



Room 14-0551
77 Massachusetts Avenue
Cambridge, MA 02139
Ph: 617.253.5668 Fax: 617.253.1690
Email: docs@mit.edu
<http://libraries.mit.edu/docs>

DISCLAIMER OF QUALITY

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available. If you are dissatisfied with this product and find it unusable, please contact Document Services as soon as possible.

Thank you.

Pages are missing from the original document.

Pages 41-42 Missing

Back to School: The Alternate Ground of Integration

by
Kyu Ree Kim

Bachelor of Engineering in Architecture
University of Seoul 2000

Submitted to the Department of Architecture
in Partial Fulfillment of the Requirements for the Degree of
Master of Architecture
at the **Massachusetts Institute of Technology**

September 2007

©2007 Kyu Ree Kim. All rights reserved.

The author hereby grants to MIT permission to reproduce and to distribute publicly paper and electronic copies of this thesis document in whole or in part in any medium now known or hereafter created.

Signature of Author: _____

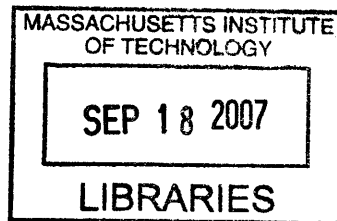
Department of Architecture
September 2007

Certified by: _____

Ann M. Pendleton-Jullian
Associate Professor of Architecture
Thesis Supervisor

Accepted by: _____

Julian Beinart
Professor of Architecture
Chairman, Department Committee for Graduate Students



ARCHIVE

Thesis Committee

Thesis Supervisor

Ann M. Pendleton-Jullian
Associate Professor of Architecture

Thesis Readers

J. Meejin Yoon
Associate Professor of Architecture
Massachusetts Institute of Technology

Robert Cowherd
Associate Professor of Architecture
Wentworth Institute of Technology

Back to School: The Alternate Ground of Integration

by
Kyu Ree Kim

Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of
Master of Architecture at the **Massachusetts Institute of Technology**

September, 2007

ABSTRACT

This thesis embraces the leftover spaces along the back alleyways and turns them into fronts. It proposes inhabitation of spaces below, above and in-between the warehouses through strategic and programmatically specific engagement. As such this project aims to devise a system that integrates both physical and sociological urban fractures.

The site is the Los Angeles Fashion District. It is a place of constant transformation; with its evolving fashion trends, new techniques of production, a changing workforce and new buildings. Yet, despite all the sociological and technological changes, the apparel industry still remains labor intensive. Furthermore, the LA Fashion District concentrates the large number of recent immigrants who are mostly undereducated or uneducated. In response to this situation, I am proposing the School for Apparel Industry Workers. Modeled based on current education facilities for adult immigrants, it provides learning opportunities to the workers at their workplace. The school also acts as an architectural connector. It creates mutual relationships among buildings in the alleyways.

Pleating, an apparel industry technique, is employed here as an architectural strategy to develop the system of the project that establish physical and sociological connections. It is also a tool in the organization of school programs as well as a technical solution in appropriating existing structures. Its structural and spatial flexibility exploits the diverse shapes extant in existing structures, providing both visual and physical connections between workplace and learning, while fostering greater acceptance and knowledge of immigrants in the community at large.

Key words: immigrant, apparel industry, informality, school for immigrant workers, infill, pleat

Thesis Supervisor: Ann M. Pendleton-Jullian
Title: Associate Professor of Architecture

O LORD, You are my God.
I will exalt You.
I will praise Your name,
For You have done wonderful things;
Your counsels of old are faithfulness and truth.
-Isaiah 25:1-

I thank You LORD,
Above all.

Acknowledgement

I would like to thank my advisor, Ann M. Pendleton-Jullian, who has been consistently encouraging and motivating me along the process of thesis exploration. Weekly conversations and critiques were always refreshing, providing thoughtful guidance and inspiration. I cannot even describe your patience and continuous confidence in me. I would also like to thank my reader, Meejin Yoon, for her harsh but encouraging critiques that helped me enjoy the design process. Above all, her excitement and enthusiasm in architecture has been energizing itself enough for me to appreciate architectural journey at MIT. I would also like to thank my reader Robert Cowherd, for his patience and supportive critique toward “real” architecture. His critique re-opened up my eyes as architect and made why and how I can enjoy design process.

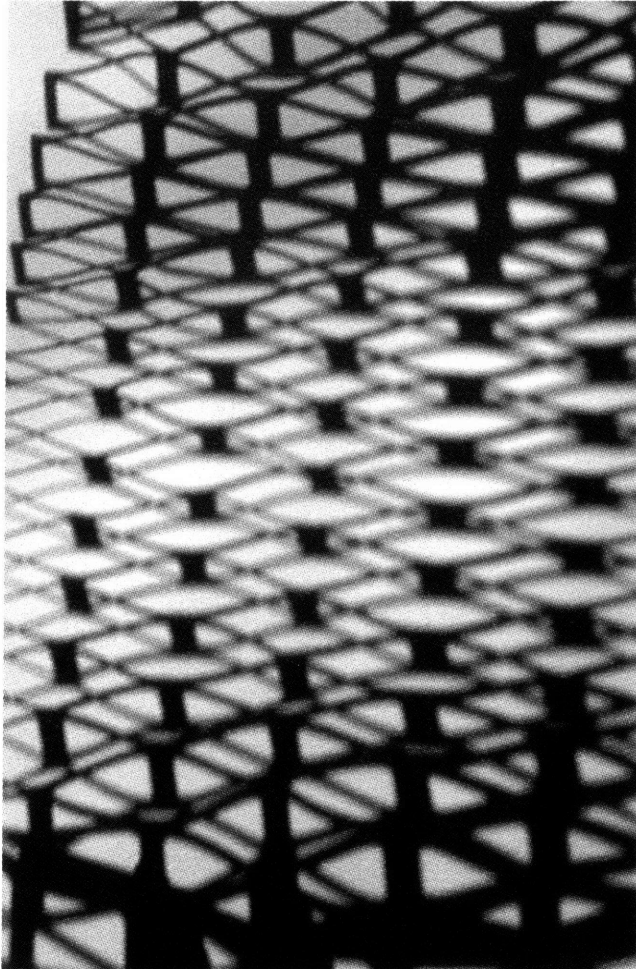
I would like to thank friends I met in Los Angeles Fashion District, especially designer Kate Kim, importer Mark Jo, developer Eugene Kim who helped me draw the LA Fashion District in detail. And to Debbie Kitch from Rinaldi Adult School, Luis Marquez from PUENTE Learning Center, Melanie Stephens from Centro Latino de Educación Popular who not only described those facilities, but also encouraged me with passion and enthusiasm on what they do.

Beyond doubt, my family has supported me at every single moment of my life at MIT and for this I would like to thank them. My parents which have always showed me of life of honest and righteousness and they made me what I am now. And for their amazing love and patience has been the source that carried me though difficulties in my life and will continue to be. My sister and brother as their support and love raised me up whenever I fell. My parents- in-law for their love and care, whose morning prayers everyday has provided me with strength and has guided me with confidence. I would also thank my brother-in-law for his effort and sacrifice for our family.

To my friends. Tracy and Sandy who almost did another thesis with me, for their excitement and energy poured on my thesis. Marta who cried and laughed with me through the thesis process, for her encouraging words “This is not the end of the world!” Dan and Sara who refilled enjoyment in our studio with their world best cookies. Jiwoon, for his succinct and honest critique and for warm encouragement. Junsik, my best friend who did everything mentioned above and prayed for me. Doug and Najiyah, without you there wouldn’t be summer in 2007. Pastor Choi and all members of Sa-rang-bang, for their prayer of tears and support. Pastor Kim and all friends from the First Koran Church in Cambridge, for their support, encouragement and powerful prayer. Especially Weon-joo, Jin-sook and Yoonji.

Jin , my husband, best and first Chritian partner and life-long colleague in architecture,
There exists no word appropriate to what you mean to me.
Neither in Korean nor in English.

I love you.
I respect you.



left:
[figure 01] study model photo
pleating structure expanded

Contents

Forward	11
Introduction	12
Preliminary Research & Analysis	28
Site	36
Los Angeles Fashion District	
Strategies	48
Strategy I: Underutilized surface	50
Strategy II: Scale of Informality	52
Strategy III: Infilling and Pleating	66
Design: Library	86
Other Applications	
Workplace Learning Center I: Distance Learning Center	98
Workplace Learning Center II: Childcare	102
Workplace Learning Center III: Classrooms	108
Workplace Learning Center IV: Satellites	112
Bibliography	116
Image credits	119

before starting designing a school

Architecture is not simply concerned with the technical details of planning and construction but, most important, with the relations between the envisioned curriculum and the spaces in which it is put into practice.

The architect plays a crucial role in the consideration of the complex relations between a large institution and its neighborhood, or the careful responses in scale and spatial layout to the needs of teachers and children, of the very materials out of which a good learning environment is built... the architect can serve as catalyst and collaborator, conscience and coordinator.¹

1. Vidler, Anthony. (Feb. 20, 2000) "Different Schools of Thought"; Los Angeles Times

below:

[figure 02,03,04] photos of the Los Angeles apparel industry workers

opposite page:

[figure 05,06] photos of sidewalk at the Los Angeles apparel industry



Introduction

Informality prevails in every part of a city. Whether sociological or physical, wherever there is density of formality – informality exists. Wherever formality reveals its limit, informal systems complement it. Informality is an enclave that is incorporated in the formal system. Whereas formal systems compete and conflict with each other, informality is interstitial. Indeed, informal practices such as auto-repair garage, street vendors, informal medical services and informal education can supplement the formal system where the latter does not reach. Moreover, the informal system is not only auxiliary but also parallel to the formal system. The informal system becomes extant when formal system is itself structured. The two systems always exist together. In fact, informal practices can influence, transform and even generate formal systems. Sporadic, yet continuous informal economic practices present potential for new types of formal structure.



It was only when informality and its actors were recognized as parts of the city that contemporary cities found the new public sphere and new public spaces. Instead of being just a united entity, the new public sphere suggests a multiplicity of simultaneous public interactions – interactions that can range from competing, conflicting or cooperating. Instead of being separated, informality and formality permeate each other, while informality's actors, activities and spaces also constitute “alternate ground” where they integrate and share together.

As such, this thesis proposes scale of informality as design strategy. By examining the degree of informality prevalent in specific areas, structural and programmatic organization is determined to recollect abandoned or underutilized lots and to transform them into new interfaces. These interfaces between residual spaces thus transform a formal structure. They

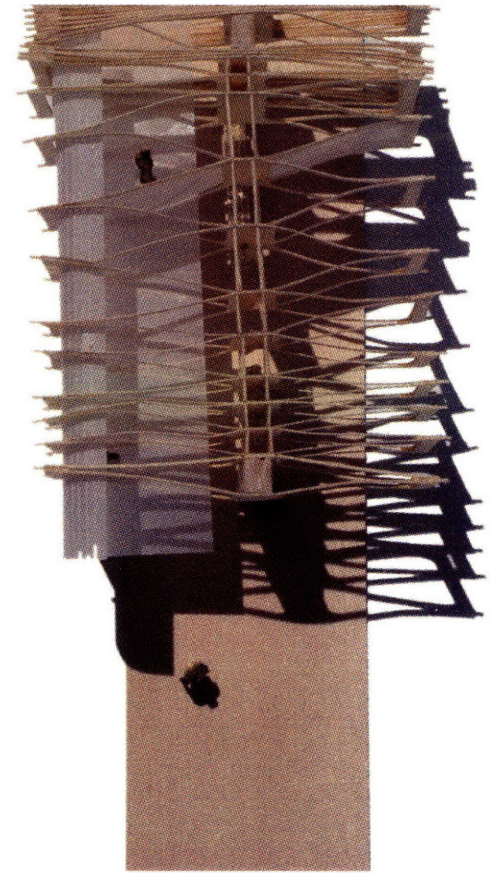
become new interfaces between the private and the public, between the employer and the employees and between the old and the new.

The site is the Los Angeles Fashion District, a place that is populated by several minority ethnic groups and recent immigrant workers. It is also a dense industrial agglomeration that is currently undergoing a restructuring process. Rather than indulging in criticisms of the area as a "sweatshop," or, at the other extreme, as a "high-tech/ high-fashion market," I propose an in-between alternative solution, the School for Immigrant Workers. First, this school attempts to mitigate the burden of industrial restructuring by offering broader learning opportunities both to the workers and employers and by encouraging more active, diverse interactions among economic actors in the industry, thus widening their future spectrum. Secondly, the school will implement an alternative design strategy for 'leftover' spaces at alleyways. By discovering the informal uses of those spaces and by connecting them with other parts of the district both programmatically and physically, this school will turn backs into fronts.

Hence this thesis research falls into two parts: a programmatic organization of the degree of informality as well as the physical relationship to the formal system. First, I investigate the organization of the school program throughout the Fashion District. Based on analysis of current adult

education and site context, I determine the location of the learning program, and its relationship and connections to the current industry. Secondly the study includes tectonic development which re-interprets the industrial technique, pleating, and adapts it into architectural system. Through drawing and modeling, pleating structures are investigated as flexible system, adapting to existing conditions and to transforming them.

right:
[figure 07] photos of the study model



Rethinking the Public in Los Angeles

Before the broader definition of public sphere and public space was conceived, Los Angeles has never had one. In her article, "Rethinking the Public Sphere", Nancy Fraser proposes a "multiplicity of public" as a more preferable to understand our contemporary society – rather than using "the public" as a single unified entity. Fraser argues that the public should be understood as a "complex and contested idea" – an idea which accepts multiple meanings and forms. This new concept urges more accessible, inclusive public for "the weak public" like women and workers.¹ In the context of Los Angeles, Margaret Crawford also asserts that the public space and public sphere can re-appear when we recognize "simultaneous public interactions that are restructuring urban space, producing new forms of citizenship, and revealing new political arenas for democratic action." In "Contesting the Public Realm: Struggles over Public Space in Los Angeles", Crawford proposes alternative grounds for the public from the very places of uprising competence and contention. Crawford attests that it is not only the violence during the "justice riots" in 1992 or the rallies and protests but that any form of economic and political participation in the

¹ Nancy Fraser, "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy," in Bruce Robbins, ed., *The Phantom Public Sphere* (Minneapolis: University of Minnesota Press, 1993).

city on a daily basis collectively constructs new areas of public expression.² Thus, streets, parking lots, sidewalks and other places of the city are the sites that have been reclaimed for this new public participation, creating new public spaces.

No longer abandoned, the new public places of Los Angeles are teaming with new public actors. These are recent immigrants, poor, minority ethnic groups or homeless people. Whether claiming accumulated time or slices of time – whether with permanent structures or temporary tents, these new public actors reflect and reinvent relations of the public spaces that were once forgotten.

These new public spaces thus can be described as heterotopias, sites of resistance. Heterotopia, a notion introduced by Michel Foucault, is the juxtaposition of "counter-sites," without superimposition or reduction of their own. According to Foucault, heterotopias interact with and inverse the normality of ordinary everyday spaces.³ But, instead of interrupting

² Margaret Crawford, "Contesting the Public Realm: Struggles over Public Space in Los Angeles," *Journal of Architectural Education* Vol. 49, No. 1 (September, 1995), pp4-9.

³ Foucault, Michael, "Of Other Spaces (1967), Heterotopias". *Architecture/Mouvement/Continuite* (October 1984).

the normal/ formal, heterotopias are positioned right between the ordinary and the extra-ordinary, between the normal and ab-normal, between the topicality and the a-topicality. In his lecture, Foucault addresses 'heterotopia' not simply to extract "extra-ordinaries" from the city but to find "difference" itself by which, in a particular time, the extra-ordinaries make particular relations to the city. In addition, although it has controlled access, this difference has effects beyond the access. Through suspecting and again reflecting' site of difference, heterotopia challenges the structure of the ordinary.

New public actors break in ordinary spaces of a city such as streets, sidewalks and back empty lots in such a way that we start "to suspect, neutralize, or invent the set of relations that they happen to designate, mirror, or reflect." In today's "slice of time", "splintering urbanism" calls for alternative grounds of integration. Los Angeles, a city in which sociological inequality and concurrent spatial polarity have expanded such that economic disparity is accentuated ever further than before, has produced numerous sites of the new public expression – sites of conflict and resistance: streets, sidewalks and back empty lots. However, the sites of public expression – or expressions at the sites – have not yet been fully investigated.



Can we integrate those sites into the city as our fully "lived spaces"? Can sites of conflict – at the same time, ignored sites – motivate our imagination? In other words, can we begin new architecture for the "lived space" right from the sites of resistance?

above:
[figure 08,09] photos of the Los Angeles apparel industry

The Apparel Industry in Los Angeles

above:
[figure 10] industrial area and major freeway network
of Los Angeles



The site for this project is the Los Angeles Fashion District. Influenced by the entertainment industry including the film and music video industries, the “screen style” of Los Angeles attracts global attention and generates the “original” that the next fashion stream niches. Despite its avant-garde fashion, the apparel industry of Los Angeles has been criticized as “modern sweatshops”, whose labor forces are made up mostly of female and immigrant workers.¹ It is often argued that the apparel industry in Los Angeles depends almost exclusively on the labor of Latino and Asian immigrant workers, who are often undocumented and underpaid. Between appraisal and devaluation, right at the two extremes of sociological, spatial polarity, the apparel industry of Los Angeles is now undergoing industrial restructuring.

Above all, it is important to notice that, as in New York and in other major cities, the major cluster of apparel manufacturers and workers tend to be highly centralized, despite the decentralized nature of Los Angeles. In Los Angeles, the clothing circle symbolically anchors the industrial geography right next to the Central Business District. Also it is interesting that the manufacturing industry’s decline in general began in the middle of 1970s in US, right where Los Angeles’s apparel industry began to take

¹ Edna Bonacich, *Behind the label: Inequality in the Los Angeles apparel industry*. (Berkeley: University of California Press, 2000).

shape.²

The Los Angeles area remains the largest urban concentration of manufacturing activity in the nation. Employing more than 12,000 people in 6,000 firms, apparel industry also constitutes 14% of the entire manufacturing in Los Angeles. It is the largest sector among all manufacturing in Los Angeles as well. However, for last ten years, it has been experiencing significant downsizing, concurrent with an increasing shift to offshore production. Receipt of apparel manufacturing has dropped down by 20% and employment by 29% in Los Angeles. Taking advantage of low wages and declining tariffs, many manufacturers and large retailers have started to outsource production work to other lower wage countries. Furthermore, recent legislation to increase minimum wage as well as frequent inspections on working conditions by federal and state agencies have also pushed out manufacturing outside the city. The competitive environment has become even more tense because of technological developments that have allowed more efficient, quicker communication among agencies through the invention of new logistics

² Edward W. Soja, "The Postfordist Industrial Metropolis: Restructuring the Geopolitical Economy of Urbanism" in *Postmetropolis: Critical Studies of Cities and Regions*, (Oxford, UK; Malden, Mass: Blackwell Publishers. 2000) p 127-144.

and trade strategies.³

However, in comparison to the employment trends in the US the Los Angeles apparel industry is doing well. Both employment loss and decreased total receipts of manufacturing in Los Angeles is only half of that of the whole country – in the same period, the US has lost 54% of employment and 45% of receipt of apparel manufacturing. Furthermore, while there has been an increasing number of manufacturers and contractors in Los Angeles, the number has decreased in the US as a whole. Experts explain this phenomenon in several ways. First, the "street style" of young women's casual wear and beach/ sports wear, which became the region's strength, has supported it to grow. From a range of highly specialized athletic shoes and clothing down to semi-formal suits, Los Angeles has been able to promote casual/ informal wear, partially due to the direct/ indirect relation to the entertainment industry such as film, music video or just the image of Hollywood itself. Those products tend to have shorter production-consumption cycles requiring fast manufacturing turns, thus benefiting from local manufacturing. Secondly, the manufacturing process is broken down into many of small tasks, thus

³ Allen J. Scott, "Competitive Dynamics of Southern California's Clothing Industry: The widening Global Connection and its Local Ramification," *Urban Studies*. 39 (8): 1287-1306. 2002.

small size contractors are highly specialized and efficient at their core competencies. In spite of the nation-wide decline of the non-employer firms, the rate has grown even higher in Los Angeles. Indeed the booming construction sites on the periphery of the Fashion District. Experts also argue that many firms work in 'modular/ team production system,' in which each worker rotates and experiences the entire production process. In other words, Los Angeles apparel industry functions under a matrix made of thousands of small size manufacturers and contractors. Lastly, but most importantly, the constant flux of immigrant workers from Latin America and Asia kept wage relatively low. Despite technology developments in apparel manufacturing process, this industry remains labor intensive, and consequently attracts enormous work forces making itself the largest concentration of immigrants. Because of the same reason, the apparel industry has a lower barrier for skilled immigrants to enter with small investment. As sewing contractors, designers, or import agents, immigrant workers have used the apparel industry to climb up the economic ladder.

