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## **Anchoring Perception Through Tactile Orientation**

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*University of Tennessee - Knoxville*

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To the Graduate Council:

I am submitting herewith a thesis written by David L. Bouldin Jr. entitled "Anchoring Perception Through Tactile Orientation." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

George Dodds, Major Professor

We have read this thesis and recommend its acceptance:

Mark Shimmienti, William Martella

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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and recommend its acceptance:

Mark Schimmenti

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William Martella

Accepted for the Council:

Anne Mayhew

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Vice Chancellor and  
Dean of Graduate Studies

(Original signatures are on file with official student records.)

“Anchoring Perception through Tactile Orientation”

A Thesis  
Presented for the  
Master of Architecture  
Degree  
The University of Tennessee, Knoxville

David L. Bouldin  
August 2005



*Abstract*

The sense of touch concretizes our perception by adding a perceptual quality stronger than the other senses. This haptic dimension also encompasses a sense of orientation, balance, and movement in the spatial experience of architectural works. This important sense has been neglected and must be re-emphasized as a worthy architectural design goal. In urban settings, the other senses are bombarded with sensory input while tactility is often denied. Public libraries are in a position to serve the haptic dimension over the other senses because of the nature of their (dynamically changing) services. Special care must be taken to design a building that provides a sensory sanctuary and a gratifying haptic experience.

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## *Chapter 1. Thesis Proposal*

The haptic dimension of human experience anchors perception. It engages “undeniability”<sup>1</sup> in architectural space.<sup>2</sup> It grounds the experience and distinguishes it through sensory differentiation such as variety of texture (figure 1.1) and volumetrics.<sup>3</sup> Therefore, without designing to include the haptic response, the architect is denying the visitor a full sense of self, because the experience lacks “undeniability” and grounding. The visitor is unable to perceive the full, cognitive reality of the space because this sense is not engaged. Experiencing a building with the sense of touch creates a visceral response that secures corporality (figure 1.2). Through tactile engagement with the environment, built and unbuilt, humans concretize their experiential knowledge and orient themselves in space and time. This passage by Jack London describes the potential power of a space to affect human response:

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<sup>1</sup> Although Descartes began his famous exploration into being by determining that none of his sense perceptions could be trusted, most people do not go to such extremes. People know that the senses can be deceptive, but by varying amounts. Smells, noises and tastes have never held tangible proof that an object exists. Ventriloquism and artificial flavors are only partly to blame. Slight-of-hand, mirages and other optical illusions make it difficult to trust completely in the sense of sight. People know that what they see is not undeniable, even to the extent that they could be dreaming. The sense of touch is the hardest sense to deny. Even dreams are ruled out with a pinch; with the sense of touch. People touch objects to dispel disbelief. The sense of touch comes closest to providing “undeniability.”

<sup>2</sup> Pallasmaa, Juhani, *The Eyes of the Skin*.

<sup>3</sup> All figures are located in the appendix.

"But always, while so lying in my nest, I was mastered by a feeling as of a tremendous space gaping beneath me. I never saw it. I never peered over the edge of the nest to see; but I knew and feared that space which was just beneath me, which threatened me without respite, like the maw of some devouring monster."<sup>4</sup>

Maurice Merleau-Ponty states, "My perception is [therefore] not a sum of visual, tactile, and audible givens: I perceive in a total way with my whole being: I grasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once."<sup>5</sup> For the built environment to fulfill this role, the building must be designed with spaces, sequences of movement or other tactile moments which connect with this human sensibility.

As early as 1954, Geoffrey Scott warns against excluding the tactile sense or the designer risks limiting access to sensual detail (figures 1.3, 1.4).<sup>6</sup> Scott draws attention to architectural "feelings of rhythm of hard and soft edges, of huge and tiny elements, of openings and closures and a myriad of landmarks and directions which, if taken together, form the core of our human identity (figures 1.5, 1.6 1.7)."<sup>7</sup> Two important aspects of his appeal are the process of encountering contrasting elements (figure

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<sup>4</sup> London, Jack, *Before Adam*, p. 22-23.

<sup>5</sup> Merleau-Ponty, Maurice. *Sense and Non-Sense*, p. 93.

<sup>6</sup> Scott, Geoffrey, *The Architecture of Humanism*.

<sup>7</sup> Ibid.

1.8) and the use of orienting systems in human spatial embodiment. Elaine

Scarry describes the former thus:

Of course, attributes (color, shape, sound) of objects in the physical world (trees, chairs) vary in the degree of reality intuitively accorded them because they vary in the number of bodily senses through which they are experienced. Those attributes confirmed by both vision and touch tend to be felt to have a greater reality than those attributes experienced by only one of the two [senses],...<sup>8</sup>

The obvious danger created by ignoring bodily engagement when designing architecture is how amiss the human experience of a building can become when left uncontrolled. Take for instance the following passage from *1984* by George Orwell:

“The plaster flaked constantly from ceilings and walls, the pipes burst in every hard frost, the roof leaked whenever there was snow, the heating system was usually running at half steam...Winston knelt down and examined the angle-joint of the pipe. He hated using his hands, and he hated bending down, which was always liable to start him coughing.”<sup>9</sup>

Although the negative haptic experience in the passage is primarily the result of lax maintenance and neglect, the experience is heightened because of a lack of haptic alternatives. The regrettable qualities rule the experience. The significance of the experience must be given direct attention.

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<sup>8</sup> Scarry, Elaine, *The Body in Pain*, p. 146.

<sup>9</sup> Orwell, George, 1984, Ch. 2.



Designing for this important sense is a focus of Alberto Perez-Gomez. Perez-Gomez adds several components to what constitutes the sense of touch when discussing architecture. The primary of these aspects is the sense of “existential orientation.”<sup>10</sup> Touch brings the architectural experience to the here and now, which is to say, in a particular location and time (figures 1.9, 1.10). Merleau-Ponty:

It is easy to show that there can be a direction only for a subject who takes it, and a constituting mind is eminently able to trace out all directions in space, but has at any moment no direction, and consequently no space, without an actual starting-point, an absolute 'here' which can gradually confer a significance on all spatial determinations.<sup>11</sup>

Juhani Pallasmaa, influenced by both Perez-Gomez and Merleau-Ponty, states, “Our buildings have lost their opacity and depth, sensory invitation and discovery, mystery and shadow.”<sup>12</sup> However, there are areas of their theories that do not belong in discussions of the haptic realm of architecture. Pallasmaa is misguided about the need for an associative architecture in the haptic dimension. In a similar stance, Perez-Gomez is mistaken about the need for cultural representation in movement and tactility. Cultural representation is an inherent factor in the process of creation, but that is not to be confused with a *need* for representation. The

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<sup>10</sup> Perez-Gomez, Alberto, *Architectural Representation*, p. 42.

<sup>11</sup> Merleau-Ponty, Maurice. *Phenomenology of Perception*, p. 288.

<sup>12</sup> Pallasmaa, Juhani, *The Eyes of the Skin*.

strongest need for haptic orientation in architecture is tactile engagement and the resulting corporeality. Creating a symbolic architecture takes the experience to a different time and/or place. External associations remove the visitor from the “here and now”, because “...an act of touch may reproduce itself as an acoustical event or even an abstract idea, the way whenever Augustine touches something smooth, he begins to think of music and God.”<sup>13</sup> The individual experiences will vary from visitor to visitor.

