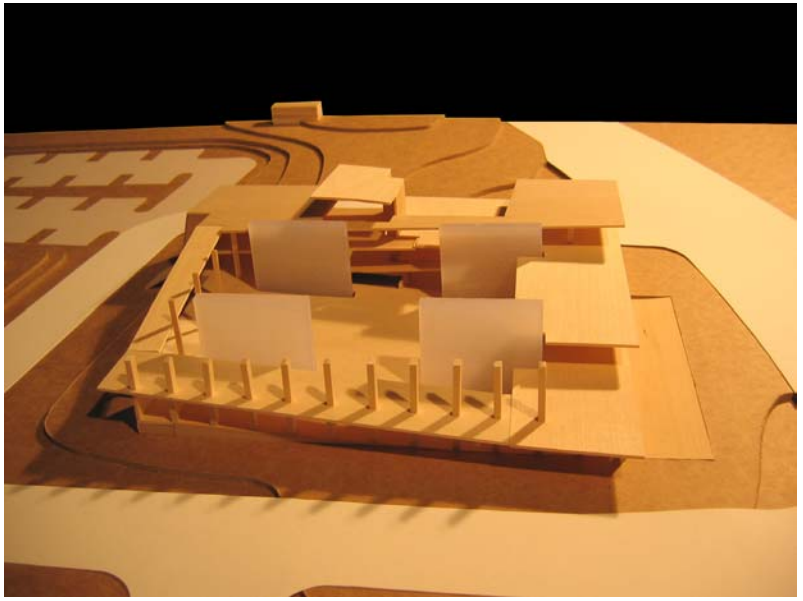
The physical well-being of the patrons is also considered, by providing a full-service café (which also acts as a social setting) on the second level near the street that can spill out to the adjoining terrace. One floor above is a fitness area that provides neutral exercising space for community programs like yoga and aerobics, which can also open out to a roof terrace. These various programs within this library create a hub of social activity in an otherwise banal suburban setting.



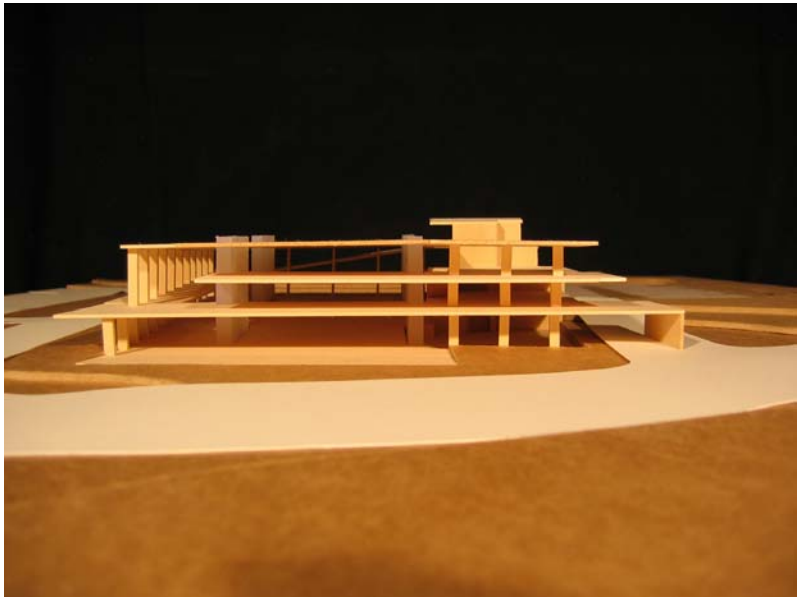


Collaged renderings showing the activation of the main public gathering space, from both the exterior and the interior

Day and night renderings showing the relationship to Plymouth Road



Final model showing the large, central public space facing the street



Endnotes

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[vii] Thomas A. Horan, Digital Places: Building our City of Bits (Washington D.C.: Urban Land Institute, 2000), 22.

[viii] Ibid., 50-53.

[ix] Walt Crawford and Michael Gorman, Future Libraries: Dreams, Madness, and Reality (Chicago and London: American Library Association, 1995), 3.

[x] Mortimer Adler, A Guidebook to Learning (New York: Macmillan, 1986), 110-134.

[xi] T. D. Webb, Building Libraries for the 21st Century: The Shape of Information (Jefferson, N.C. and London: McFarland & Company, Inc., 2000), 191-192.

[xii] R. Kathleen Molz, The Knowledge Institutions in the Information Age: The Special Case of the Public Library (Washington: Library of Congress, 1988), 18.

[xiii] Ian Rogers, The Google Pagerank Algorithm and How It Works, IPR Computing Ltd. http://www.iprcom.com/papers/pagerank/.

Postscript:

The critics in the final review commented that the thesis concept and issues that I was investigating were interesting and well thought out. However, they felt that not everything that I discussed in my thesis was as thoroughly explored as it could have been, and thus thought that some aspects of the project could have been executed in an entirely different manner. One suggestion was a possible renovation of an existing mall building, where the programmed voids could be inserted into this structure to create a new version of the public library. Other issues raised were the vastness of the main public space and ways that it could be broken down in scale to provide smaller spaces for usability, and the implications of placing public and commercial elements into a government-run institution and the shift in responsibility that would entail.

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