On the other hand, other experts are more critical of the industry. Firstly, they argue that the "street style" is based on "copying" rather than creating. Interviews with some manufacturers and designers reveal that production often begins with samples which were delivered by buyers

or which were purchased from weekly shopping. Moreover, instead of leading new style, the apparel industry only supports a few ethnic groups, for instance, the Mexicans and the Koreans. Secondly, spontaneous relationships between small size firms seem to no longer promise long-term economic development in the globalized market structure. Critics view the contracting practice as poor venture capital based on sweatshop practices and as impromptu "accountability" rather than "responsibility". The apparel industry reveals itself just as a set of overlapping markets with feeble government financing in brutal competition. Thirdly, critics point out that above mentioned problems basically reply on the exploitation of immigrant laborers and that considering much lower wage in Asian countries and growing immigration demand in US, it seems that labor exploitation will continue to happen.⁴ Growing numbers of justice protests and worker-supporting unions also appeal for the significance of the conflicts.⁵

4 Edna Bonacich, "Asian and Latino Immigrants in the Los Angeles Garment Industry: An Exploration of the Relationship Between Capitalism and Racial Oppression" *Institute of Social Science Research*, 1989-90, Vol. 5, Number 13. <<http://repositories.cdlib.org/issr/volume5/13>>

5 "Crisis or Opportunity?: the Future of Los Angeles' Garment Workers, the Apparel Industry and the Local Economy," *Sweatshop Watch Annual Report* <<http://www.sweatshopwatch.org/>>

below:
[figure 11,12,13] constructions at LA Fashion District



Prosperity in connection with entertainment industry or collapse in impotent design mind?
Advancement of flexible network or degradation of credibility?
New economic stage of immigrant communities or new slave market of labor exploitation?

I would argue that the Los Angeles's apparel industry should devise a place that can mitigate those extreme views. I also believe, as Crawford asserts, that sites for this place are already expressed by "insurgent" publics. Streets, sidewalks, parking lots and back empty lots are the sites for counterfeit product stores, so-called niche markets or for temporary

stalls geared to liquidate leftovers from wholesale. They are also sites for deliveries – visual, yet hardly understandable network among various participants such as designers, manufacturers, contractors, import/export agents and retailers. Besides product circulation, broader knowledge about the industry is transmitted through the sites. All in all, they are sites where immigrant workers inhabit; sites that these workers have claimed. Whether explicit or implicit, whether economic or political, whether legal or illegal, immigrant workers express their demand through those sites. By proposing an architectural intervention, I attempt to transcend the limit of the sites. By utilizing those sites, the architecture makes visible their existence of these very sites and relationships to others, helping immigrant workers get ready for the larger context of the city.

Institutions and incentives: School in Los Angeles Fashion District

“To consider the importance of societal and communitarian forces to economic development is to think about institutions.” (Storper.2004)

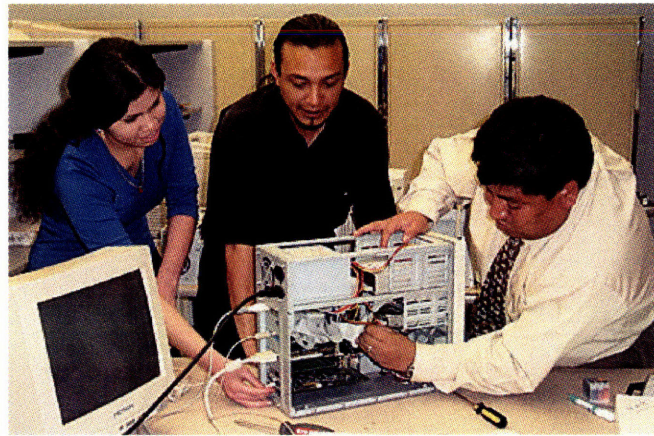
In the lecture “Institutions, Incentives and Communication in Economic Geography” at the University of Heidelberg, Michael Storper emphasizes the importance of “context-sensitive” institutions for long-term economic development. As he puts it, institutions does not only refer to the private or public organizations that rules how actors should interact, but also include the habits, collective routine or conventions that the actors have established through everyday practices; both rule-bound society and informal relationship based community: both ones by “bonding” and by “bridging”. Storper points out that economical development happens through the relations among those institutions.¹ On the one hand, industrial agglomeration arises based on “localized input-output” relationship in order to minimize transaction cost and to enhance productivity. On the other hand, industrial agglomeration operates based on indirect relations such as “untraded interdependencies and localized conventions” – non-market screened behaviors and atmosphere that “attach to the process of economic and organizational learning and

¹ Michael Storper, “Society Community and Economic Development” *Institutions, Incentives and communication In Economic Geography*. (Heidelberg: Franz Steiner Verlag 2004).

coordination.” In other words, their reflective relations in formal and informal institutions together promote learning and innovation in the industry.

All in all, through mutual relations, organizations – both communities and societies – generate appropriate institutional arrangements which are beneficial for economic development. Institutions, through the reflective practices, avoid one overarching rule which ignores actors’ micro-economic activities and confidence within or which hardly fits to any real site. At the same time, institutions escape from spontaneous impulsions which only encourage confrontation or from passive observation which does not promote innovation. Storper asserts that appropriate multiple institutions strive to construct and transmit accumulative knowledge from “situated practices” that have been built on “specific site.” These context-sensitive interactions achieve substantive development.

Contemporary economic development calls attention to sites of difference. As a city integrates sociological and spatial marginality, Nancy Fraser and Margaret Crawford argue, it uncovers the hidden public sphere and public spaces. The spaces and activities at those spaces, however, have been considered only as conflicts one should avoid rather than as demand expressed for new economic development strategy. Sometimes these



left:
[figure 14,15]
PUENTE Learning Center

spaces are hidden because activities in marginal area do not go through formal organizations or because they are simply assumed as pathological symptoms to be cured. But as discussed in the previous chapter, the place of difference, heterotopia, exists not necessarily to exclude alterity but to juxtapose it to the normality, the governing institution. It is parallel to the institution, while it also resists the institution stimulating institution's transformation.

The future of the Los Angeles apparel industry is unclear. Between conflicting scenarios – prosperity or collapse – Storper urges us to consider the complex interactions among all institutions and to promote what generates incentives in those activities. Above all, the

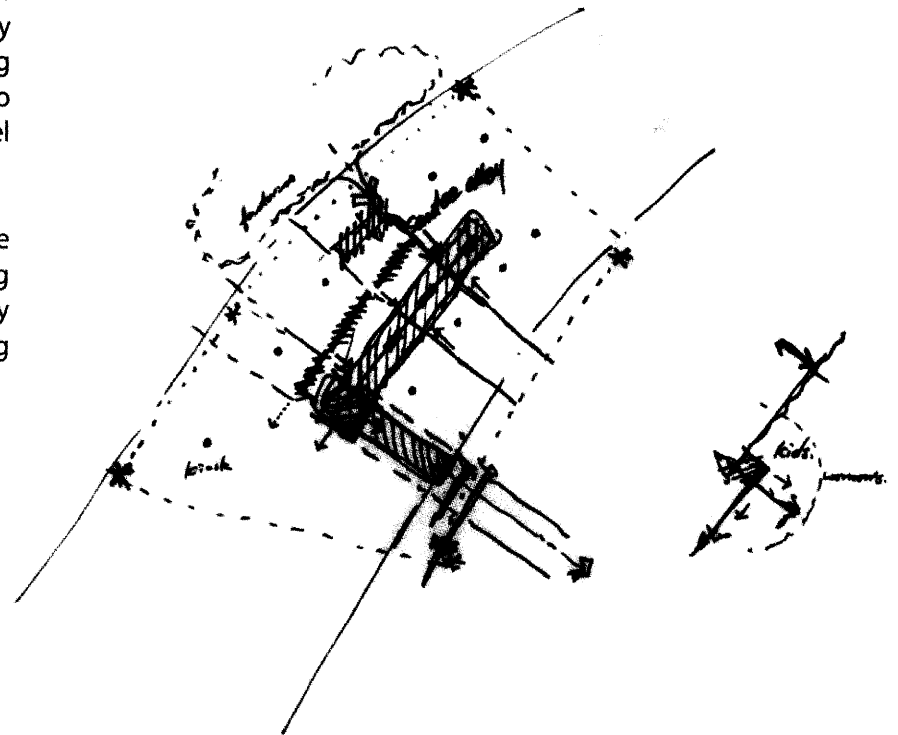
core mechanism of the incentive is confidence – in individual level and institutional level – which is the accumulation and application of knowledge. Together with appropriate social policy environment, mutual confidence through “bonding” and “bridging” is essential. Analyzed from this point of view, the apparel industry in Los Angeles reveals that it does not have balanced institutional structure. Firstly, this industry has uneven distribution in its types of institution; it is concentrated on the wholesale store owner's associations or manufacturer's association based on ethnic background. They barely create mutual relationships. It is partially because those institutions are based only on similarities which only stimulate competitions. Secondly, this industry has very a few institutions supported by or supporting employees who are

mostly immigrants. Furthermore, few of the institutions provide workers with communication and learning. Thirdly, if there is any channel for communication and knowledge transference, these channels are mostly informal or communitarian institutions, which are not often considered institutions at all.

Therefore, my thesis aims to diversify the types of the institutions by proposing a set of educational facilities in the apparel industry. These are learning centers for immigrant workers. Taking the form of a series of institutions provide diverse levels of education level from basic literacy to industry specific education such as design, apparel manufacturing and entrepreneurship. In addition, these educational facilities attempt to support various sectors of the industry; not restricted to specific apparel category but rather open opportunities to all types of business.

The design begins from sites of informal economy and sites outside formal institutions, sites that have shown immigrants' need. By designing a series of learning programs that facilitate activities of informal economy and that uncover the potential of other dormant areas, I seek to bring awareness to the leftovers of the city.

right:
[figure 16] sketch by author



Informality as Strategy

Informal¹:

1. without formality or ceremony; casual
2. not according to the prescribed, official, or customary way or manner; irregular; unofficial
3. suitable to or characteristic of casual and familiar, but educated, speech or writing.
4. Grammar. characterizing the second singular pronominal or verbal form, or its use, in certain languages

Infill²:

- verb (used with object) 1. to fill in
- noun 2. the planned conversion of empty lots, underused or rundown buildings, and other available space in densely built-up urban and suburban areas for use as sites for commercial buildings and housing, frequently as an alternative to overdevelopment of rural areas.
- adjective 3. of, pertaining to, or involving the use of infill in urban planning: infill condominium projects; infill office buildings and retail space.

pleat³:

- noun 1. a fold of definite, even width made by doubling cloth or the like upon itself and pressing or stitching it in place.
- verb (used with object) 2. to fold or arrange in pleats.

Pleats are measured folds formed at the edge of a piece of fabric where they are secured with stitching. Beyond the stitching, pleats become loose folds that continue the arrangement set at the edge. (Wolff.1996)⁴

1 "Informal." *Dictionary.com Unabridged* (v 1.1). Random House, Inc. 02 Aug. 2007. <Dictionary.com <http://dictionary.reference.com/browse/Informal>>.

2 "infill." *Dictionary.com Unabridged* (v 1.1). Random House, Inc. 02 Aug. 2007. <Dictionary.com <http://dictionary.reference.com/browse/infill>>.

3 "pleat." *Dictionary.com Unabridged* (v 1.1). Random House, Inc. 02 Aug. 2007. <Dictionary.com <http://dictionary.reference.com/browse/pleat>>.

4 Colette Wolff, *The Art of Manipulating Fabric*. (Iola: Krause Publications. 1996) p88.

Informality is often understood as “resistant and alternative” to a formal system. It is understood as being in state of competition with the formal system, attracting attention out of the formal system. Therefore, the success of the one system means the failure of the other. However, in observing our everyday lives, one soon realizes that no informal system operates completely separated from the formal system or vice versa. Instead of being “poles of a continuum”, Michel Laguerre argues that informal and formal systems interact and influence each other. (Laguerre.1994)⁵

In the Los Angeles Fashion District, the informal economic activities are as common as the formal activities – street vendors, food trucks, cardboard box collectors and temporary deliverers are infilling niches that the formal market does not reach. There are also indirect economic activities which happen due to absence of appropriate facilities in the formal system – for instance, alleyways are used as bathroom, as temporary parking, as temporary storage or as rest area for workers. Furthermore, thriving business along the alleyways, for example, the Santee Alley, developed into the busiest retail shopping and tourist area, generate new business models for other parts of the district. As well as the main façade, some wholesale warehouses design their backs for secondary retail business or product display while others have their fronts on alleyway side. By different degrees, local businesses in the Los Angeles Fashion District have suggested the potential of alleyways as sites in and aof themselves, bridging the gaps between the formal and informal activities.

Degree of informality is a design strategy by which the leftover spaces

of the industrial area get integrated to the city. The informal system is a parallel structure to the formal system with various degrees. It ranges from very informal to almost formal, according to “closeness” to the formal system – according to how closely the informality is integrated to shape the formal structure. This design strategy infills the gaps between wholesale warehouses, between old and new industrial centers, between the private and the public and between the employers and the employees. Degree of informality determines independency of the proposed buildings – both tectonic capabilities and educational methodology.

⁵ Michel S. Laguerre, *The Informal City*. Houndmills, Basingstoke, (Hampshire : Macmillan. 1994.) pp.xii-26

below:

[figure 17,18,19] photos of alleyways in LA Fashion District:
alleyways which are not only used for service functions of
wholesale stores and factories, but also activated as retail/ tour-
ist shopping. It has added temporal element on the alleyways.



right:
[figure 20, 21] photos from PUENTE Learning Center



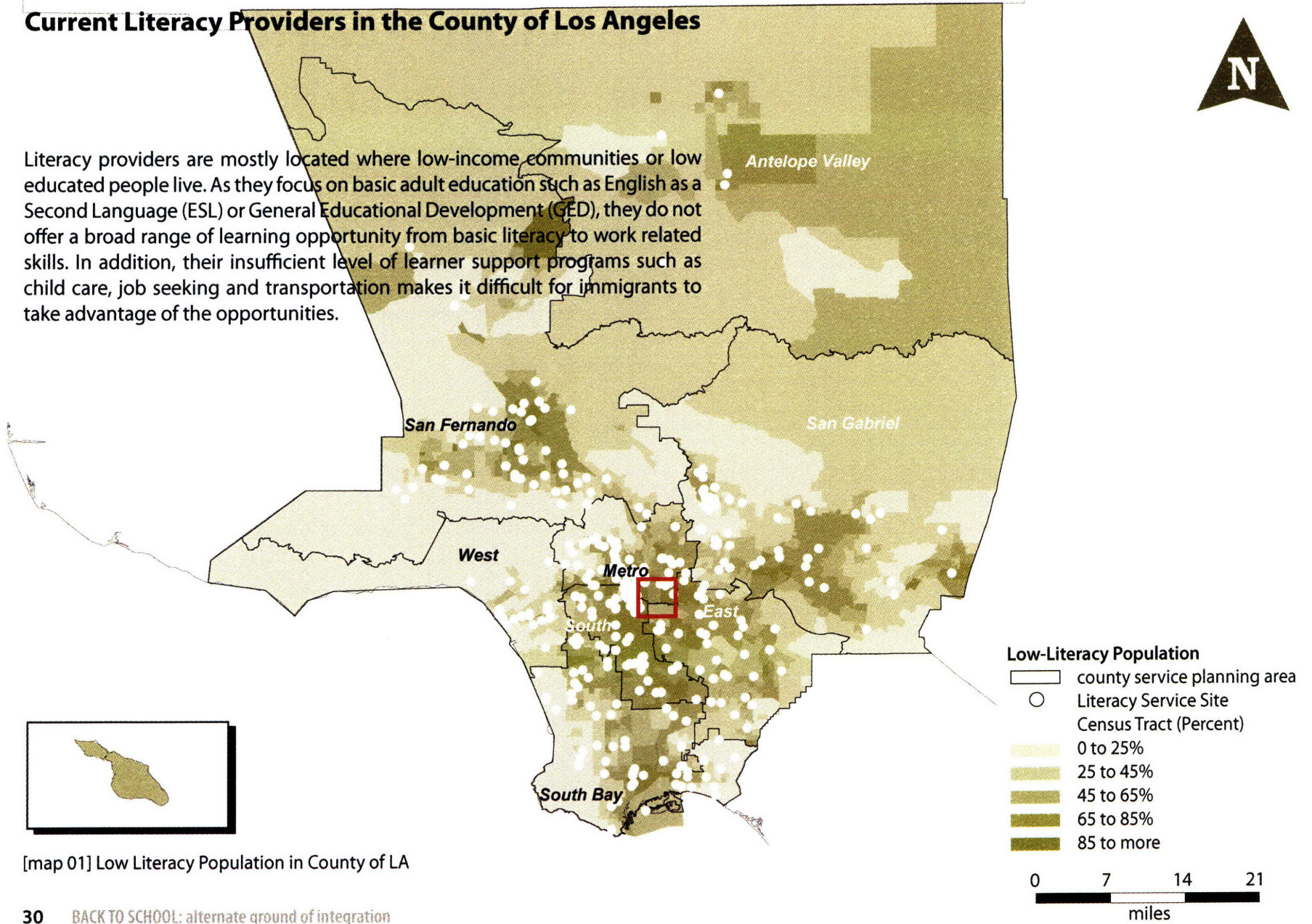
Preliminary Research & Analysis

Today, the need to provide school buildings no longer revolves purely around the school-age population growth and decline; to be visible community facilities, schools must be designed and built to tie directly into the needs and desires of the communities that they serve, both programmatically and physically, in their scale and their symbolic potential to give identity and purpose to the surrounding community. ... New school buildings offer opportunities to think about urban diversification, the recognition of urban space, the quality and expansion of landscape, and the provision of new spaces for contemporary urban programming.