The flaws in Pallasmaa’s argument can be seen in his own description of Konstantin’s Melkinov House. Pallasmaa praises the haptic qualities of the building but also relates that “orientation within the two cylinders with the diagonal and skewed walls becomes very confused indeed (figure 1.11). The exclusion of orientation in Pallasmaa’s haptic definition is more detrimental when juxtaposed with a confusing mixture of external references and associations. In his description of the house, Pallasmaa praises aspects of the house because they represent Neoclassicism, Modernist Bauhaus, De Stijl, German Expressionist films from the 1920s, Malevich’s suprematist architecton, and Loos’ Venetian

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<sup>13</sup> Scarry, Elaine, ed. *Literature and the Body*.

flat.<sup>14</sup> The ability to fully inhabit a space is made more difficult with a confused sense of place and deliberate mental distractions.

Other architects and theorists have spoken to this issue as well.

Steven Holl suggests concentrating on the unique characteristics of each project and the geometry of structural details to create solutions to challenging elements<sup>15</sup> in designing strong architecture.<sup>16</sup> Christian Schittich supports this line reasoning by describing the Museum of Hiroshige Ando as possessing haptic qualities in the following manner:

The subtle skin contracts the building volume, its playful treatment of transparency, light and material elicits associations with the phenomenon of cloud formation - an accumulation of tiny droplets of water transformed into a visible, constantly shifting appearance solely by their density.<sup>17</sup>

The difference in association is that the references are abstractions and not direct quotation of historical or cultural phenomenon. Morphosis' Blades Residence sought to combine the interior and exterior realms. The visitor steadily gains orientation and a sense of balance. The architects hoped that the architecture would connect the individual experience of one's inner-

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<sup>14</sup> Ibid., p. 18-19.

<sup>15</sup> Holl, Steven, *Parallax*, p. 305. In this reference, Holl is responding to the theories of Maurice Merleau-Ponty in a section of the book about 'porosity.'

<sup>16</sup> "Strong architecture" is a phrase used by Holl to mean an architecture which successfully fulfills all goals, most notably a strong visual impact or presence.

<sup>17</sup> Schittich, Christian, *In Detail*, p. 126.

self and the external experience of the outer world.<sup>18</sup> External associations in architecture are inevitable and advantageous. These associations, however, should not be a tactile aspiration.

In an urban setting, there is a need for a reprieve from the way the senses are traditionally handled on street-level (figures 1.12, 1.13). Kevin Lynch, an urban design theorist, developed a system of five basic urban design dimensions. Two of the five dimensions are vitality and sense. Vitality is “the degree to which the form of places supports the functions, biological requirements and capabilities of human beings” and sense is “the degree to which places can be clearly perceived and structured in time and space by users.”<sup>19</sup> The urban setting heightens the need for haptic engagement. A public building should provide moments of stillness to anchor the sense of touch and provide respite from the offensive on the other senses to increase the individual’s awareness of their bodily interactions (figure 1.14, 1.15). The goal of should be to create a haptic respite from urbanity by engaging the tactile sense in a series of architectural moments throughout the building.

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<sup>18</sup> Steele, James, *Architecture in Process*, p. 87.

<sup>19</sup> Carmona, Matthew, *Public Places - Urban Spaces*, p. 9.

## *Chapter 2. Site*

Urban settings provide an abundance of sensory stimuli. Noises, sights, and smells bombard the senses (figure 2.1). Simultaneously, urban settings neglect the human sense of touch. People are encouraged to keep their hands to themselves for safety, hygiene or liability reasons.

Pedestrian movement is hindered by ad hoc sidewalk obstacles and circulation patterns along streets designed for the automobile (figure 2.2).

Public libraries, above other public building types, are in a unique position to both provide respite from this sensory strain and gratify the sense of touch for its patrons (figures 2.3, 2.4, 2.5).

An important element for a public building of this type is presence (figure 2.6). Lawson McGhee Public Library, the current downtown public library,<sup>20</sup> suffers from a lack of visibility and limited pedestrian interaction.<sup>21</sup> The proposed site on Gay Street is the public park on the west side of Gay Street located north of Clinch Avenue (figures 2.7,2.8). The project may expand to include a portion of the adjacent Krutch Park(figure 2.9) to the west of the indicated parcel. This site provides an opportunity for high visibility because of the prominence of the street.

Also, the building will provide a pass-through from Gay Street to Market

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<sup>20</sup> The current downtown library is at 500 West Church Avenue.

<sup>21</sup> Frank, Larry, Knox County Library Director, Lawson McGhee Public Library, interview by author, October 7, 2004.

Square. It must be a visible, accessible refuge from the city streets. (figures 2.10, 2.11, 2.12, 2.13)

Other considerations must be addressed as well. Because the site is centrally located amid five public parking facilities (figure 2.14), the building will be approached by foot from every direction. Also, the Knoxville Area Transit (KAT) services the downtown with a line running directly in front of the site (figure 2.15). Within one block of the site there is access to two additional routes. The building will serve as a pedestrian pass-through which connects the activity of Market Square to the activity of Gay Street (figure 2.16). Finally, environmental issues, such as solar angles and prevailing wind directions (figure 2.17), must be accounted for the project to be successfully sustainable on the site.

### *Chapter 3. Quantitative Program*

Libraries are manifestly dominated by the visual and the tactile senses (figures 3.1, 3.2). Visitors search for holdings by typing on a computer, move through the stacks (figures 3.3, 3.4), bend and stretch (figure 3.5) to pull books, sit and thumb through pages while reading (figure 3.6). The books of the library serve to transport the mind of the reader (figure 3.7). The architecture should serve as a bodily anchor for self-awareness (figure 3.8).

The role of the library as an institution is changing. Digital technology is altering the efficacy of books as primary information providers and librarians across the country are struggling to adapt.<sup>22</sup> Tennessee faces additional problems. The state ranks last in per capita spending on public libraries.<sup>23</sup> Politically, public libraries are often cast in opposition to education when it comes to public support. In Knoxville, voters recently turned down a proposal to fund a new downtown central library. The current facilities are roughly forty percent of their necessary

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<sup>22</sup> Ward, Jacob, *The Making of a Library: The Research*, p. 98-101.

<sup>23</sup> Frank, Larry, interview by author, October 7, 2004. Tennessee spends approximately \$11.00 per capita on public library funding.

capacity.<sup>24</sup> Regional attitudes toward the public library system lack the inherent connection with education.

Through a variety of instructive programs, the proposed downtown library will bring together the fractured notions of education and public libraries. The building will house “community education” classes. These programs include adult secondary education, adult literacy, ESL and computer literacy classes as a basis. Seminars include vocational training, career services, art, and writing.

Table 1 lists necessary spaces in the building with target square-footages for each. The spaces are grouped into fifteen categories based on function and proximity needs as follows:

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<sup>24</sup> Frank, Larry, interview by author, October 7, 2004. For a city the size and composition of Knoxville, the central library would typically require 175,000 to 200,000 square feet. The current building is 75,000 square feet.