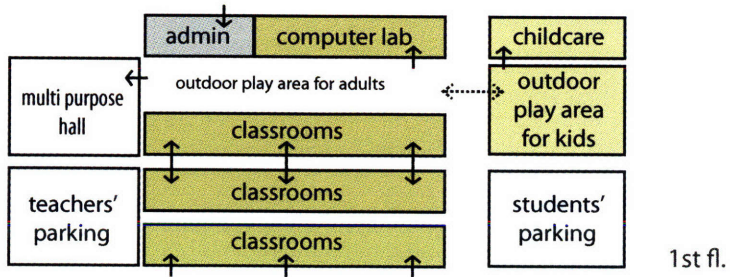
Despite the considerable number of providers, the limited facilities of each provider often fail to provide competent job skills and often its program is limited within its fence. Furthermore, they are rarely associated with immigrants' working context, neither physically nor economically.

Current Literacy Providers in the County of Los Angeles

Literacy providers are mostly located where low-income communities or low educated people live. As they focus on basic adult education such as English as a Second Language (ESL) or General Educational Development (GED), they do not offer a broad range of learning opportunity from basic literacy to work related skills. In addition, their insufficient level of learner support programs such as child care, job seeking and transportation makes it difficult for immigrants to take advantage of the opportunities.

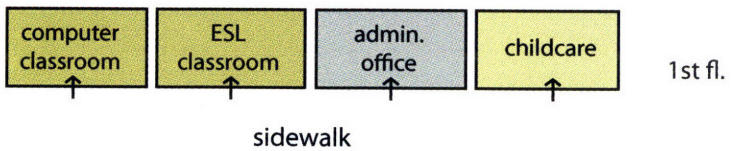


[map 01] Low Literacy Population in County of LA



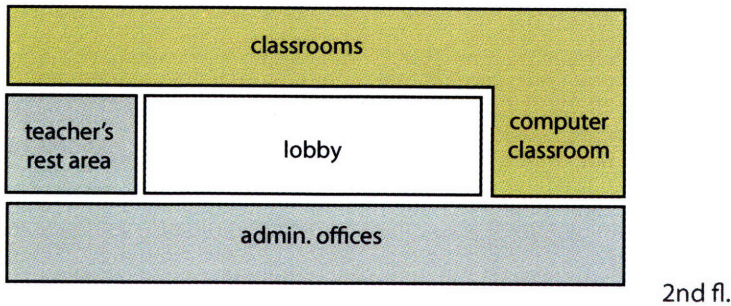
Rinaldi Adult School

- + under John F. Kennedy High School (LAUSD)
- + renovated from the abandoned elementary school
- + courses offered: English As a Second Language (ESL), General Educational Development (GED), Computer basic
- + supporting program: childcare



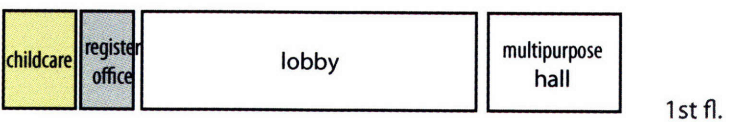
Centro Latino de Educación Popular

- + community based nonprofit, nonsectarian 501(c)(3) organization
- + refurbished from the underutilized first floor spaces in the senior apartment
- + courses offered: English As a Second Language (ESL), Basic literacy for Spanish speaker, General Educational Development (GED), Computer basic, Workforce literacy
- + supporting program: Childcare, Job counselling



PUENTE Learning Center

- + community based nonprofit, nonsectarian 501(c)(3) organization
- + new structure established in 1992
- + supporting 3000 students
- + courses offered: English As a Second Language (ESL), General Educational Development (GED), Computer basic, computer repair, Workforce literacy
- + supporting program: Childcare (Preschool readiness, family literacy, after school), Job counselling (including vocational certification)



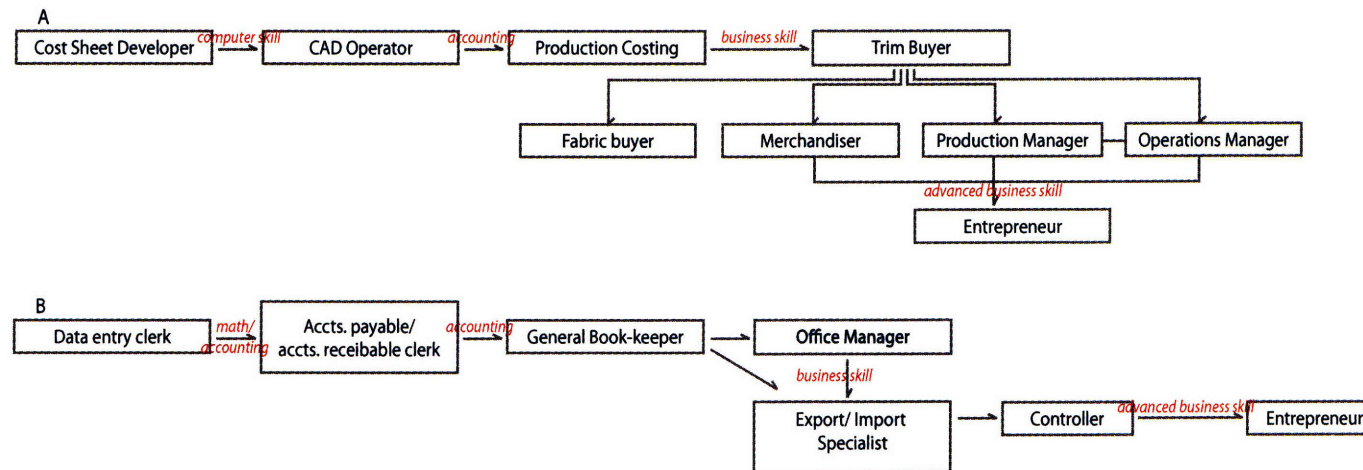
drawings not in scale

Career path in apparel industry, Los Angeles

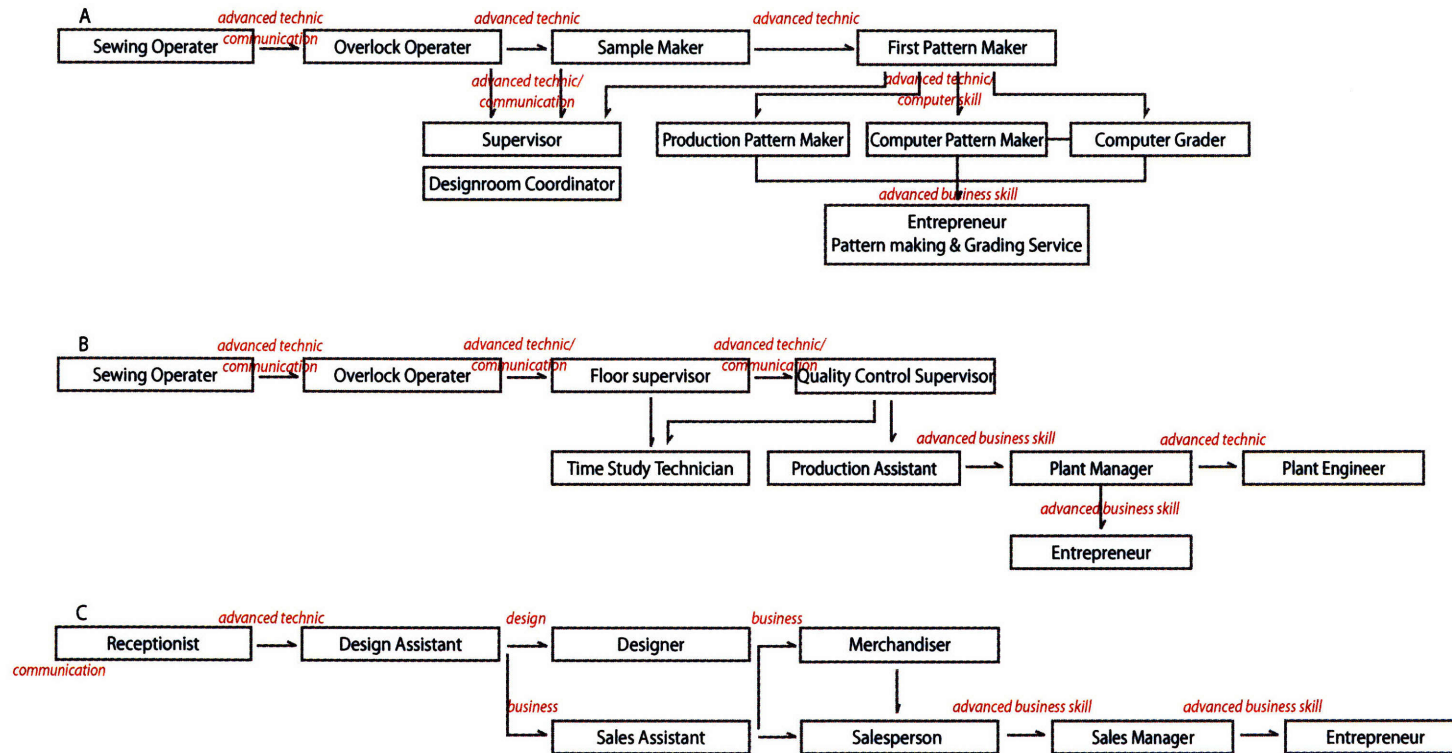
Most of the existing career training is conducted at the workplaces, without any formal structure. Some apparel design and production focused courses are taught in community colleges and high schools, but a significant number of those are shutting down. More critically, there is no educational inventory for basic literacy or supporting services nearby.

Marked in red are possible educational programs that can assist conventional career development, however other programs must be considered to fill the skill gap: basic literacy, design school, international trade and entrepreneurship.

career path in manufacturing



career path in contracting



Precedent projects

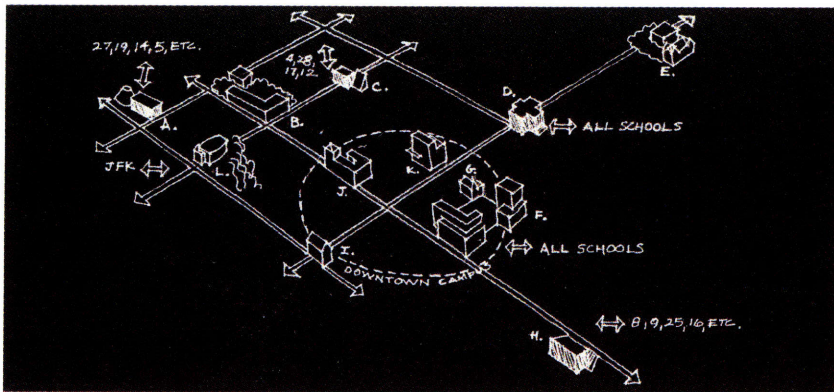
A City of Learning

1998-2000

Paterson, NJ

Design: Roy Strickland

A City of Learning presents a concept that public school facilities function as tools for revitalizing a post-industrial American City. Four types of educational inhabit the abandoned buildings while they integrate themselves to the neighborhood. I found this concept compelling not only because it revivifies abandoned historic buildings but also because it situates learners in wider urban context than the school fence. Those four types - MPACT (Metro Paterson Academy for Communications Technology), Educational park, STEM (Academy for Science, Technology, Engineering and Math), and the Computer Clubhouse – are well specified in terms of provided program, location and relationship to the public.



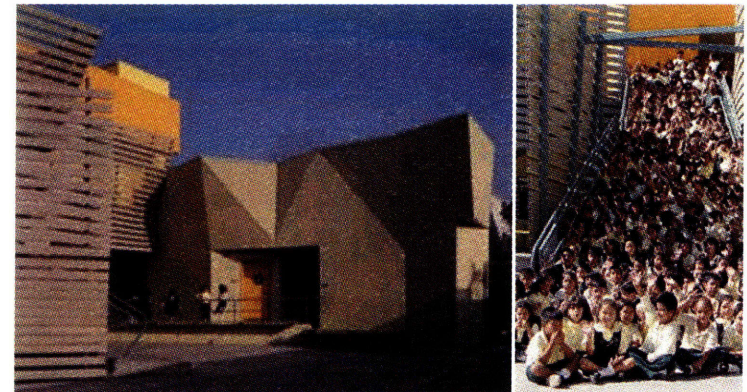
Camino Nuevo Charter Academy

2000 - present

Los Angeles, California

Design: Daley, Genik Architects

This project also utilizes existing pieces of the urban fabric for local redevelopment. Abandoned shopping mall, office and ice-cream factory buildings were carefully redesigned for classrooms, playground and offices. Throughout five design phases, it has not only developed each plot but also created interesting interstitial play grounds for kids. Moreover, the Camino Nuevo Academy is one part of the larger system that the organization has built; such as community owned thrift store, the chapel (Mass on the Grass), the community owned janitorial supply store (Pueblo Nuevo Enterprise). They are also well connected to other adult education providers – for example, Centro Latino de Educación Popular and more – to support the broader scope of the neighborhood.



Steps of Providence : Rhode Island School of Design

1978

Providence, Rhode Island

Design: Machado and Silvetti

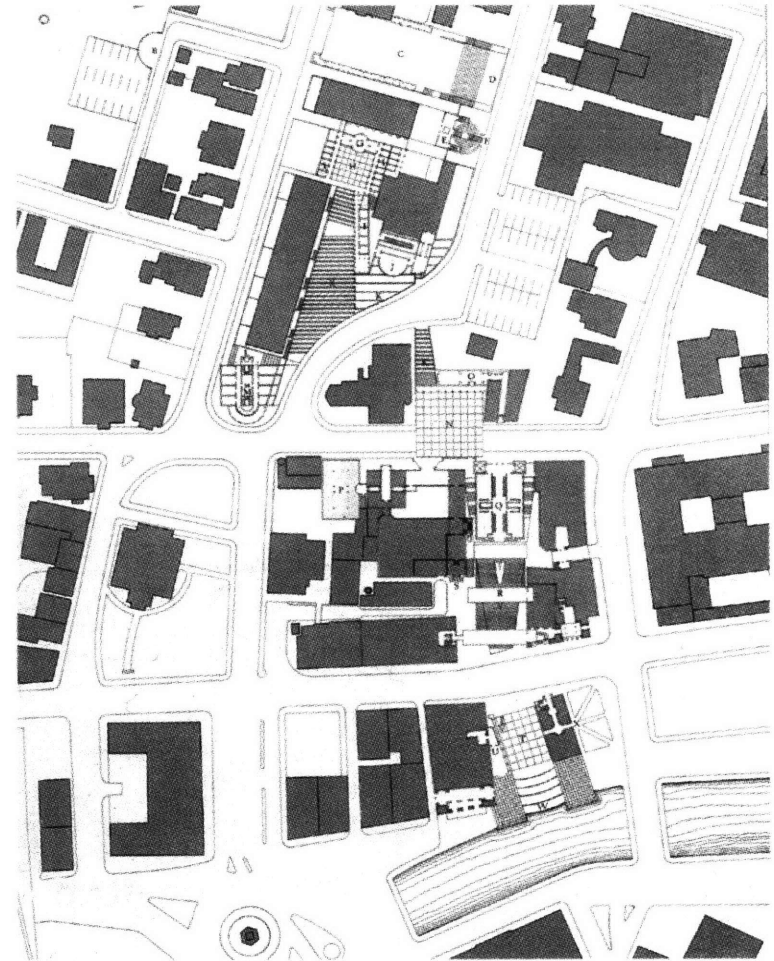
Steps of Providence: the Rhode Island School of Design shows a series of interesting architectural and landscape interventions along with the steps that interweave through the campus. This design suggests unified, but also spatially diverse form and movement while linking school buildings. Existing open space - sometimes leftover spaces - are redesigned into garden, squares and circulatory axis to unite and create visual, functional areas of intense character, becoming the identity of the campus.

opposite:

[figure 22,23] potoes of Camino Nuevo Charter Academy
burlington campus

right:

[figure 24,25] drawings of "Steps of Providence"



opposite page:

[figure 26] sewing machine operator

[figure 27] photos from site: textile store

Site

apparel industry in transition, Los Angeles

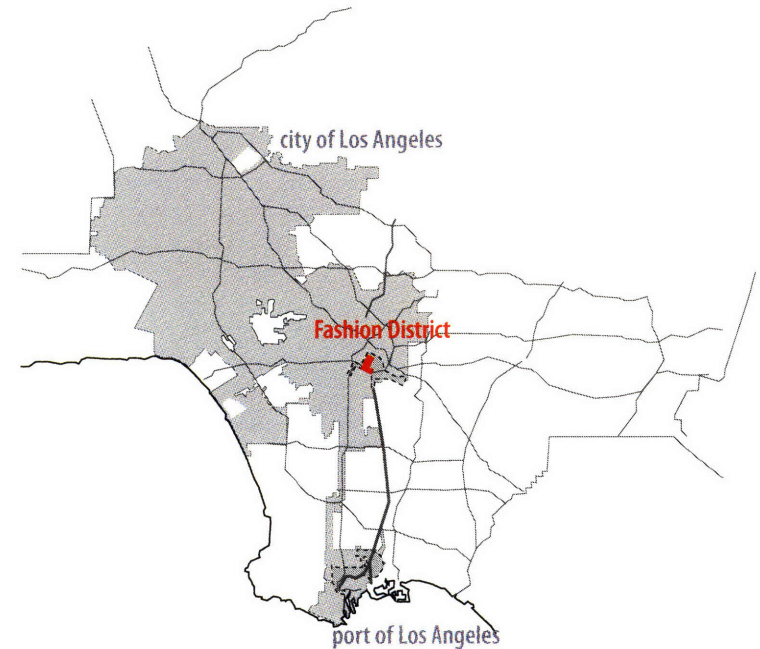
The Apparel industry remains a labor-intensive industry. Because one can enter this industry with low capital investment, often it is the apparel industry that underdeveloped countries first establish because of their abundance of cheap labor. Thus this industry is generally considered as “sunset” industry in developed countries. Moreover, in a high-cost environment like Los Angeles, it would not seem to survive. But it has not been the case...



The Fashion District is located in the South of downtown Los Angeles, surrounded by textile/ apparel manufacturing clusters. Spread over 92 blocks, more than 1000 wholesale showrooms and storages makes one of major distribution gates in United States. Los Angeles's apparel manufacture has grown to be the largest in the U.S.

Though there have been tremendous job losses since its peak in 1997 - it has lost almost 40% of employment - because of the off-shore production trend in recent years, Southern California still retains the largest portion of production lines in the nation. It is partially because the strength of Los Angeles is in junior/ women's casual wear and beach/ sports wear that require quick design and quick production response from local manufacturers. More critically, it has been well supported by constant supply of immigrants, especially from Asia and South/Central America.

In Los Angeles apparel industry, the numbers of apparel manufacturers are actually growing. They have no or less than two employees and only perform entrepreneurial functions such as purchasing raw materials, designing and preparing samples, arranging for the production and distribution of the apparel and marketing the finished product. The actual production part is done in other counties - mostly in China. Most of those manufacturers are foreign-born immigrants, mainly Koreans or Mexicans, who have set skills and knowledge in this area. For immigrants, the apparel industry in Los Angeles has been one of the easiest entrances both as an employee and employer.



above:

[map 02] map of city of Los Angeles and Fashion District

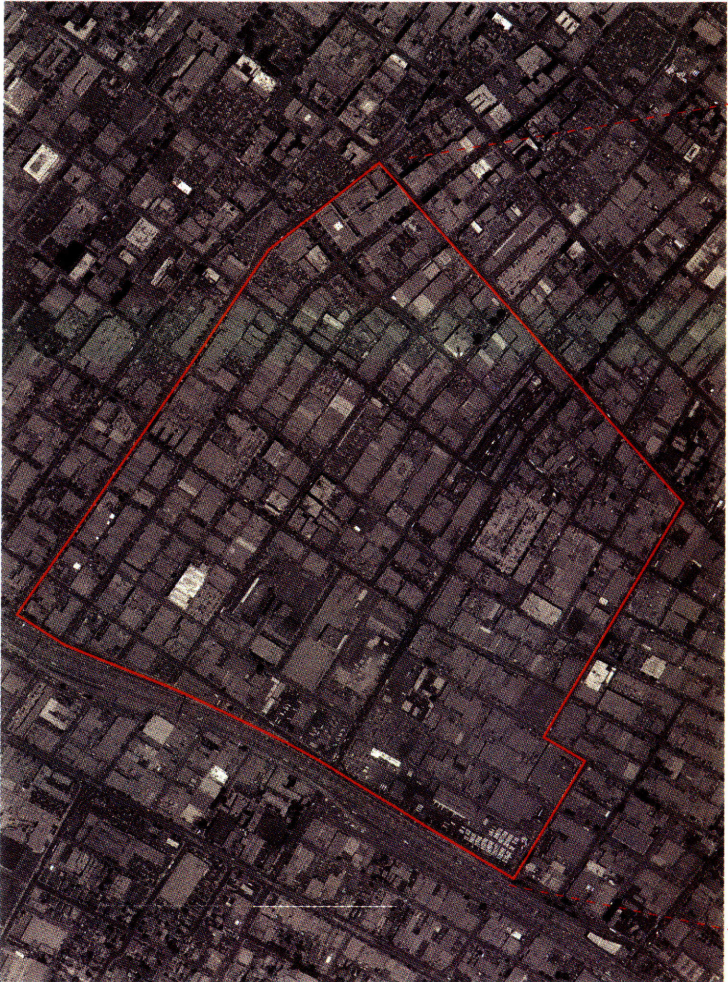
opposite page:

[map 03] Fashion District and manufacturers

[map 04] Fashion District and other industrial area



The Los Angeles Fashion District encompasses sub-districts, according to product, such as men's wear, kid's wear, textiles, and accessories. However its strength is in informal/ casual wear for juniors or for young women, that is located in the center. Recently, this area has been expanding toward the East of the district.



right:
[figure 28]
satellite image of LA fashion District

opposite page:
[figure 29]
collage of shopping in the Fashion District Los Angeles



Room 14-0551
77 Massachusetts Avenue
Cambridge, MA 02139
Ph: 617.253.5668 Fax: 617.253.1690
Email: docs@mit.edu
<http://libraries.mit.edu/docs>

DISCLAIMER OF QUALITY

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available. If you are dissatisfied with this product and find it unusable, please contact Document Services as soon as possible.

Thank you.

Pages are missing from the original document.

Pages 41-42 Missing

The district encompasses sub-districts such as men's wear, kid's wear, textiles, and accessories. However its strength is in informal/ casual wear for junior or young women which is located in the center and spreading toward the East of the district.

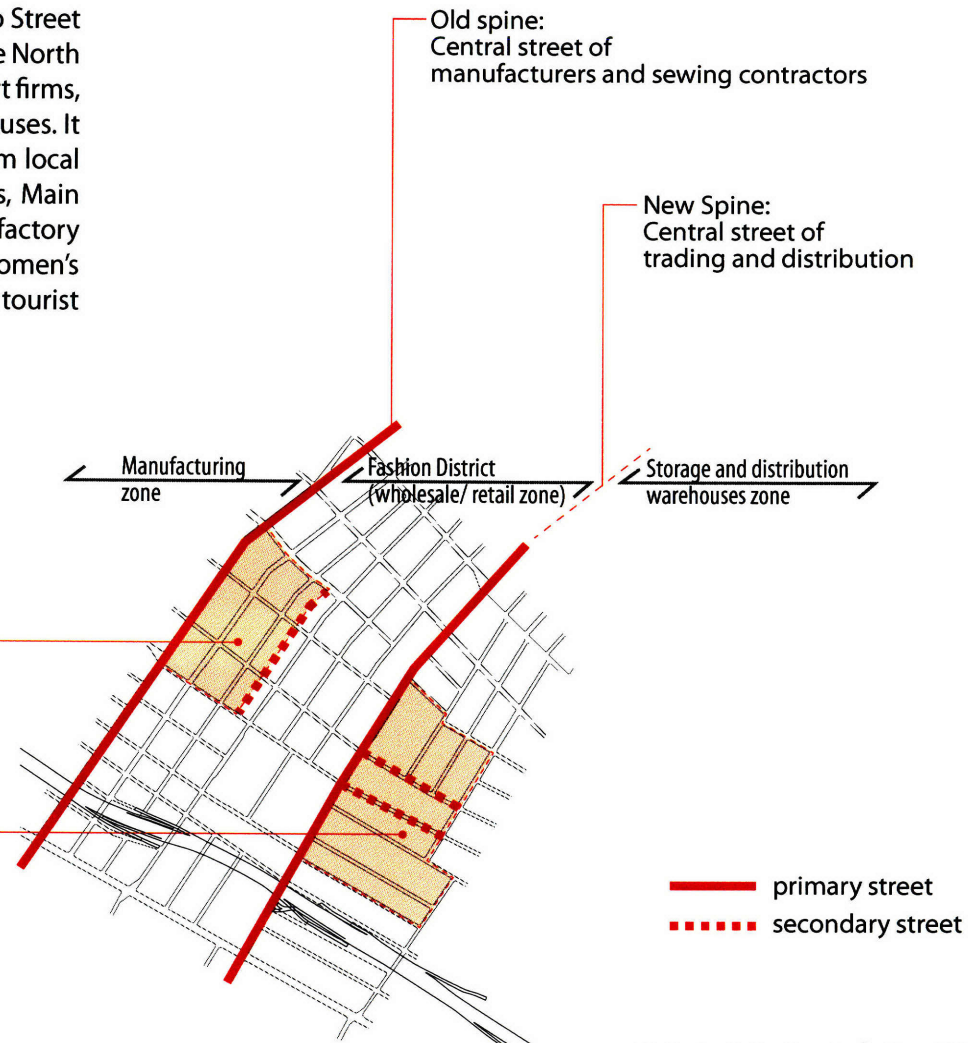
Moreover, throughout the district, we also find many street vendors selling one product or another. Some stay in a specific place everyday while others are itinerant, changing locations depending on time of the day or day of the week. Some sell clothing coming from the local wholesalers and factories while others sell secondary products such as home-cooked food and fruits or accessories and toys. On weekends, they often fill up the alleyways. Even store owners sell products, which do not fit wholesale units, on the sidewalks or alleyways. Those informal and itinerant businesses create another important sector in the district, as they attract local as well as clients further afield.



Observation 2 Industry in Transition



In the recent ten years, the center of gravity has moved to San Pedro Street as the industry expands toward the East and South. Running from the North to the South, it intersects and connects sub-clusters like textile import firms, storage suppliers, women's wear and kids' wear and storage warehouses. It corresponds to the fact that this industry has changed its focus from local manufacturing to international trade. During the past two decades, Main Street used to be the central spine in this district as it interweaved factory warehouses with sub-clusters such as men's wear, accessory and women's wear. Now it has been faded out while it finds niche in retail and tourist focused business.



right:
[map 05] shifting center of gravity

opposite page:
[map 06] manufacturers
[map 07] wholesale stores
[map 08] zone by product category

Observation 3 Underutilized surface

right:
[figure 35, 36, 37]
underutilized surface: horizontal and vertical

opposite page:
[map 09] underutilized surface: horizontal and vertical



Covered in concrete masonry units, walls facing alleyways remain dormant. Sometimes alleyways are used for delivery and service circulation such as trash truck route and packaging space. Other times they are used as informal sales areas. However, it is often the case that trash is flooding over the streets and that only weekly, monthly or seasonal delivery uses them.

On the map, marked in red are the surfaces that are seldom used, such as:

- (1) walls without windows or doors
- (2) windows that are in-filled with concrete masonry unit,
- (3) loading zone/docks that are used occasionally,
- (4) empty space above the surface parking for tenants



Design criteria were set up by

(1) interviews with local workers

such as apparel designers and sample makers, import agents, computer operator at dying factory and deliverers

(2) interviews with local educators

from PUENTE Learning Center, Centro Latino de Educación Popular and Rinaldi Adult School

(3) reviewing of the reports from "Literacy @ Work",

public/private partnership project dedicated to the advancement of workforce literacy in Greater Los Angeles

Strategy for

**accessible: adaptable: connected: symbiotic
school for immigrant workers**

[1] Underutilized surface redefined

[2] Scale of Informality

[3] Pleating infilled

below:

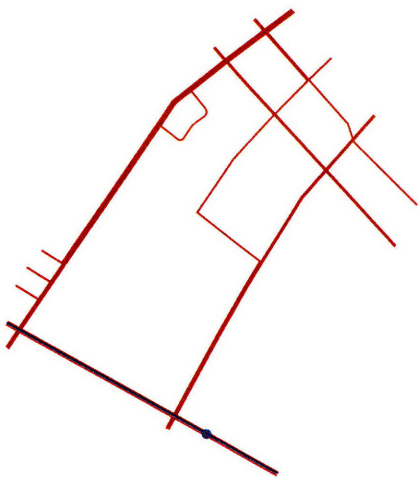
[map 10] public transportation

[map 11] factory

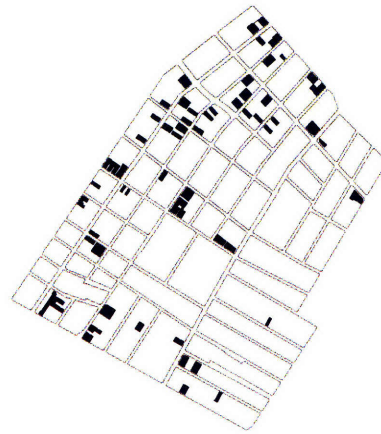
[map 12] alleyways in the LA fashion District

opposite page:

[map 13] underutilized surface



public transportation



factory



alleyways of pedestrian

Strategy 1

Underutilized Surface Redefined

1. Proximity to factories

proximity to the working place
accessibility for the local workers to the learning program

2. Proximity to public transportation and to public parking

proximity to bus stop and subway station
accessibility for workers from other area

3. Continuity

visible from the major streets
visible between one and another

4. Heavy pedestrian traffic with Light vehicular traffic

proximity to pedestrian oriented places

5. Minimum Dimension and activity

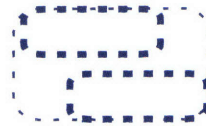
- 0' wall poster or signage
- 3' minimum occupiable space by one person
- 4' minimum passage width
- 6' one row of desk and chair including pass
- 9' allowable width for a vehicle upto minivan size
- 12' minimum width for trash truck and UPS truck
minimum small group space
- 24' average width of alleyways in the apparel industry area in Los Angeles
(allowing trailer truck access in some cases)
- 30' regular classroom size (minimum area 960 sq.ft.)
minimum kindergarten classroom
(minimum area 1350 sq.ft. including restrooms, storage, teacher preparation, wet and dry areas)



Alleyway reclaimed:

from temporal stall to permanent structure

Throughout the Fashion District, one can find street vendors and temporary carts selling accessories, handbags, socks or fruits. On weekends, more vendors come to claim spaces in front of construction sites, closed stores, parking lots and back alleyways. Wholesale stores also sell off-season products or leftovers at the sidewalk. At the other corner of the streets, some people collect cardboard boxes that were thrown out.



Strategy 2

Scale of informality

Informality permeates every aspect of the functioning of society. It is a vast real – multiplicity of niches – where human beings place themselves, either prior to the advent of an imposed formal system or within the nooks and crannies of the societal system. They do so in order to deal effectively with the routine issues of everyday life. Informality is a structure of action that contains both harmonious (adaptation) and contradictory (resistance) relationships. It is a site of power in relations to external disciplinary and control power. (Laguerre, 1994)

opposite page:

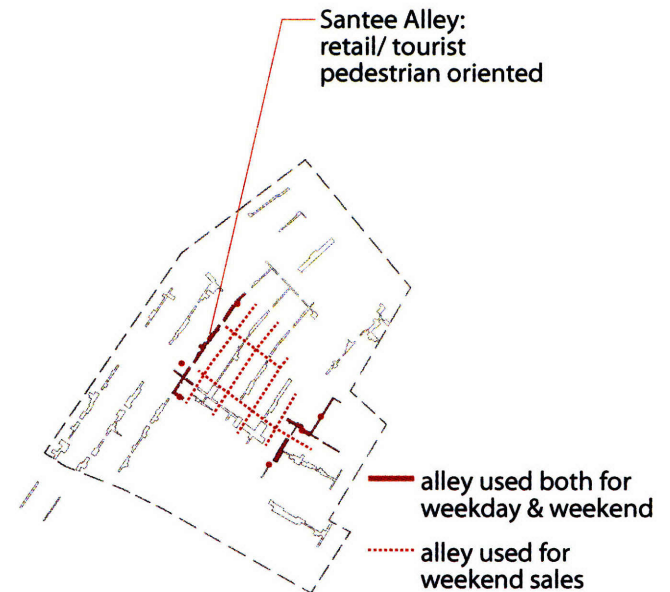
[figure 38] alleyway vendor on weekend

[figure 39] semi-permanent sun shade on the Santee Alley

[figure 40] roof and parking structure added on the Santee Alley

right:

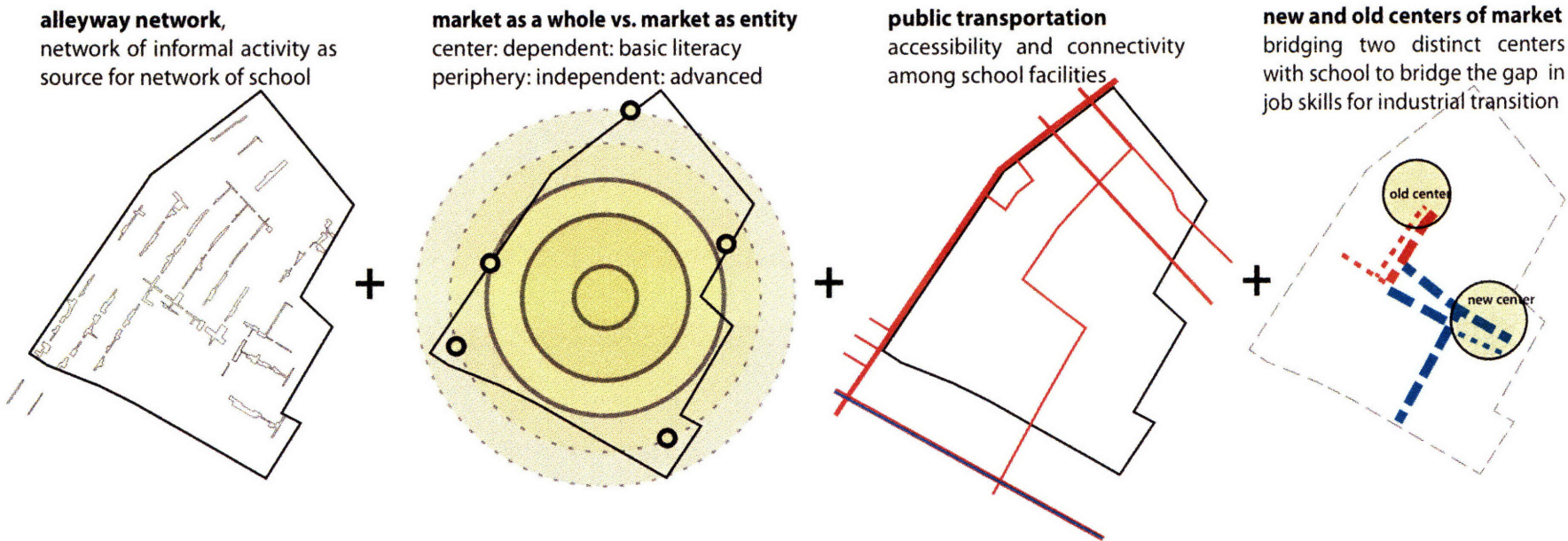
[map 14] keymap



Alleyway reclaimed:

from temporal booth to permanent classroom

Scale of informality is a measure that organizes school program throughout the alleyways. Three scales of school facilities - center, satellite and bridge - are proposed in accordance with site conditions. As such, each facility interweaves both physically and visually, and it supports each block/sector.



Three types of school are proposed in accordance with informality. "Center" is a heart of this school assembly and a school designed for people who need care mostly such as childcare, Spanish Basic Literacy, and ESL. It is formal classroom type educational facility which also facilitates small counseling rooms and small group near by. "Satellite" is a type of school designed for apparel industry-specific education and small size advanced level ESL. Small group rooms and public corridors are designed to accommodate buyer's lounges or display areas. "Bridge" is a connector between the center and the satellite. It supports independent learning through library and distance learning center or it also supports centers and satellite as education resource inventory.