Table 1. Required Building Spaces and Sizes

Area/Room	Net Sqft.	Gross Sqft.
<b>Entrance Area</b>		
Vestibule	200	266
Lobby	2000	2660
Café	500	665
Gift Shop	<u>500</u>	<u>665</u>
<i>Subtotal</i>	3200	4256
<b>Circulation Area</b>		
Department Manager's Office	120	160
Circulation Staff Office (50 sf/person)	900	1197
Work / Sorting Area	2000	2660
Pedestrian Book Drop	300	399
Service Desk: Renewals / Returns	200	266
Service Desk: Check-Out w/ Self-Check	400	532
Service Desk: Information & Membership	400	532
Convenience Copy Area	150	200
Hold Shelving & Work Desk	<u>200</u>	<u>266</u>
<i>Subtotal</i>	4670	6212
<b>Popular Materials</b>		
Service Desk: Popular Materials	150	200
Staff Office (50 sf/person)	250	333
New Book Display	200	266
Catalog Terminals: Standing (10 @ 20 sf)	200	266
Catalog Terminals: Seated (10 @ 40 sf)	400	532
General Seating (60 seats)	<u>1800</u>	<u>2394</u>
<i>Subtotal</i>	3000	3991
<b>General Collection</b>		
Service Desk: General Collections	200	266
Adult Fiction	23,000	30,590
Non-Fiction Circulating	10,000	13,300
Current Periodicals	1000	1330
Periodical Archives	1000	1330
Catalog Terminals: Standing (15 @ 20 sf)	300	399

Table 1. Continued

Area/Room	Net Sqft.	Gross Sqft.
Catalog Terminals: Seated (10 @ 20 sf)	200	266
General Seating (40 seats)	1200	1596
Study Rooms (2 w/ 6 seats each)	<u>360</u>	<u>479</u>
<i>Subtotal</i>	37,160	49,556
<hr/>		
Young Adult		
Young Adult Collection	500	665
Catalog Terminals: Standing (2 @ 20 sf)	40	53
Catalog Terminals: Seated (2 @ 40 sf)	80	106
Computer Workstations (6 @ 75 sf)	450	599
General Seating (30 seats)	900	1197
Study Room (6 seats)	<u>180</u>	<u>239</u>
<i>Subtotal</i>	2150	2859
<hr/>		
Audio & Video		
Department Manager's Office	120	160
Audio & Video Staff Office	1000	1330
Technical Work Room	500	665
Service Desk	200	266
Audio & Video Circulation	2000	2660
Catalog Terminals: Standing (12 @ 20 sf)	240	319
Catalog Terminals: Seated (8 @ 40 sf)	320	426
Viewing Carrels (8 @ 40 sf)	320	426
Listening Carrels (6 @ 40 sf)	240	319
Listening Rooms (2 @ 120 sf)	240	319
General Seating (8 seats / table for 6)	500	665
Lecture & Music Research	1000	1330
Control Room	<u>400</u>	<u>532</u>
<i>Subtotal</i>	7080	9417
<hr/>		
Reference		
Department Manager's Office	120	160
Reference Staff Office	1000	1330
Telephone & E-Mail Question Room	250	333
Work & Committee Room	250	333

Table 1. Continued

Area/Room	Net Sqft.	Gross Sqft.
Service Desk: Reference	700	931
Reference Collection (General & Business)	5000	6650
Microfilm Storage	1600	2128
Map Storage	200	266
Catalog Terminals: Standing (15 @ 20 sf)	300	399
Catalog Terminals: Seated (10 @ 40 sf)	400	532
Computer Workstations (20 @ 50 sf)	1000	1330
Microfilm Stations (10 @ 40 sf)	400	532
Accessibility Material Aids	400	532
Grand Reading Room (80 seats)	6000	7980
Study Rooms (4 w/ 6 seats each)	<u>720</u>	<u>958</u>
<i>Subtotal</i>	18,340	24,394
<hr/>		
Children's Room		
Department Manager's Office	120	160
Children's Staff Office (50 sf/person)	750	998
Work Room	300	399
Service Desk: Children's Department	240	319
Storytelling / Program Space (35 children)	800	1064
Vestibule / Orientation Space	400	532
Children's Toilets	160	213
Nursing Room	100	133
Children's Computer Terminals	400	532
Children's Collection	6000	7980
Children's Reading Area	1500	1995
Catalog Terminals: Standing Child (6 @ 20sf)	120	160
Catalog Terminals: Seated Child (4 @ 40 sf)	<u>160</u>	<u>213</u>
<i>Subtotal</i>	11,050	14,698
<hr/>		
Special Collections/Uses		
Art Gallery	1000	1330
Reading Gardens	11,000	14,630
Computer Classrooms (2 w/ 20 @ 50 sf ea.)	<u>2000</u>	<u>2660</u>
<i>Subtotal</i>	13,000	18,620

Table 1. Continued

Area/Room	Net Sqft.	Gross Sqft.
<b>Community Conference Center</b>		
Conference Rooms (2 @ 500 sf)	1000	1330
Auditorium	3000	3990
Auditorium Control Room	150	200
Catering Kitchen	<u>300</u>	<u>399</u>
<i>Subtotal</i>	4450	5919
<b>Administration</b>		
Director's Office	300	399
Asst. Director's Office: Main Library	200	266
Asst. Director's Office: Branch Libraries	200	266
Administrative Assistant	120	160
Work Center with Clerks	600	798
Private Toilets & Showers	150	200
Meeting Room	350	466
Staff Break Room & Kitchenette	600	798
Staff Toilets / Showers & Lockers	350	466
Staff Meeting Room	500	665
Staff Sick Room	80	106
Catering Kitchen	150	200
Purchasing Office	300	399
Accounting Office	300	399
Secure File Room	100	133
Marketing & Communication	500	665
Friend's/Volunteer Coordinator	200	266
Library Staff Training Room	400	532
County Library System Supply Storage	<u>500</u>	<u>665</u>
<i>Subtotal</i>	5900	7849
<b>Technical Services</b>		
Tech. Services Department Manager's Office	120	160
Staff Workstations	800	1064
Acquisitions	1000	1330
Cataloging	2000	2660

Table 1. Continued

Area/Room	Net Sqft.	Gross Sqft.
Serials	500	665
Collection Department	<u>700</u>	<u>931</u>
<i>Subtotal</i>	5120	6810
<hr/>		
System Services		
Department Manager's Office	120	160
Staff Workstations	240	319
Systems Services Room	400	532
Server Room	400	532
Communications Rooms (1 per floor)	600	798
Systems Administration Storage	<u>300</u>	<u>399</u>
<i>Subtotal</i>	2060	2740
<hr/>		
Branch Services		
Department Manager's Office	120	160
Staff Workstations	200	266
Outreach Services	200	266
Visiting Branch Manager's Workspace	200	266
Library System Mail / Courier Room	1500	1995
Friend of the Library Work Room	<u>1500</u>	<u>1995</u>
<i>Subtotal</i>	3720	4618
<hr/>		
Shipping & Receiving		
Truck Dock	8000	10,640
Courier Sorting Room	1600	2128
Shipping & Receiving Office	<u>300</u>	<u>399</u>
<i>Subtotal</i>	9900	13,167
<hr/>		
<b><i>Total</i></b>	<b>131,800</b>	<b>175,111</b>

#### *Chapter 4. Performance Program*

Libraries are in the midst of change. A new library, therefore, must have utmost adaptability.<sup>25</sup> This must not, however, compromise the original experiential goal. The design approach must focus on the haptic experience of architecture and information. (figures 4.1-4.10).

The building should also create a sense of orientation for the citizen. Jane Jacobs warns:

Sometimes north, south, east and west are all alike, as they are when you stand with the grounds of a large project. It takes differences - many differences - cropping up in different directions to keep us oriented. Scenes of thoroughgoing sameness lack these natural announcements of direction and movement, or are scantily furnished with them, and so they are deeply confusing. This is a kind of chaos.<sup>26</sup> (figure 4.11)

Located between Market Square and Gay Street, this building will connect these two nodes of activity and should use this natural flow of pedestrian traffic to orient the entire building program.

The library's entrance area is an important space of movement and orientation.

This area serves as a pass-through for people moving between Market Square and Gay Street. The path they take should showcase the library and hint at the tactile riches within. Also, those people who are arriving to

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<sup>25</sup> Moody, Fred, *The Making of a Library: The Spiral*, p. 108-111.