C : Center

S : Satellite

B : Bridge

opposite page:

[figure 41] diagram 1: alleyways

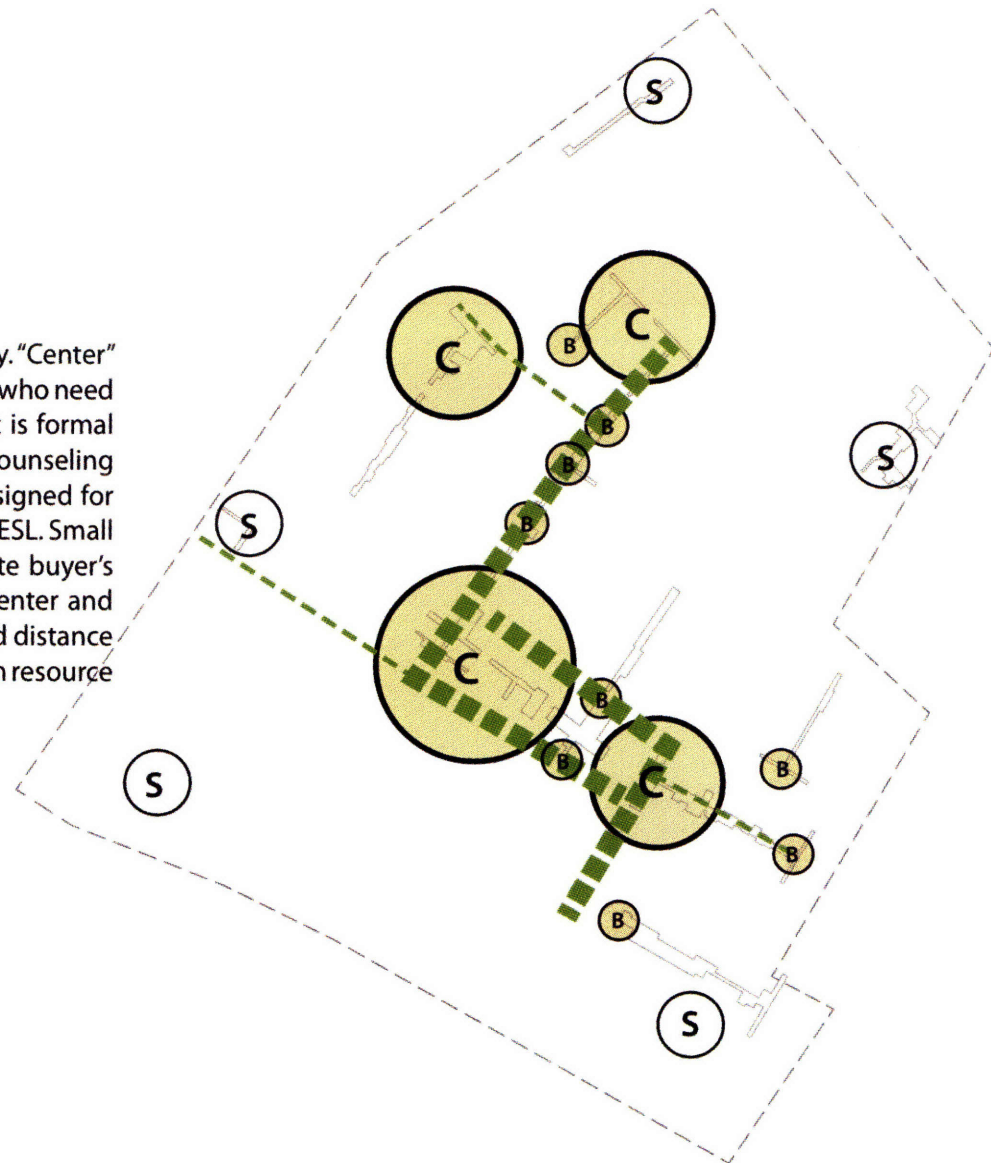
[figure 42] diagram 2: centrality

[figure 43] diagram 3: public transportation

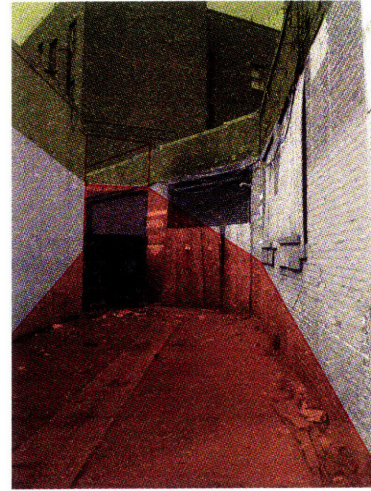
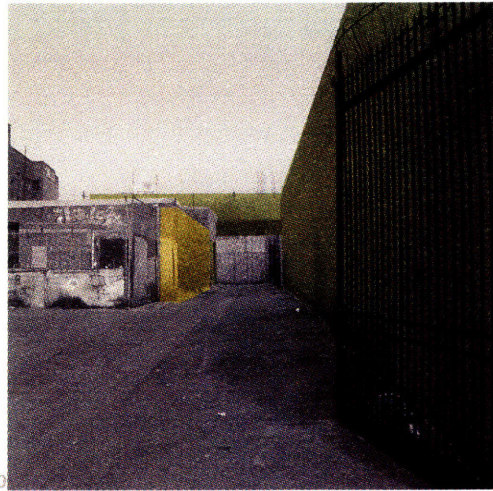
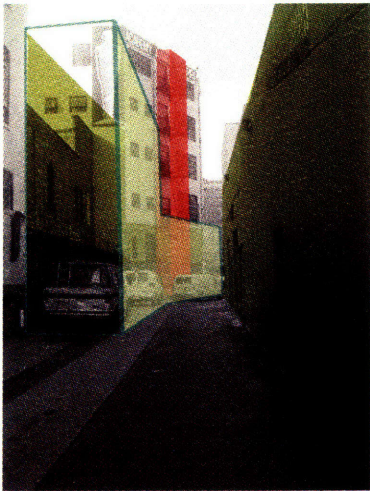
[figure 44] diagram 4: old and new center

right:

[figure 45] learning program locations



school 1:
satellites



left:
[figure 46] concep diagram:
learning place engagement at alleyways
(Satellite)

opposite page:
[figure 47] circulation diagram
[figure 48] distribution of learning facilities

[1] Location:

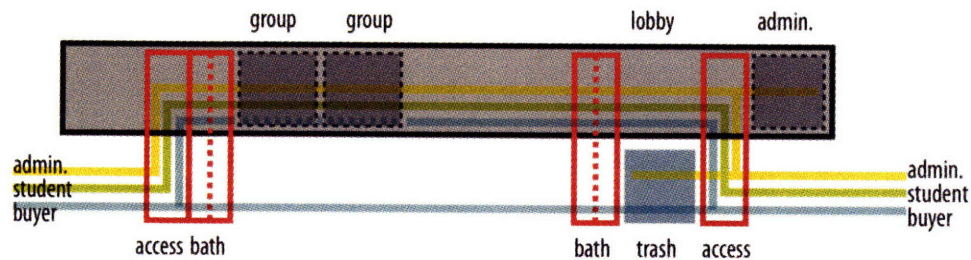
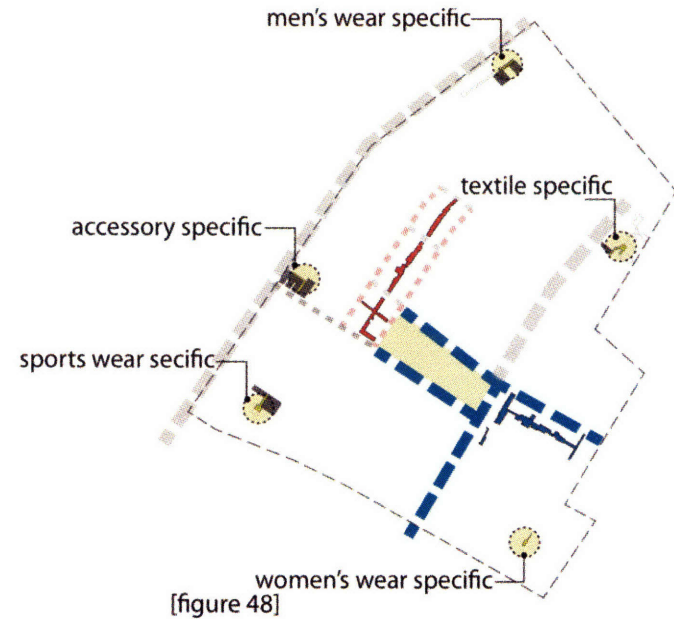
- + At the alleyway
- + On periphery of the Fashion District
- + One for each sub-sector
such as men's wear, women's wear, kids' wear, accessory and textile

[2] Program:

- + Small group focused education
- + Industry specific education (workforce education)
- + Group room shared as buyer's lounge or meeting room
- + Group room shared as temporary childcare
- + Public amenity: bathroom, rest area with chairs and benches, public phone

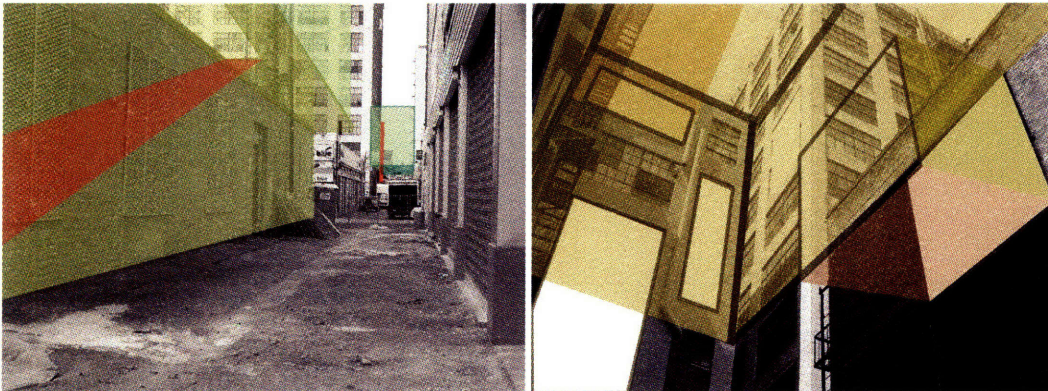
[3] Circulation:

- + Learning facilities on upper level - accessed from adjacent building
- + Public amenity on lower level
- + Industrial circulation on lower level : trash delivery



[figure 47]

school 2:
centers



left:
[figure 49] concep diagram:
learning place engagement at alleyways
(Center: Childcare and classrooms)

opposite page:
[figure 50] circulation diagram
[figure 51] distribution of learning facilities

[1] Location:

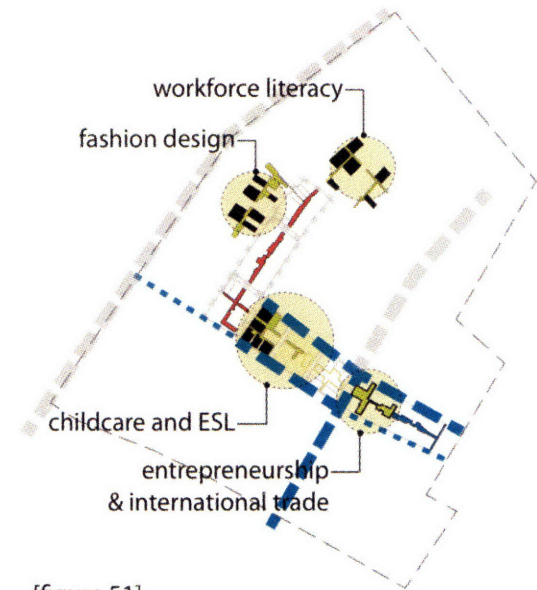
- + At the alleyway
- + At the center of the Fashion District

[2] Program:

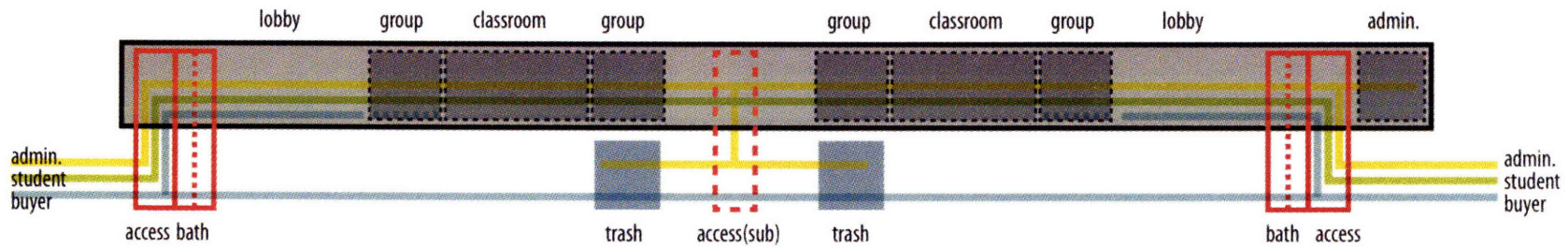
- + Basic Literacy Center for adults
- + E-Learning Literacy for adults
- + Large group classes
- + Daycare Center (after school)
- + Public amenity: bathroom, rest area with chairs and benches, public phone

[3] Circulation:

- + Learning facilities on upper level - accessed from adjacent building
- + Public amenity on lower level
- + Industrial circulation on lower level : trash delivery

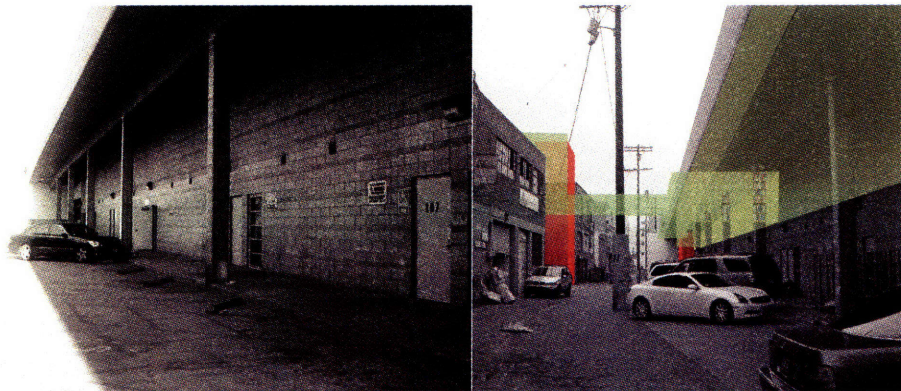


[figure 51]



[figure 50]

school 3:
bridges



left:
concept diagram of
learning place engagement at alleyways
(Bridges)

left:
[figure 52] concept diagram:
learning place engagement at alleyways
(Bridges)

opposite page:
[figure 53] circulation diagram
[figure 54] distribution of learning facilities

[1] Location:

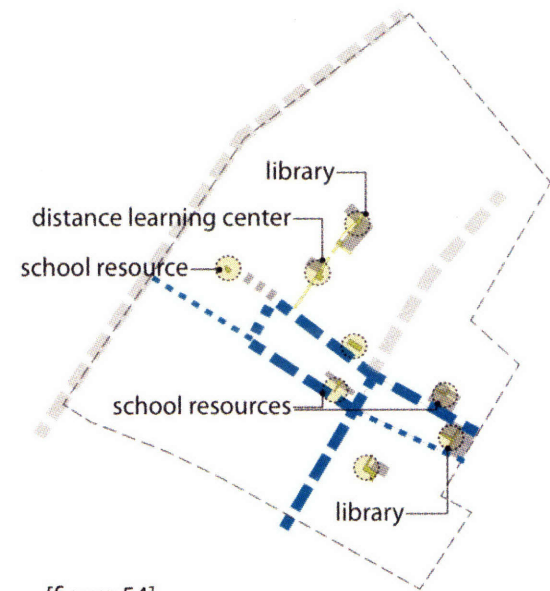
- + At the alleyway
- + Between one center and another, between center and satellite

[2] Program:

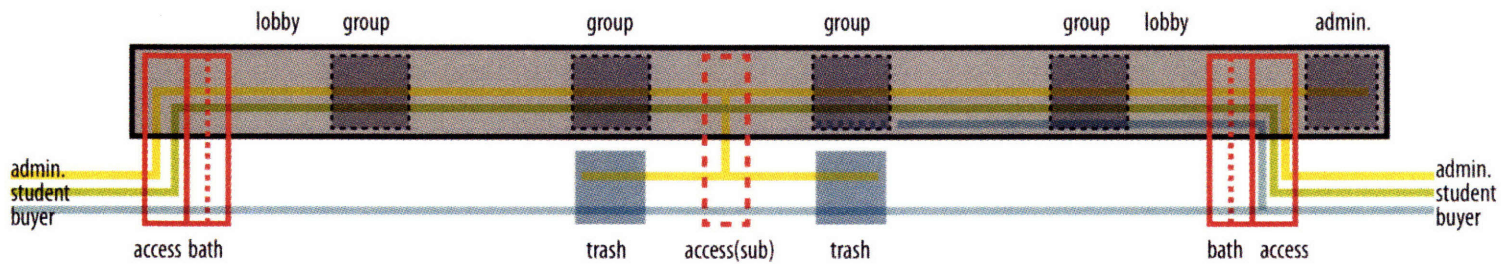
- + Resources center for centers and satellite
- + Distance learning support center/ library
- + Storage for education resources
- + Public amenity: bathroom, rest area with chairs and benches, public phone

[3] Circulation:

- + Learning facilities on upper level - accessed from adjacent building
- + Public amenity on lower level
- + Industrial circulation on lower level : trash delivery

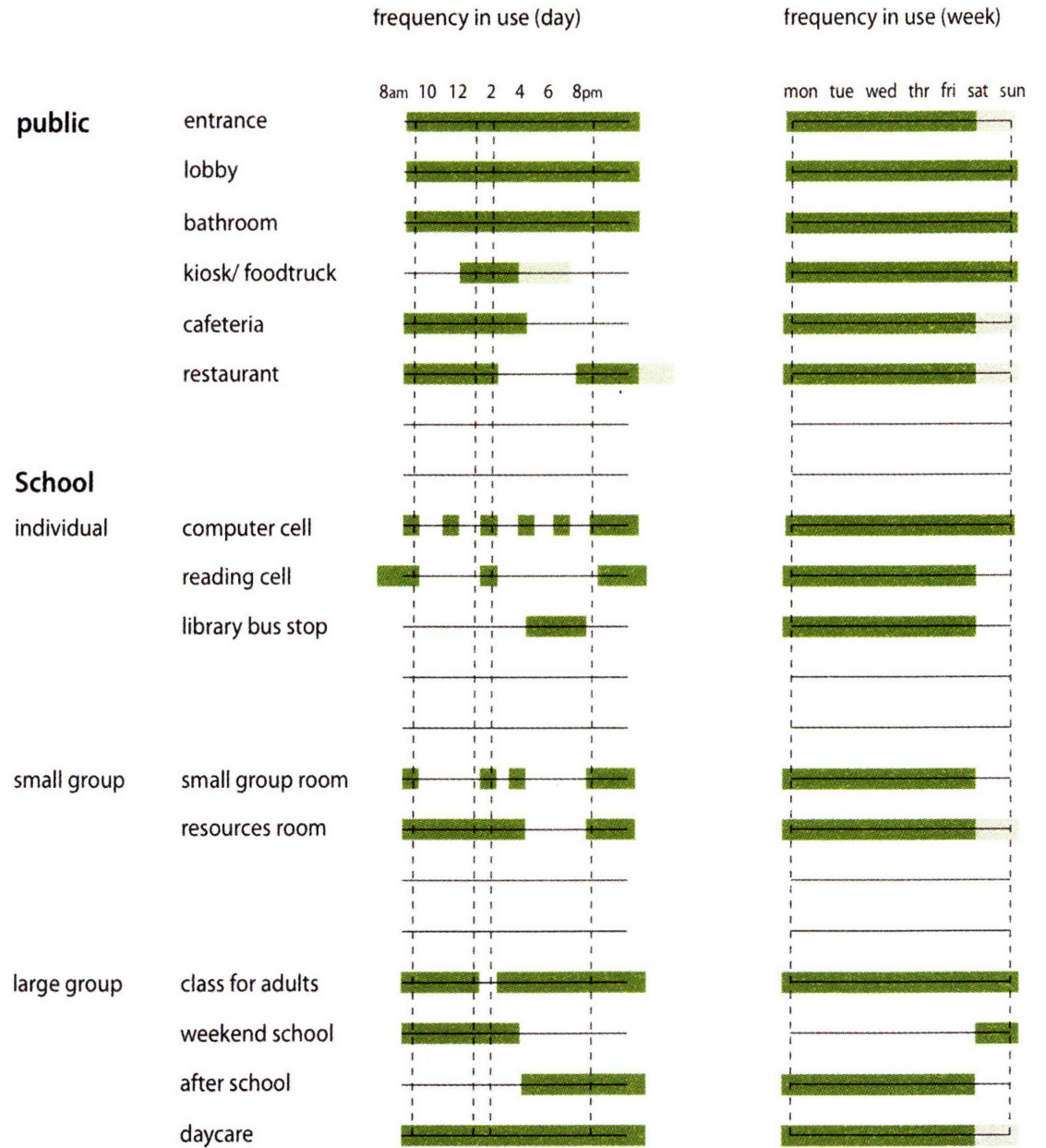


[figure 54]