<sup>26</sup> Jacobs, Jane, *The Death and Life of Great American Cities*, p. 224.

use the library's services need to easily orient themselves within the building and feel comfortable with the experience of engaging the library as a system. The space is large and open with natural landscape features to integrate the building with the adjacent green spaces. Acoustically, the natural noise produced by the number of inhabitants should be contained within the space and not allowed to interfere with the quieter areas in the library. Natural light is encouraged. Temperature may fluctuate slightly with the seasons. Movement of people through the space should be slower than urban pace and offer at least one feature, such as a fountain or sculpture, which invites tactile exploration.

Whether the patron chooses to stand or sit at a library catalog terminal, they are engaging the library system with their whole body. Plush comfort is not necessary because the time spent in this space is relatively limited. These are small spaces within a larger space. They are information pods people step up to or sit down at. The information they gather relates to the entire library. Therefore these spaces should be an orientation point with the movement in which they result. Temperature, air movement and noise are less important than the tactile interface (i.e., keyboard) and the surface on which the patron stands or sits.

The stacks are a quiet, calm area for the patron to find the book they need while physically encountering the many they do not. The book stacks are both an arrival and pass-through area. This area has thousands of individual arrival points which also serve as circulation. The arrival point for each patron is a pass-through for many others. The perfect location for every book is barely within reach of the tip-toed patron who has been looking for it. Unfortunately, varying patron heights and the required linear wall-space render this solution impractical. The use of wall-mounted, rolling ladders to reach books creates the most desirable body movement. Climbing for a book is an adventure in itself. However, litigation precludes this solution as dangerous and insensitive to those with special needs. The desire in both of these scenarios is the feeling the patron has when a large wall of books is conquered. The large wall of books gives the patron power over a vast amount of knowledge, but also perspective and self-reflection akin to staring into a star-filled sky. The air in the stacks is still. There is enough room to flip through a book in the aisle, but not enough for two people to pass without acknowledgement. Leaning into the books to allow a fellow patron to pass is important. It encourages physical contact with the books and brings the patron closer to the smell of paper. The lighting is abundant because each aisle will require



separate fixtures. The lighting is indirect and artificial to protect the books from damage. Acoustics are not a factor because the books act as a natural sound barrier.

The grand reading room is, at its core, a space where patrons can read comfortably. For different people, this can mean different things. For this reason, the grand reading room should include a variety of seating opportunities. There should be plush, upholstered chairs, chairs at tables, and areas where reading in a reclined position is possible. The space is, at a minimum, a double-height space of impressive scale. The building itself should have a temperature gradient in which some spaces are warmer than others. The grand reading room should be on the warm side to promote patrons to remove items such as coats and jackets and relax. The majority of seating opportunities should include small-item storage for patrons to stow items such as purses and book bags securely. This will help the patron fully engage the book without the distraction of worry. The room should be quiet. It commands quiet because noises are acoustically amplified. Small groups of patrons will not be tempted to converse quietly if there is no way to do so without disturbing the other readers.

Chapter 5. Technical Data

Parcel Information:

Location Address:	519 S Gay St (proposed)
Zip Code:	37902
Parcel ID:	094LE010
Subdivision:	FIVE THIRTY ONE CORP
Census Tract:	1
Planning Sector:	Central City
2000 Traffic Zone:	2
County Commission:	1 (Diane Jordan & Thomas Stickland)
City Council:	6 (Mark Brown)

The following codes are applicable to projects in the City of Knoxville:

- *City of Knoxville Zoning Ordinance (with amendments) adopted by City Ordinance 3369*  
 The proposed site is zoned C-2/H-1. H-1 zoning indicates an historic overlay which typically carries no specific requirements other than additional civic approvals. No rezoning is required, because C-2 permits public buildings of this type. Furthermore, C-2 zoning carries no height restriction. The number of stories determines the allowable site coverage.
- *1999 ed. of Standard Building Code adopted by Ordinance 0-149-99*
- *1991 (with 1997 amendments) ed. of North Carolina Handicap Code per Tennessee State Law Chapter No 429, House Bill 55.*
- *2002 ed. of National Electrical Code adopted by Ordinance 0-387-02*
- *1997 ed. of Standard Gas Code adopted by Ordinance 0-146-99*
- *1997 ed. of Standard Mechanical Code adopted by Ordinance 0-150-99*
- *1997 ed. of Standard Plumbing Code adopted by Ordinance 0-148-99*

In addition, the Fire Inspection Bureau reviews plans for compliance with:

- *2003 ed. of NFPA-1 & -101 Life Safety adopted by Ordinance 0-53-04*
- *1997 ed. of Standard Fire Prevention Code adopted by Ordinance 0-27-99*

*Chapter 6. Case Studies*

*Blades Residence, Santa Barbara, California by Morphosis*

The focus on the project is the haptic dimensions of balance and orientation. By studying the means by which the architects achieved the desired results, one is able to adapt those principles to the project at hand. Balance is achieved by setting opposing elements in contrast with one another. In the case of this residence, the polar concepts of interiority and exteriority as well as built structure and natural landscape are cast together to create tension and, ultimately, balance. The differences are highlighted and a strong orientation between the two is achieved. This project demonstrates spatial references without externality. (figures 6.1, 6.2)

*Fukuoka Housing, Fukuoka, Japan by Steven Holl Architects*

The focus of the project is the haptic dimensions of passage and orientation. The building provides varying experiences based on approach. East and west circulation patterns orient the visitor as well as respond to environmental circumstances. Because the proposed building site in downtown Knoxville is bounded on the north and south sides and the circulation pattern for the pass-through function is east-west in orientation, the library design will have an inevitable orientation similar

to the Fukuoka Housing project. This has greatest impact on the orientation of human movement as it relates to the movement of the sun. Light and warmth change as the day progresses and the experience of the building changes with it. (figure 6.3)

*Melnikov House, Moscow, Russia by Konstantin Melnikov*

This project is an example of an externalized haptic experience. The building serves as a warning. Associating the spatial experience of a building with other times and places removes the viewer and diminishes haptic capacity. Pallasmaa described the orientation of this building as complex. To list the references becomes confusing, which would lead one to believe that experiencing them would be confusing as well. This sort of disorientation should not be a goal in the design for a civic library in a downtown setting. A clear sense of architectural orientation and a haptic experience which does not seek to mentally relocate the visitor is the appropriate response to a chaotic, urban setting. (figures 6.4, 6.5)

*Museum of Hiroshige Ando, Batoh, Japan by Kengo Kuma & Associates*

The focus on the project is haptic materiality and abstract reference. Moving through the building brings about nonfigurative associations. The lesson to be learned is the role of materials in haptic mobility. Texture and

temperature are but a few of the roles materials can play and enriching the experience of a building.