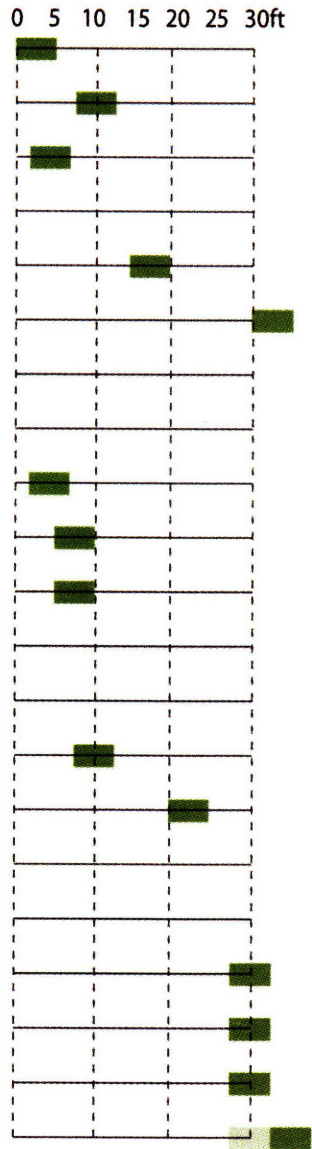
[figure 53]

school program analysis

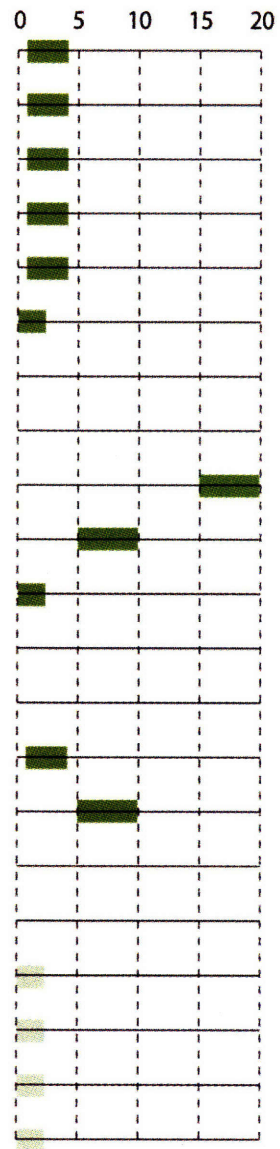


right:
[figure 55] diagram:
time-space frequency analysis of learning facilities

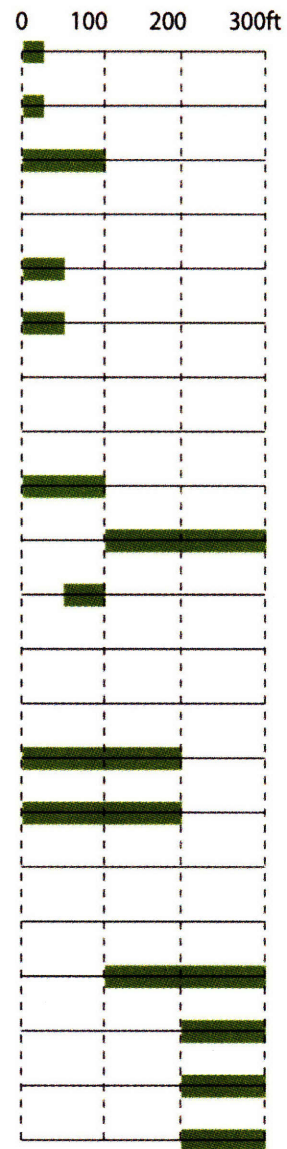
size of facilities



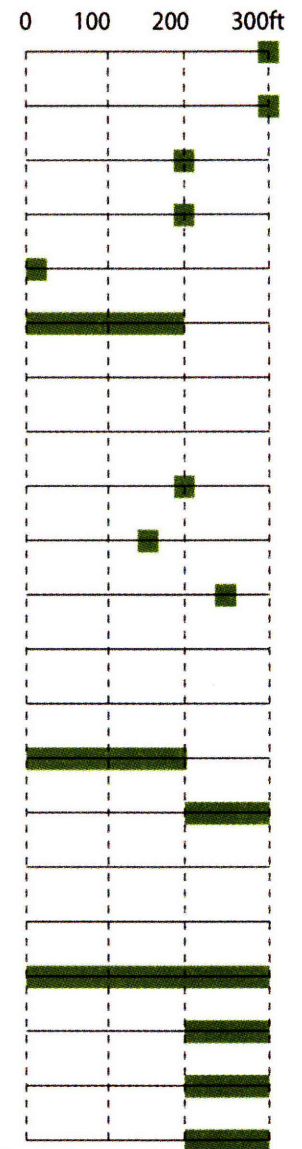
frequency in space:
how many in one block?

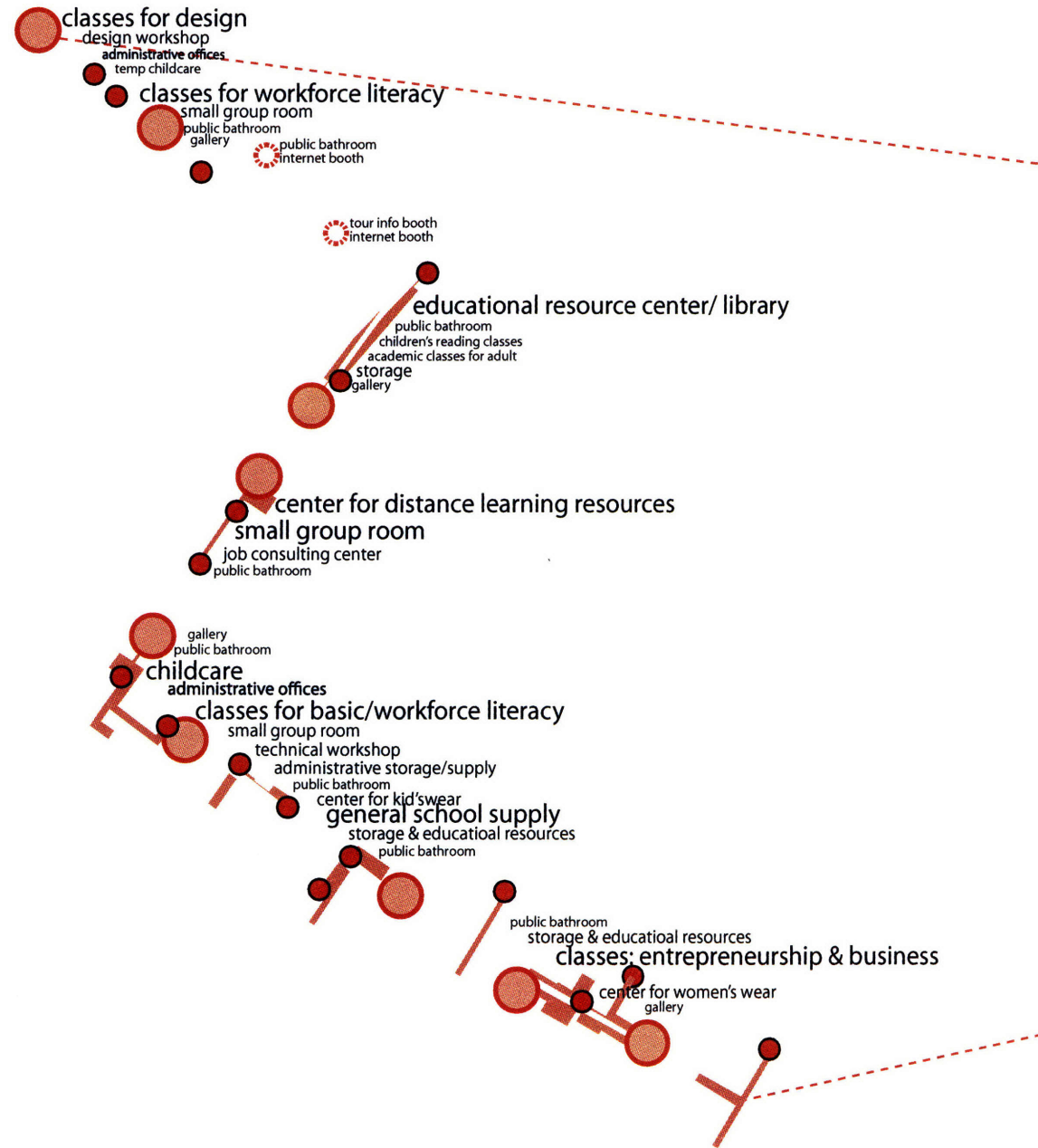


adjacency 1:
distance from major street



adjacency 2:
distance between facilities








For further study, two areas were selected. One area that is located in the center of the fashion district includes childcare, basic literacy and computer literacy classes for adults, library, and distance learning center. (blown up area shown below) The other area is a satellite school that supports men's wear sub-sector.

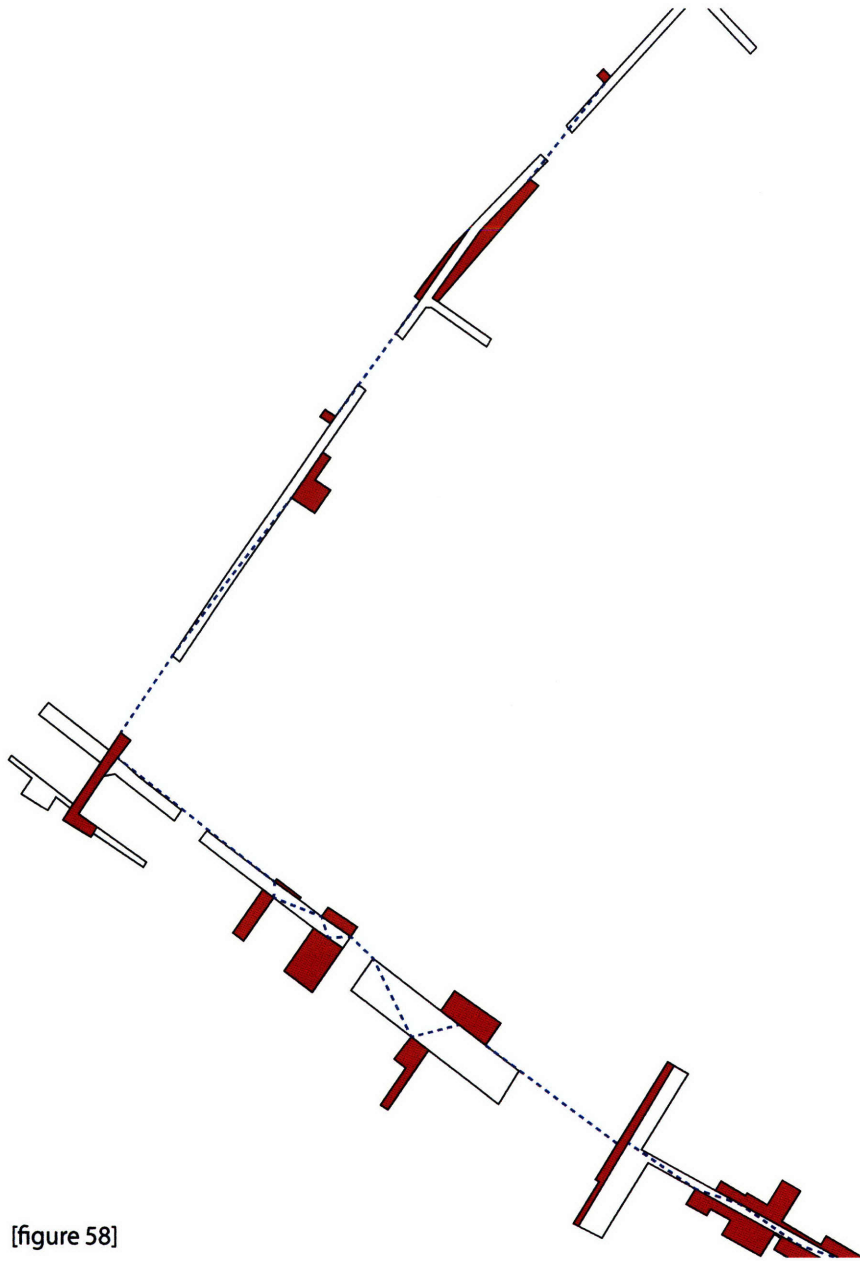


right:
[figure 56] site plan 1

opposite page:
[figure 57] site plan 2: earning program in detail

-  alleyway with learning facilities
-  primary access: elevator + stair
-  secondary access: stair

opposite page:
[figure 58] sites infilled
[figure 59] sites infilled (satellite school)

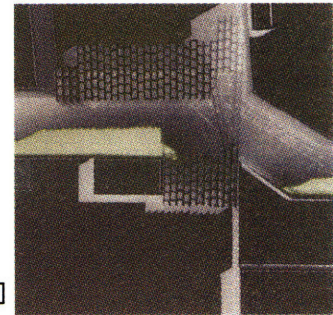


[figure 58]

Strategy 3

Infill pleated

Underutilized surfaces are infilled by schools. Flexible, yet a structurally reliable systematic folding structure, PLEAT is explored as architectural strategy to adopt various locations, shapes and sizes of the leftover spaces. The relationships to existing buildings, lighting requirement, and types of usage determine the density of the pleats, the size of the crease and location of intermediate panels. These intermediate panels determine the use of the space and the circulation as they demarcate the position of each pleat and porosity of the panels.



[figure 59]

pleat

–noun 1. a fold of definite, even width made by doubling cloth or the like upon itself and pressing or stitching it in place.

–verb (used with object) 2. to fold or arrange in pleats.

infill

–verb (used with object) 1. to fill in

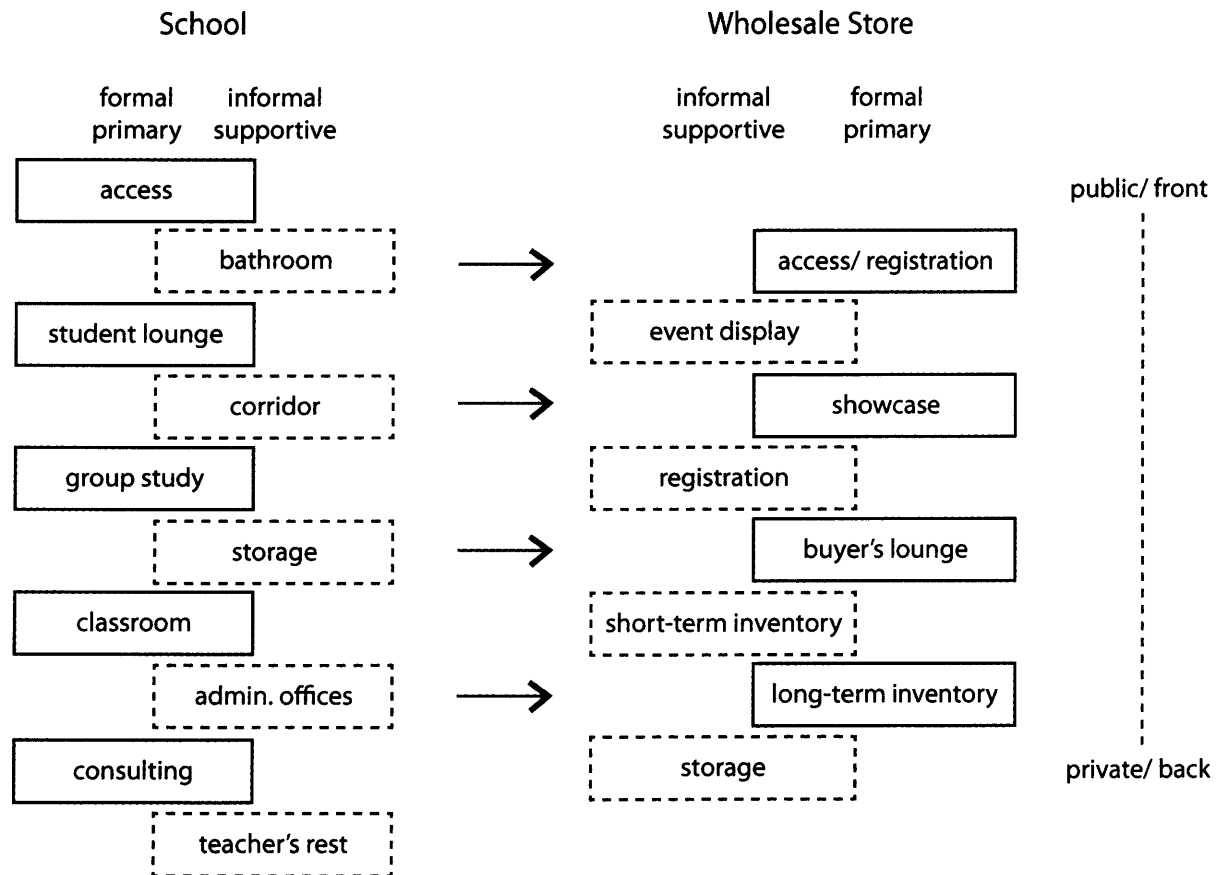
–noun 2. the planned conversion of empty lots, underused or rundown buildings, and other available space in densely built-up urban and suburban areas for use as sites for commercial buildings and housing, frequently as an alternative to overdevelopment of rural areas.

–adjective 3. of, pertaining to, or involving the use of infill in urban planning: infill condominium projects.

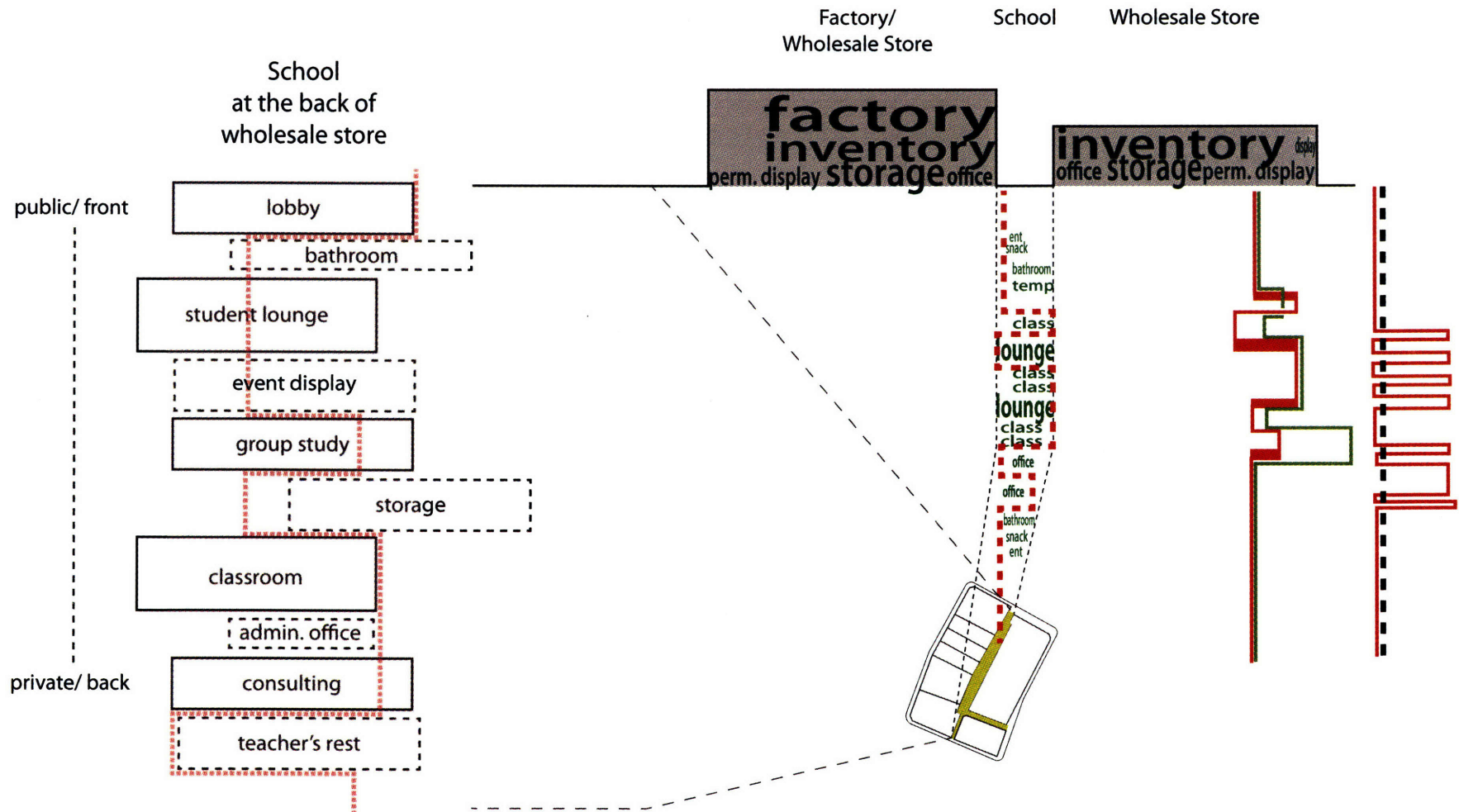
pleating:

Interweaving program

As new fronts at the back alley, the school programs interweave with the original alleyway programs as service circulation of wholesale stores. Pleating walls expand/contract, push out/ pull in, or lengthen/ shorten in accordance with program arrangement.



right & opposite page:
[figure 60] interweaving program
between school and store



criteria for infilling and pleating:

Turn back to front / Pull in Light / Lift

Schools are lifted up to avoid industrial circulation such as clothing delivery and trash and to take advantage of better sunlight. This method also allows direct access from the factory or mezzanine/ second level of the wholesale stores which mostly support parking or storage function. Trash rooms sometimes also act to support the lifted structure.

opposite page:

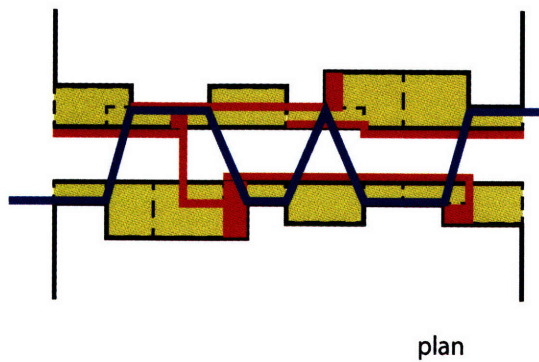
[figure 61] diagram 1: shcool and circulation

[figure 62] diagram 2: school and light

[figure 63] diagram 3: shcool and trash

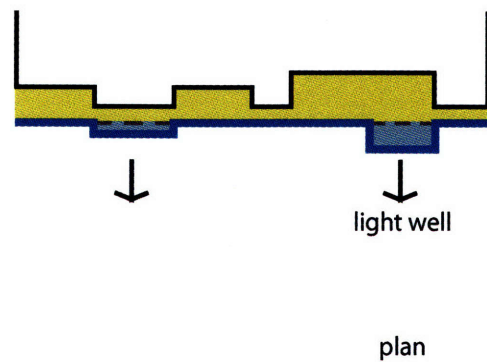
Turn Back to Front

- + New Interface on the back
- + Physical connection
Circulation that connects each classroom with other collective spaces and that connects admin offices with resources
- + Visual connection
between childcare and adult education
between childcare and workplace
between admin offices and resources



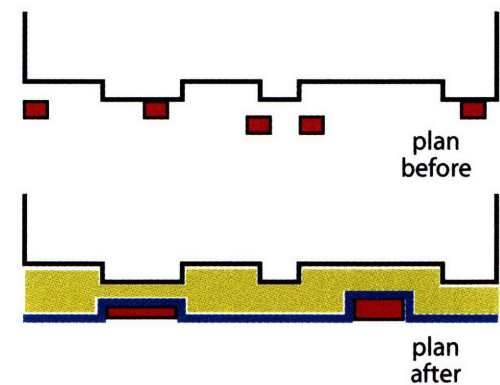
Pulling light and air in

- + Light inserted by pulling pleatings further out to catch lighting
- + Ventilation circulated through wind chimney that is created between school and existing buildings



Lifting

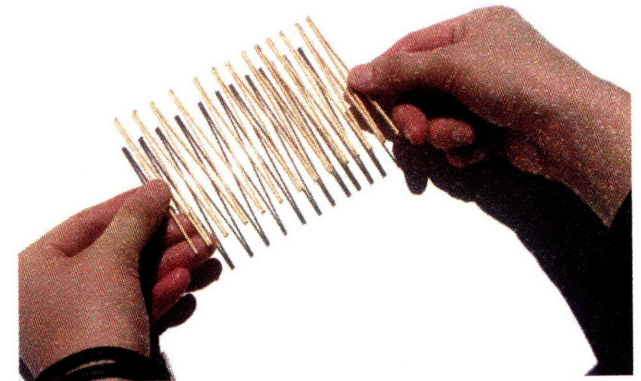
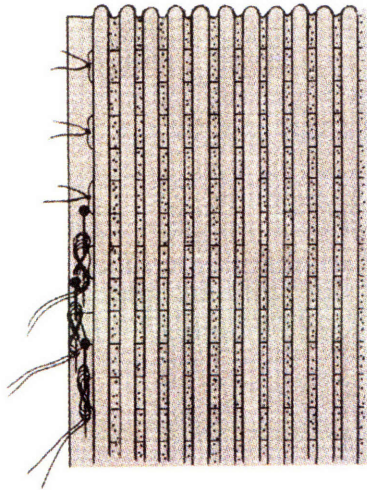
- + Elevated learning facilities
- + trash rooms are located to support the lifted structure



Pleating study:
in FABRIC

Pleats are measured folds formed at the edge of a piece of fabric where they are secured with stitching. Beyond the stitching, pleats become loose folds that continue the arrangement set at the edge.

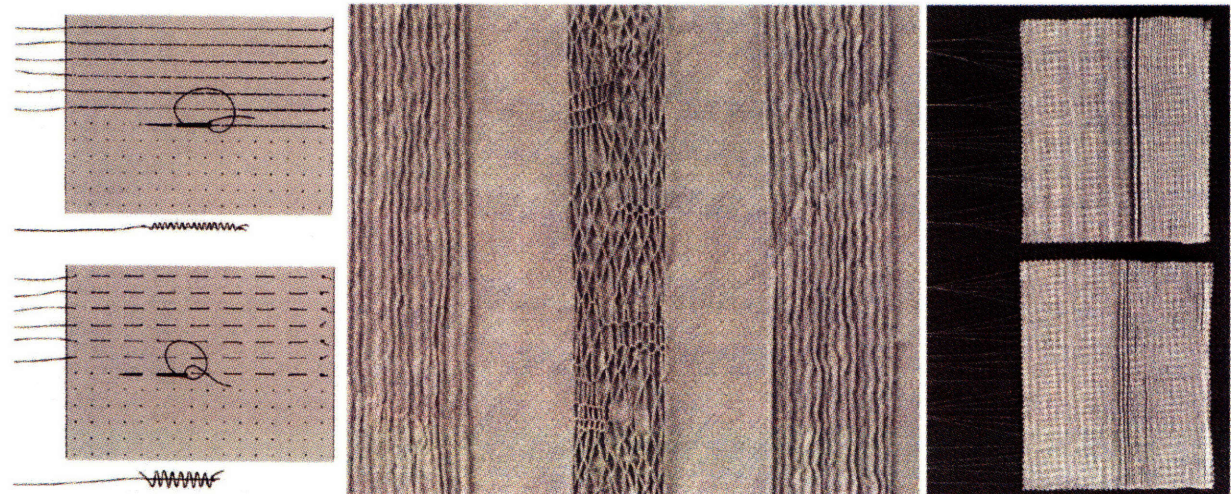
At the edge, pleat folds are either leveled or manipulated to project. The folds are released in sharply creased order, or they continue unpressed and modify into softly spreading rolls. After reducing fabric measurement at the source, the full extent of the pleated fabric becomes accessible where the folds are unconfined, all the way to an opposite edge that floats or another edge where the folds are again secured with stitching. (Wolff, 1996)



Through stitching and modeling, I explored types/ variations of pleating and manipulation technique with stitching in order to translate this fabric manipulation skill to architectural tectonic strategy. Pleating gets its structural volume from repetitive edges of folded surfaces and from manipulation technique that stitches each fold to others. On the one hand, pleating is flexible as size and distance between each crease give variation to pleated form. On the other hand, pleating is structurally stable as threads penetrating through the pleats secure creases at certain position.

opposite page (from the left to the right):
[figure 64, 65]
pleat structure study model - bass wood

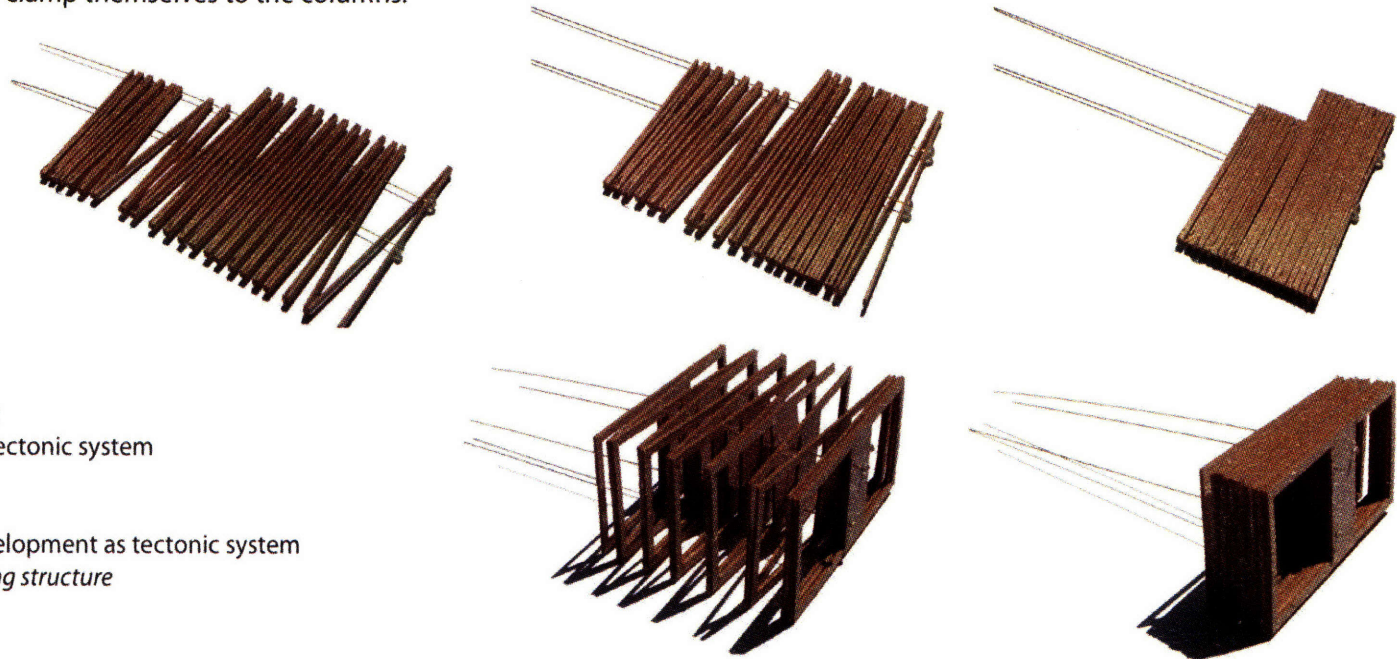
right (from the left to the right):
[figure 66,67,68]
pleating as fabric manipulation technique
showing relationship between thread and pleat



Pleating study:

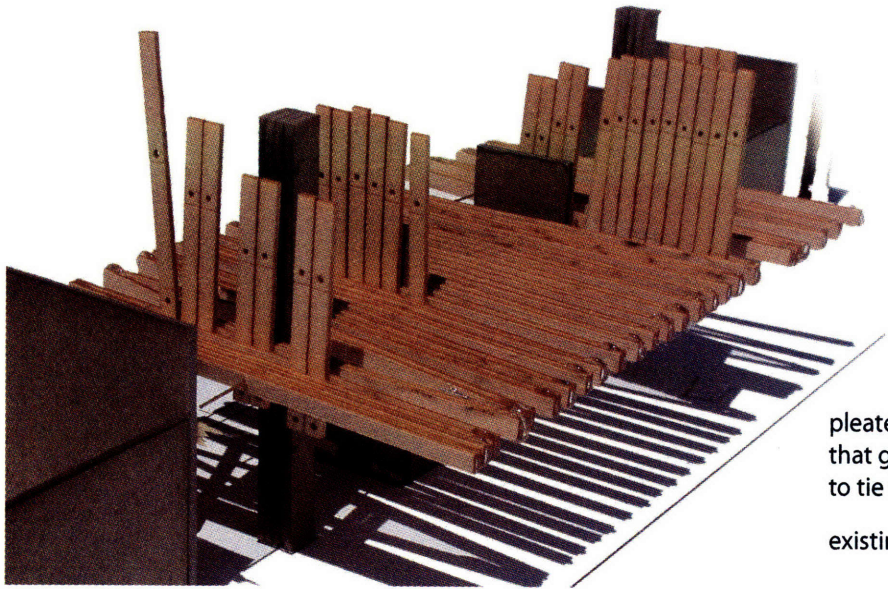
Expansion and Contraction for parasitic system

Similar to ones in fabric, pleats of basswood model can be controlled by penetrating threads. And by compressing the existing column or walls, those pleats can be attached to the existing structure and hung from it. To increase the attached surface area, the pleat structure was developed to become an occupiable shape – a vierendeel truss. Repetitive vierendeel trusses run from one column (existing) to another (existing), creating accordion pleats as they clamp themselves to the columns.

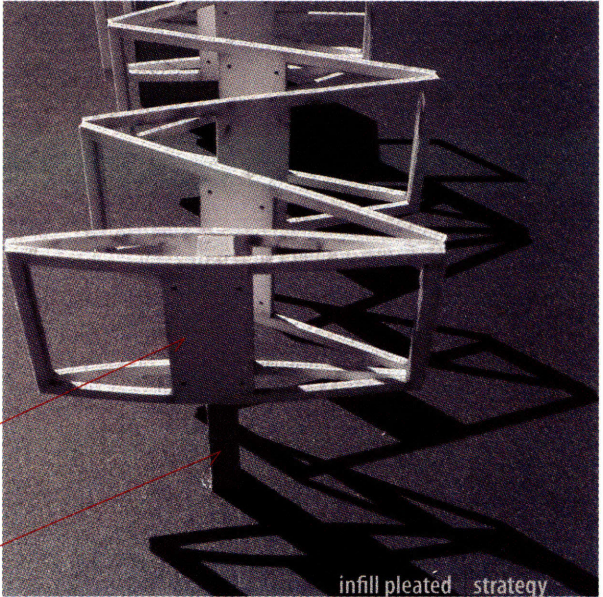
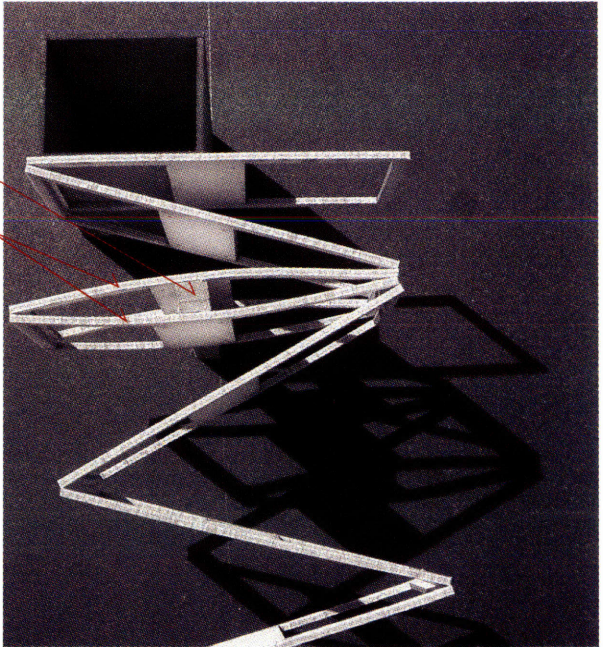


right:
[figure 69, 70] study model:
pleating development as tectonic system

opposite page:
[figure 71,72] pleating development as tectonic system
how to integrate with existing structure



existing column
pleated vierendeel trusses
that get compressed
to tie to the existing structure



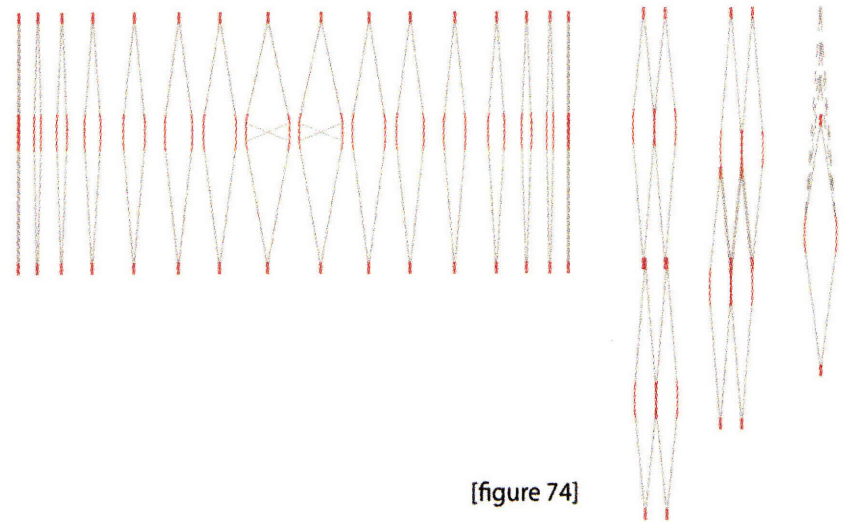
pleated vierendeel trusses
that get compressed
to tie to the existing structure
existing column

infill pleated strategy

Pleating:

Expansion and Contraction for space adjustment

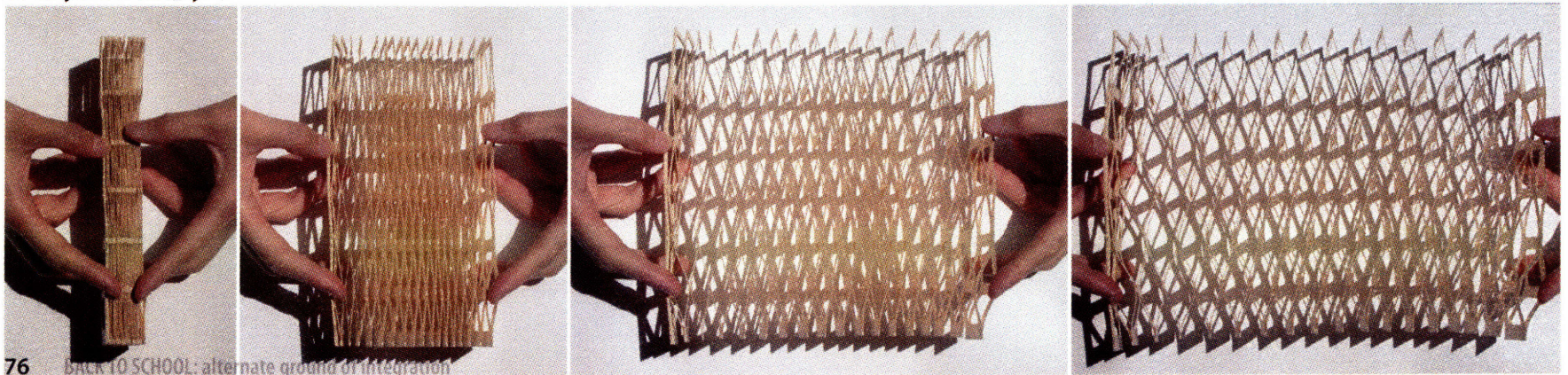
Continuous vierendeel trusses that are made of light gage steel plate can be manufactured in factory and delivered as compressed shape. As they expand, they create gathering spaces or classroom and allow brighter, larger space; as they contract, they create education resource stacks, smaller rooms or bathrooms.