*Chapter 7. Precedent Analyses*

*Hodges Library, Knoxville, Tennessee by McCarty, Holsaple, McCarty*

The analytical focus on this project is the lack of an orientation system. There are two areas by which enter the building, but there is no true entrance. Upon entering the building from the Volunteer Boulevard side, the patrons' view is dominated by a circulation desk and two large staircases. Moving up these stairs leads the visitor to a large gallery/hall space with no clear sense of direction save a few labels above doorways. No stacks, reading rooms, information desks or vertical circulation are in sight. The other entrance opens up onto a concourse. First-time visitors are left to wander aimlessly until they find someone to approach for directions. The book stacks require a constant checking of signs to move through and often result in back-tracking and looping around to other areas, other sides of walls or the other side of the floor. Even the catalog terminals are hidden. They are most easily seen once the patron has given up and is returning to the elevators. By determining the reasons this building is so difficult to navigate, one can begin to understand both the need and methodology behind simple bodily orientation. Visual clues can be augmented with tactile clues and should incorporate intuitive sequences movement and spaces. (figures 7.1, 7.2)

*Lawson McGhee Public Library, Knoxville, Tennessee by McCarty,  
Holsaple, McCarty*

The primary reasons to study this project are the existing programs. The programs in place to serve the needs of Knoxville have been developed over years of successful community involvement and response. The downtown library currently provides services such as adult literacy, computer literacy and small business start-up assistance. By analyzing the current uses of the building, the successes and shortcomings of the building can be determined. The primary limitation of this building is size. There is no room for the building to expand enough to meet the needs of a city the size of Knoxville. The site is restricted due to surrounding buildings and vertical expansion is not feasible because of the structural limitations of the building's construction.

*Nashville Public Library, Nashville, Tennessee by Robert A.M. Stern*

The purpose for studying this building is civic appropriateness. There are regional characteristics which are shared between Nashville and Knoxville. Also, the setting for both the Nashville Public Library and the proposed Knoxville library are downtown, urban settings. While downtown Nashville is more urban than downtown Knoxville, a design goal for the Knoxville library should be to have a building that remains

viable even as Knoxville grows. Special attention should be paid to the role of the library in the community and the programmatic needs addressed. The Nashville library was designed to help "strengthen the dangerously frayed fabric of the civic center complex."<sup>27</sup> Knoxville has similar issues downtown, and has just finished a master-planning process comparable to Nashville. As people return to downtown Knoxville, a strong, central library is a necessity to promote civic pride and serve the needs of the increasing population. Nashville has responded in an appropriate manner with this project, which should serve as a guide.

(figures 7.3, 7.4, 7.5, 7.6)

*Seattle Public Library, Seattle, Washington by Rem Koolhaas*

The focus on the project is the changing role of the library in an increasingly digital society. The lessons learned from this library include the necessity of flexibility and intuitive building organization principles. The library is also set in a downtown setting, though meshing with the existing urban fabric was not a goal, the building does play an important role in adding character to the city.

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<sup>27</sup> Dixon, Peter Morris, *Robert A.M. Stern: Buildings and Projects, 1993-1998.*



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*Appendix*



Fig. 1.1: Fingerprint and Infant Touching Father  
Source: Challenging Technologies, LLC



Fig. 1.2: Door Handle and Female Torso  
Source: Challenging Technologies, LLC



Fig. 1.3: Hand in a Water Feature  
Source: Challenging Technologies, LLC



Fig. 1.4: Architectural Detail with Several Textures  
Source: Challenging Technologies, LLC

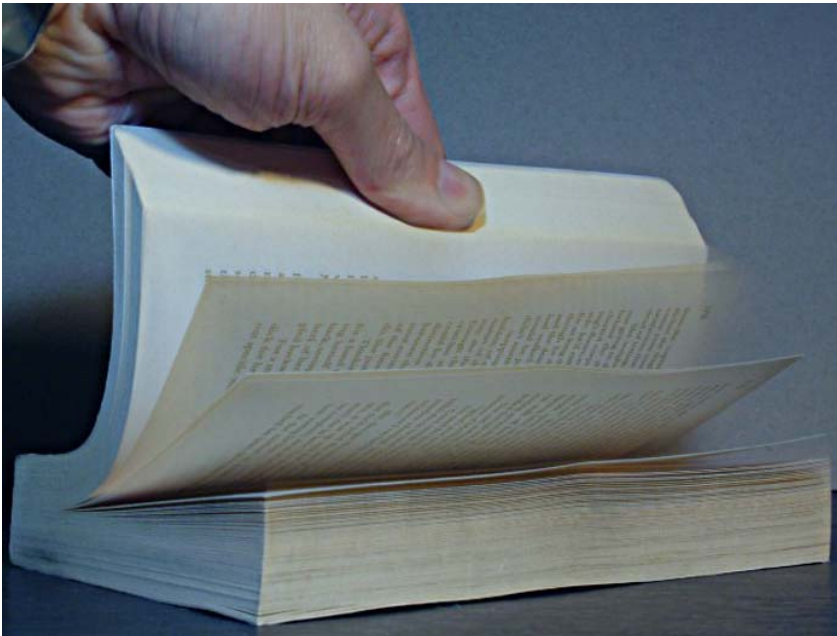


Fig. 1.5: Thumbing Through a Book  
Source: Challenging Technologies, LLC





Fig. 1.6: Book Pages Turning  
Source: Challenging Technologies, LLC



Fig. 1.7: Notepad Pages Turned  
Source: Challenging Technologies, LLC

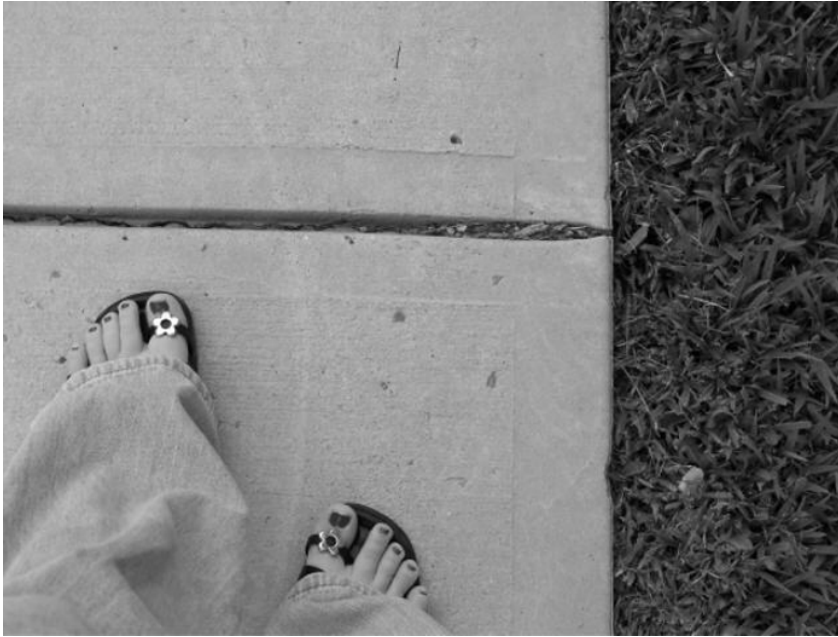


Fig. 1.8: Feet on Pavement with Grass  
Source: Challenging Technologies, LLC



Fig. 1.9: Wooden Park Bench  
Source: Challenging Technologies, LLC



Fig. 1.10: Metal Park Bench  
Source: Challenging Technologies, LLC



Fig. 1.11: San Francisco Skyscrapers  
Source: Challenging Technologies, LLC





Fig. 1.12: Chicago at Dusk  
Source: Challenging Technologies, LLC



Fig. 1.13: Busy City Street  
Source: Challenging Technologies, LLC

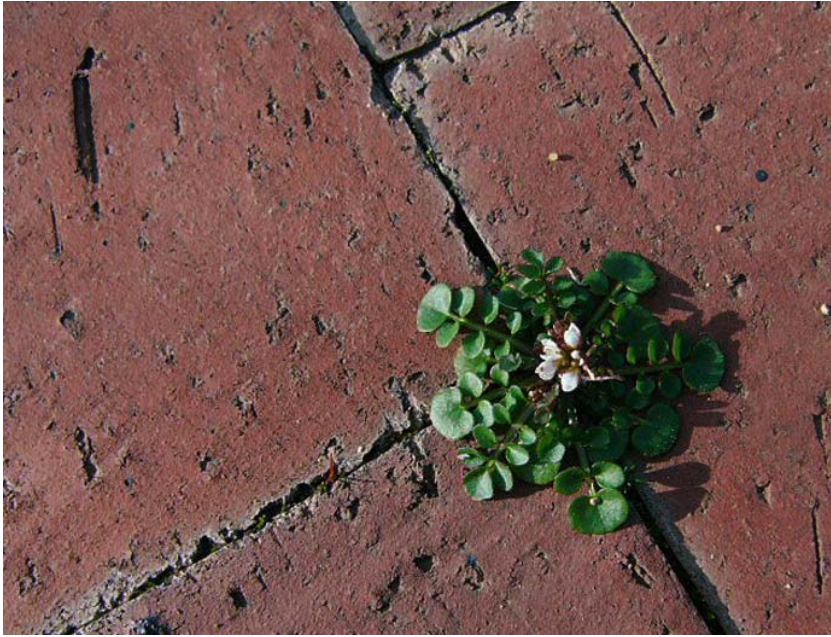


Fig. 1.14: Weed Growing Between Pavers  
Source: Challenging Technologies, LLC



Fig. 1.15: Woman Walking on Stone  
Source: Challenging Technologies, LLC





Fig. 2.1: Broadway Lights

Source: Challenging Technologies, LLC



Fig. 2.2: Pedestrians in an Intersection

Source: Challenging Technologies, LLC



Fig. 2.3: Concrete Stairway  
Source: Challenging Technologies, LLC



Fig. 2.4: Brick Stairway  
Source: Challenging Technologies, LLC





Fig. 2.5: Stairs with Metal Handrails  
Source: Challenging Technologies, LLC



Fig. 2.6: Looking Up at Seattle Public Library  
Source: Challenging Technologies, LLC





Fig. 2.7: Two Buildings to Either Side of Site  
Source: Author



Fig. 2.8: View of Site from Market Square  
Source: Author



Fig. 2.9: Krutch Park  
Source: Author





Map by KGIS- Copyright (C)2003  
0 224ft

Fig. 2.10: Site with Address Numbers and Street Names  
Source: Knoxville Geographic Information System



Map by KGIS- Copyright (C)2003  
0 224ft

Fig. 2.11: Site with Surrounding Buildings  
Source: Knoxville Geographic Information System



Fig. 2.12: Site with Surrounding Open Space  
Source: Knoxville Geographic Information System



Fig. 2.13: Site in Aerial Photograph  
Source: Knoxville Geographic Information System

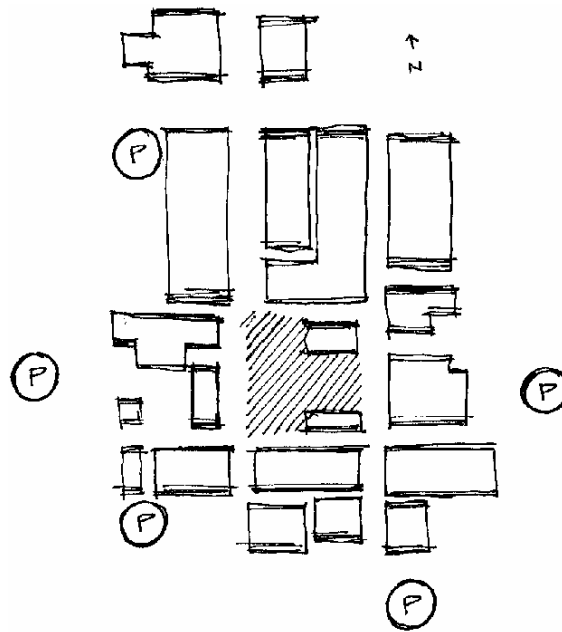


Fig. 2.14: Diagram of Nearby Parking Facilities  
Source: Author

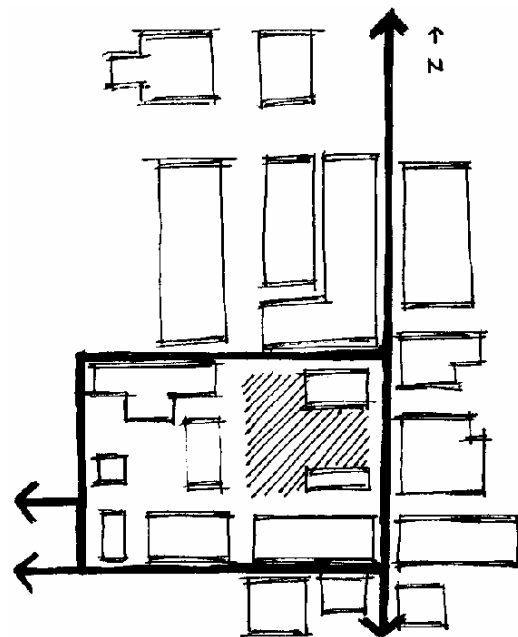


Fig. 2.15: Diagram of Public Transportation Routes  
Source: Author

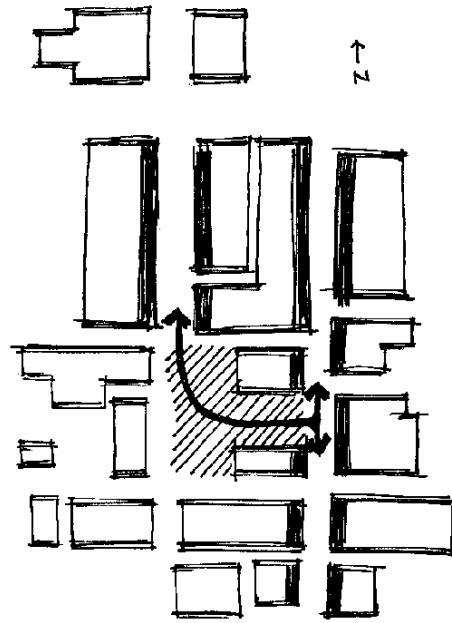


Fig. 2.16: Diagram of Pass-Through Function  
Source: Author

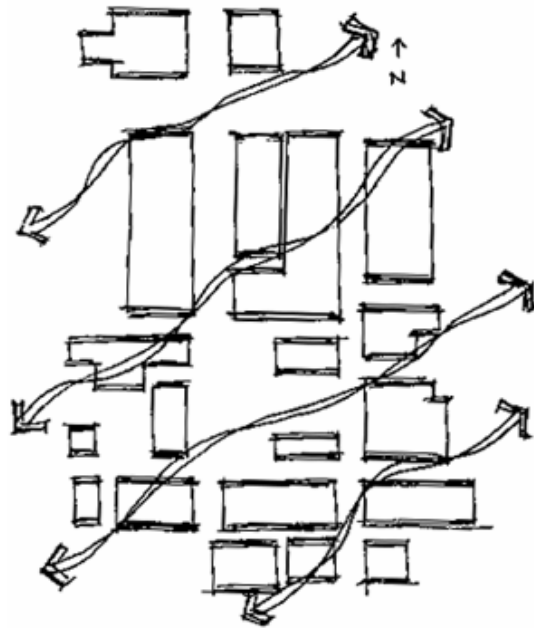


Fig. 2.17: Diagram of Knoxville Prevailing Wind Directions  
Source: Author





Fig. 3.1: Library Archway  
Source: Challenging Technologies, LLC



Fig. 3.2: Library Stacks  
Source: Challenging Technologies, LLC



Fig. 3.3: Hand Reaching for a Book  
Source: Photodisc Blue



Fig. 3.4: Sitting and Reading a Book in the Stacks  
Source: Photodisc Red





Fig. 3.5: Child on Ladder Reaching for a Book  
Source: National Library Photo Contest



Fig. 3.6: Female Reading at a Table  
Source: Digital Vision



Fig. 3.7: Reading a Book in the Corner  
Source: Digital Vision



Fig. 3.8: Child Laying Down and Reading a Book  
Source: Challenging Technologies, LLC



Fig. 4.1: Ground Floor Plan  
Source: Author



Fig. 4.2: Third Floor Plan  
Source: Author



Fig. 4.3: Fifth Floor Plan  
Source: Author





Fig. 4.4: Roof Plan  
Source: Author



Fig. 4.5: Gay Street Elevation  
Source: Author



Fig. 4.6: Krutch Park Elevation  
Source: Author





Fig. 4.7: Section Facing West  
Source: Author



Fig. 4.8: Section Facing North  
Source: Author



Fig. 4.9: Section Facing East  
Source: Author



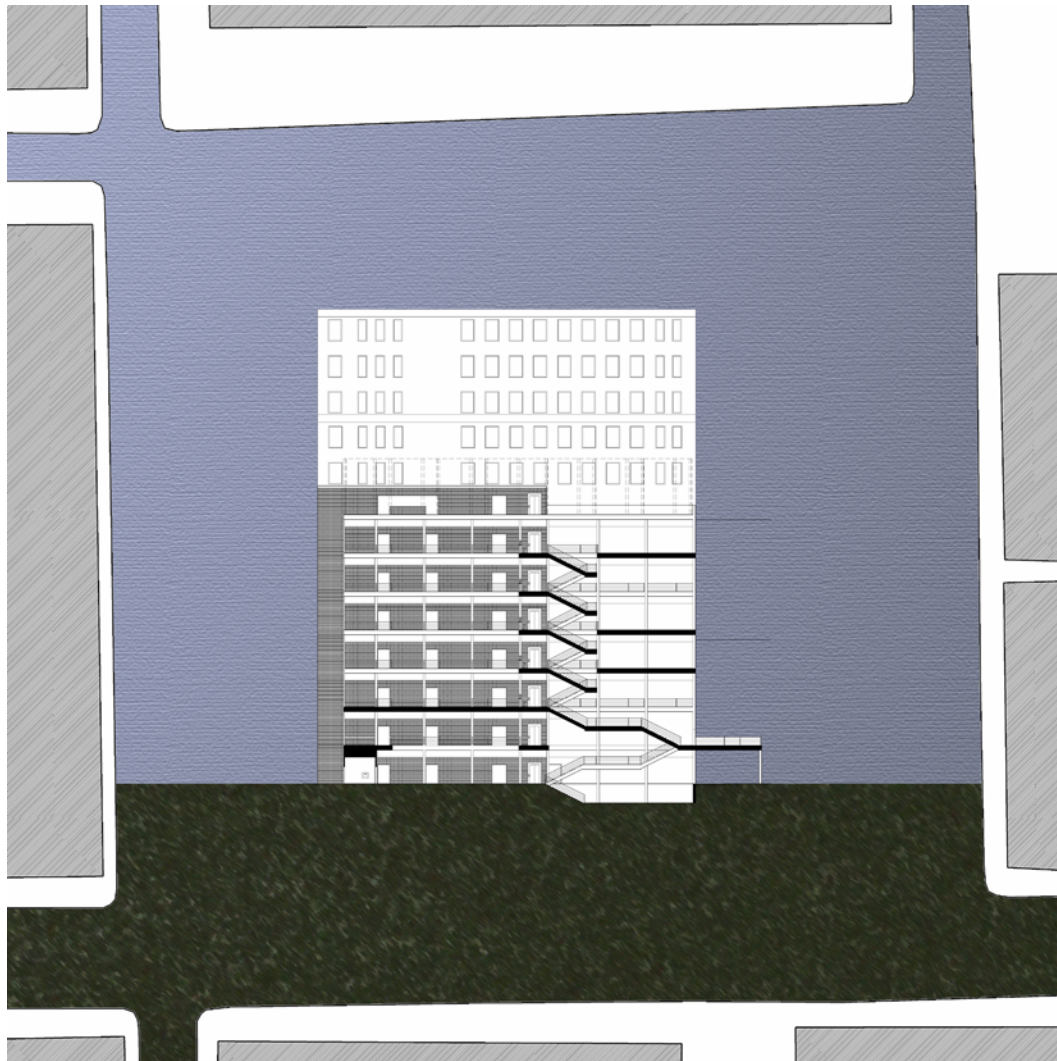


Fig. 4.10: Section Facing South  
Source: Author

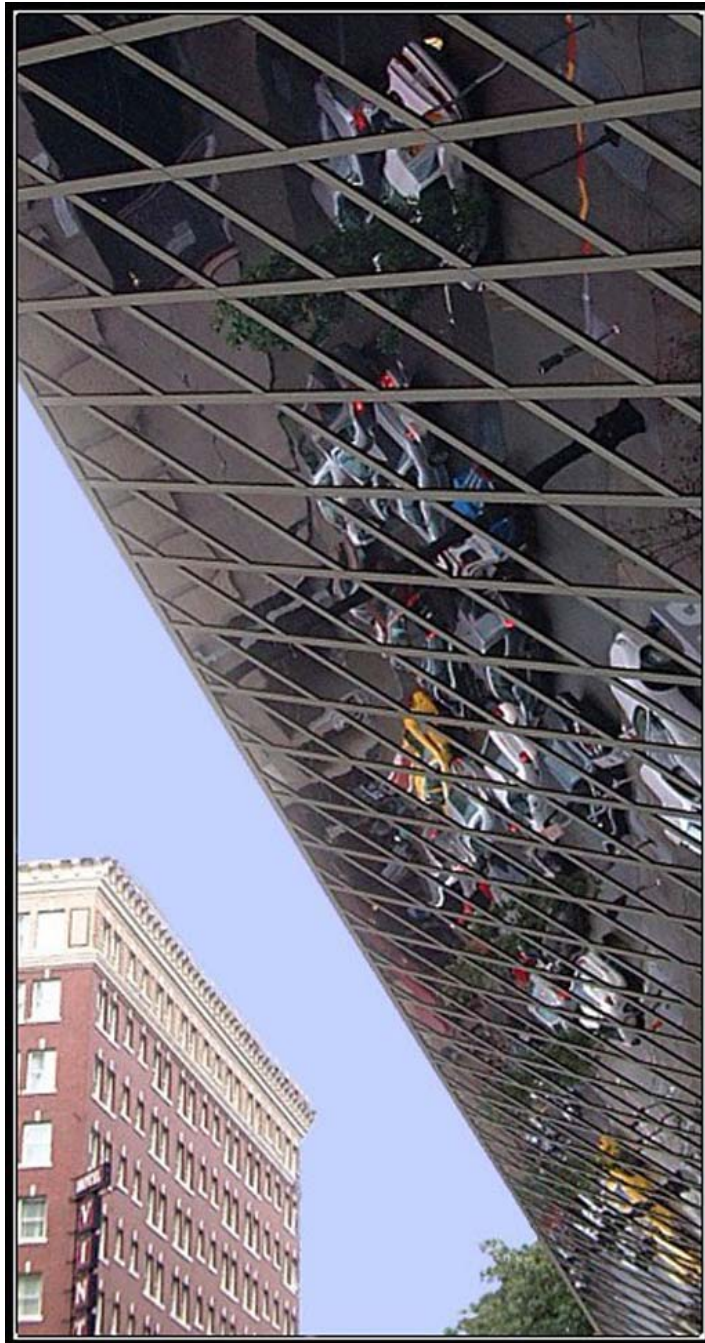


Fig. 4.11: Seattle Public Library Reflecting City Activity Below  
Source: Challenging Technologies, LLC

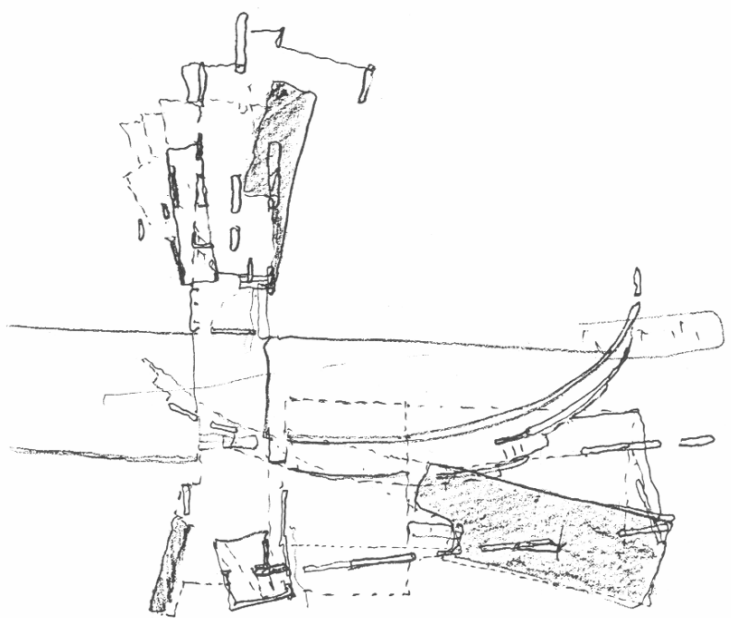


Fig. 6.1: Diagram of Blades Residence  
Source: *Architecture in Process*



Fig. 6.2: Model of Blades Residence  
Source: *Architecture in Process*



FROM ABOVE: FRONT VIEW OF FINAL BUILD  
PROJECT, 1989; MODEL OF NORTH  
ELEVATION STUDY FOR SUN THROUGH THE

Fig. 6.3: Photograph and Model of Fukuoka Housing  
Source: *Architecture in Process*





Fig. 6.4: Exterior of Melnikov House  
Source: Webshots, Inc



Fig. 6.5: Interior of Melnikov House  
Source: ARTINFO



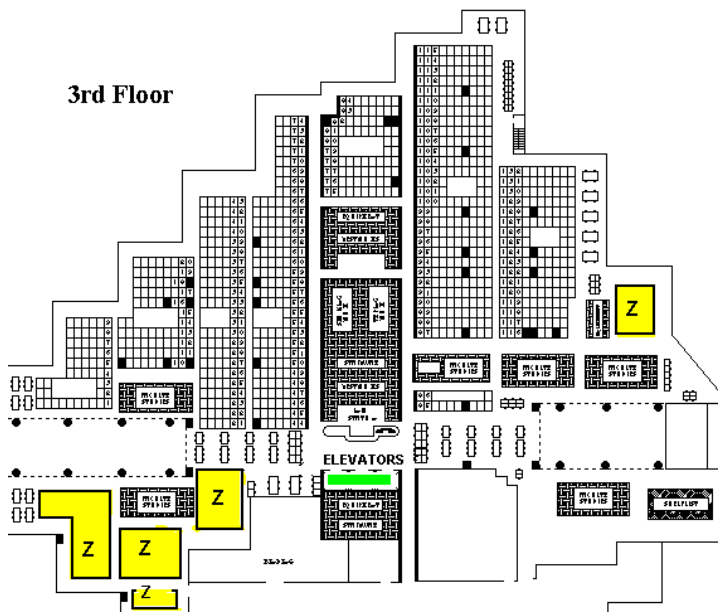


Fig. 7.1: Third Floor Plan of Hodges Library  
Source: University of Tennessee

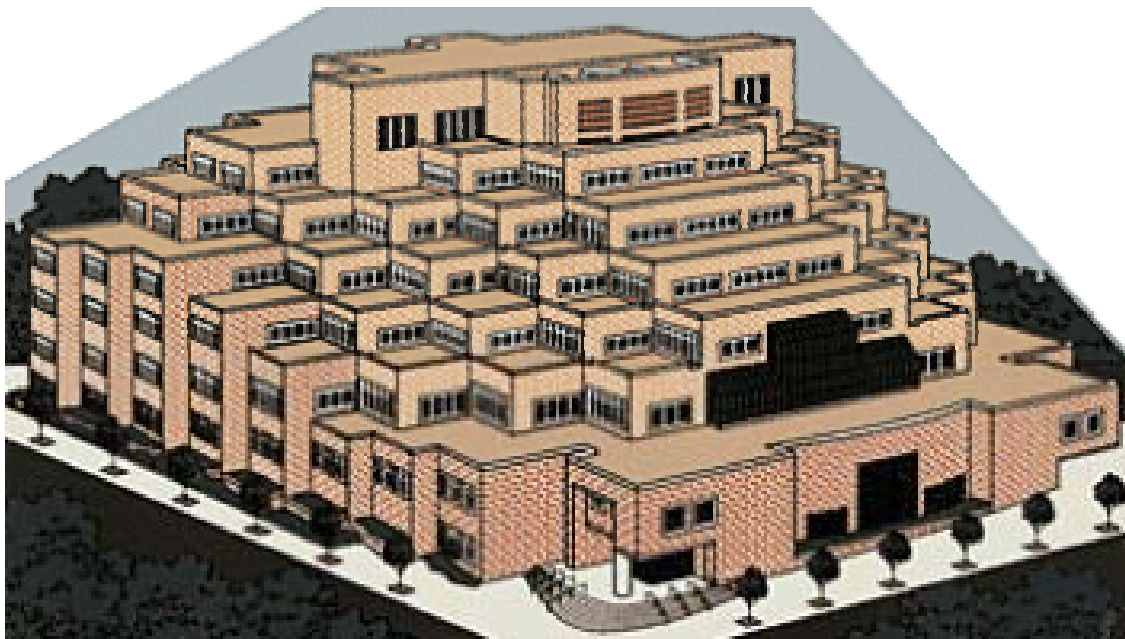


Fig. 7.2: Exterior Drawing of Hodges Library  
Source: University of Tennessee



Fig. 7.3: Interior Courtyard of Nashville Public Library  
Source: Author



Fig. 7.4: Reading Area with View of Construction  
Source: Author



Fig. 7.5: Interior of Nashville Public Library  
Source: Author



Fig. 7.6: Tactile Experience of the Nashville Public Library  
Source: Author

*Vita*

David L. Bouldin was raised in Allen, Texas, just north of Dallas, Texas. After graduating from Allen High School in May 1994, David began his collegiate experience in the architecture program at Louisiana State University in Baton Rouge, Louisiana. He worked for Richards/Oyer Archistudio, Inc. as well as a variety of other architecture and mechanical engineering firms. In 1999, David transferred to the University of Texas at Arlington. Combining his interests in architecture, art and philosophy, David helped create an Aesthetic Theory degree in the Department of Interdisciplinary Studies. He received his Bachelor of Art in Interdisciplinary Studies with two minors (Architecture and Art) in 2001. In 2002, David enrolled in the graduate program for architecture at the University of Tennessee. He will graduate with his Master of Architecture degree in **August 2005**.