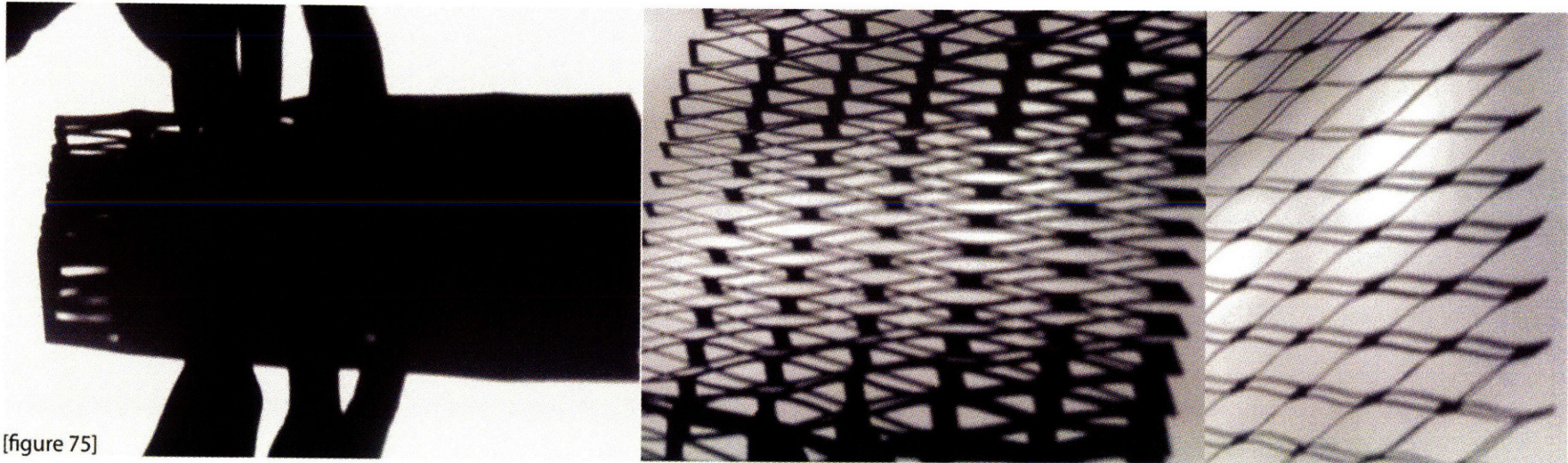


above:
variation in length, angle and density

[figure 74]

below:
expansion and contraction of pleat
density and flexibility



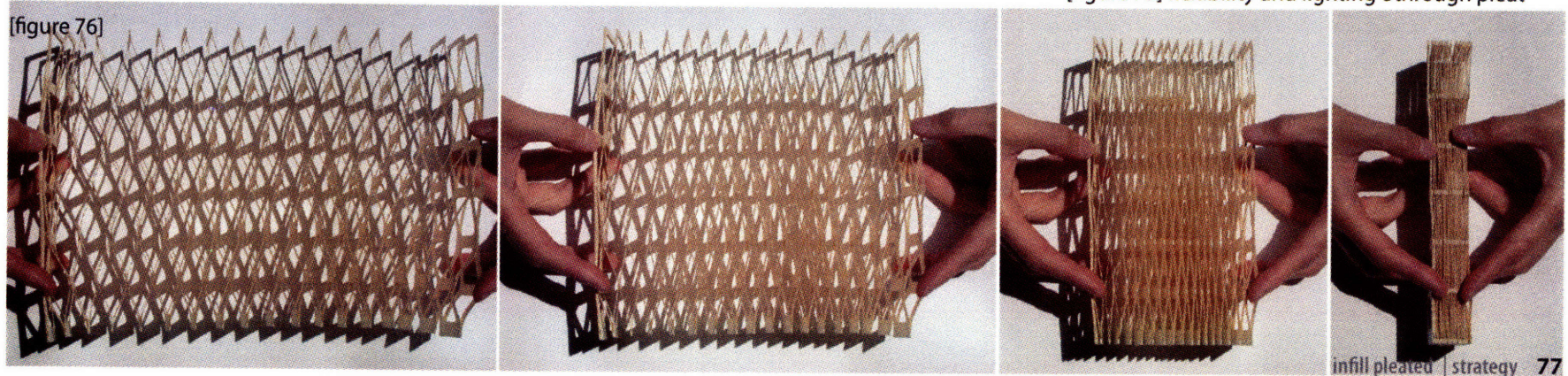


[figure 75]

opposite page:
[figure 73] study model:
variation of pleat

up:
[figure 74] pleating development as tectonic system
lighting through pleat

below:
[figure 75] flexibility and lighting through pleat



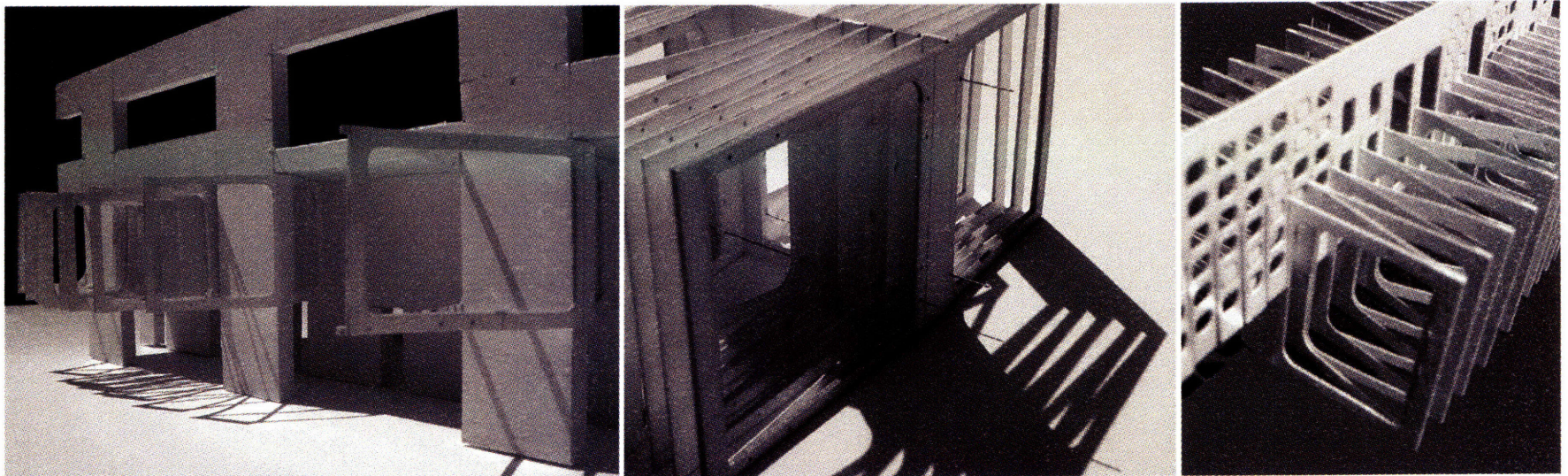
[figure 76]

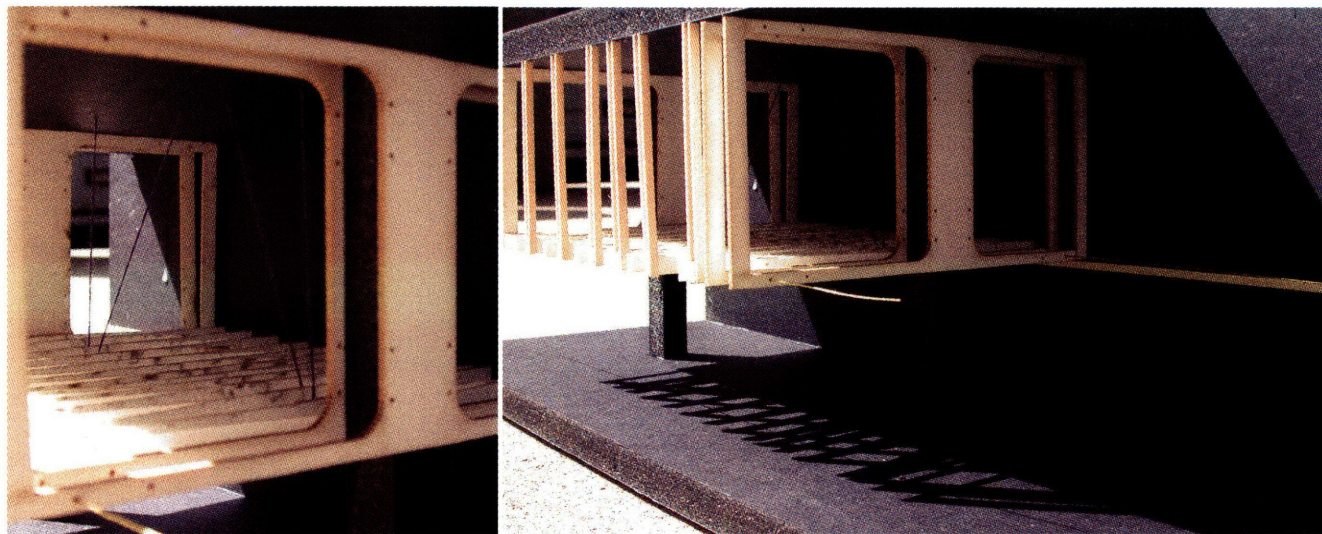
Pleating:

Expansion and Contraction for stability

Because of their weight and shape, pleated trusses sag as they go further from the attached part. To deal with this problem, I have introduced “third” elements such as hanging cable, tension threads and panels by re-interpreting the ‘thread’ in a fabric model.

Intermediate panels inserted between pleats could function as compression elements that control the density of pleats. They can be placed in various ways to create different spatial qualities.





opposit page:
[figure 76,77,78]
pleating as tectonic system
how to stablize the position of pleasts

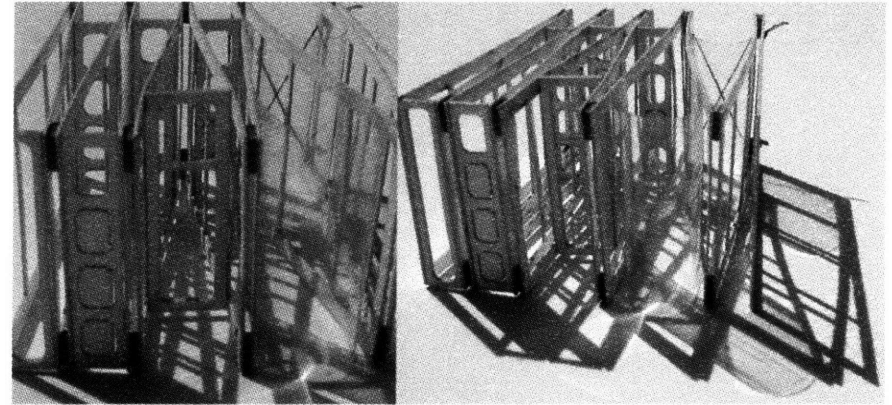
left:
[figure 79, 80]
pleating as tectonic system
clamped pleats to the existing structure

Pleating:

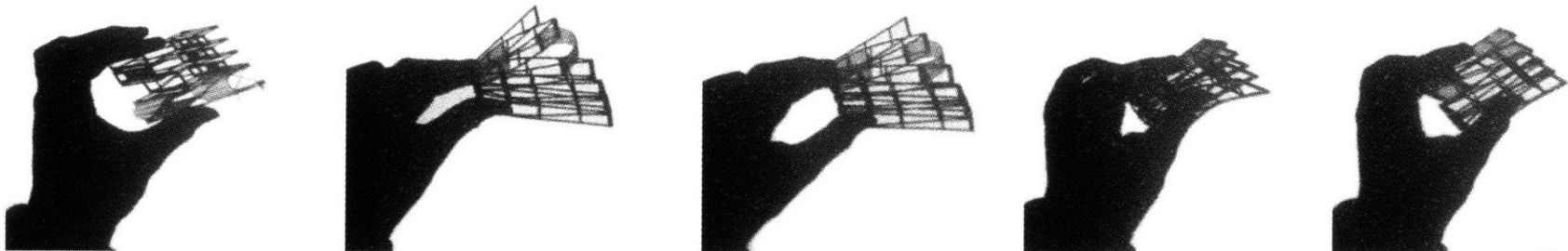
Variation and Flexibility in space division

Intermediate panels inserted between pleats could function as compression elements that control the density of pleats. They can be placed in various ways to create different spatial qualities.

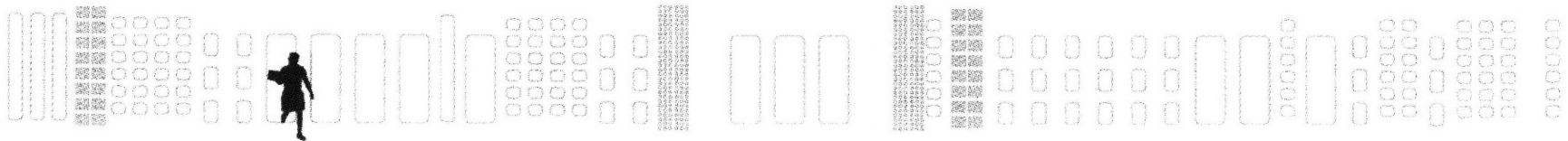
The perforation of the panels allows diverse use of the panels
The location of the panels creates various shape and size of rooms
The material type of the panels gives variety in transparency, texture and flexibility



[figure81]



[figure 82]



[figure 83]

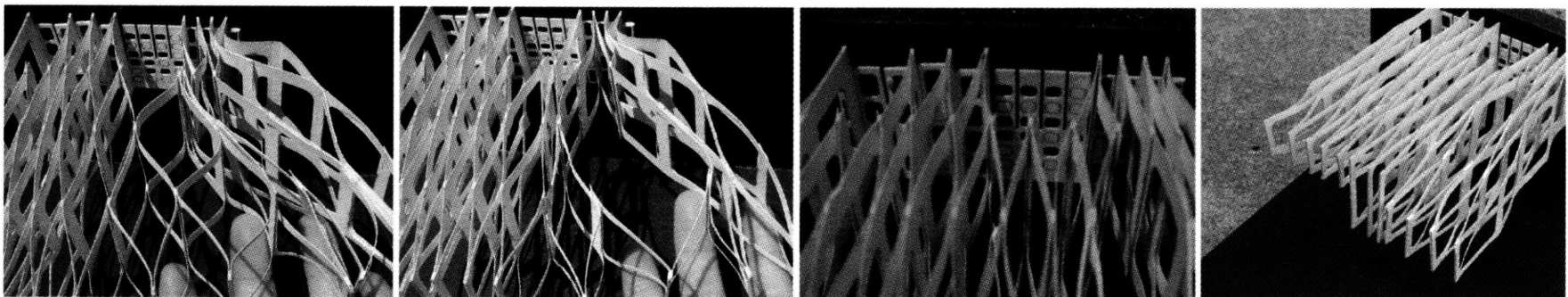
opposit page:

[figure 81, 82] materiality of intermediate panels

above:

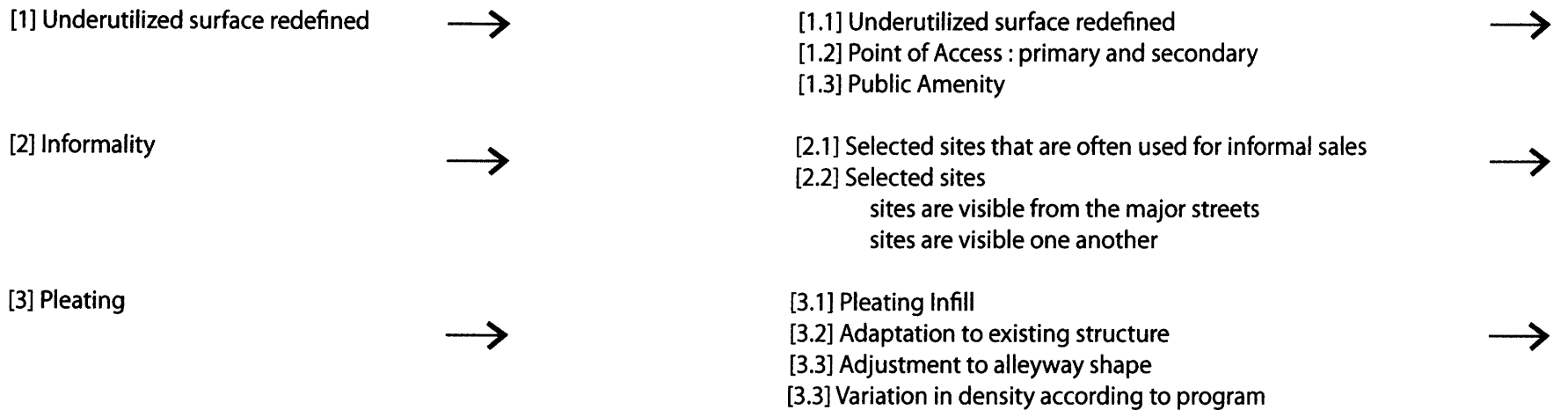
[figure 83] porosity of intermediate panels

[figure 84] flexibility and density of pleats 2



[figure 84]

Underutilized Surface + Informality + Pleating Infill:
design strategy



opposit page:
[figure 85] design steps laid out

The diagram on the opposite page and further designs were developed based on the site of library. The site of the library was selected for design in detail because this site has the most restricted condition because of the existing building and because it is located in the middle of the learning corridor between the distance learning center and the classrooms for adults.

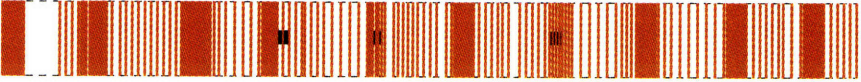
site defined



pleat inserted



pleat intensified:
adaptation to exiting structure



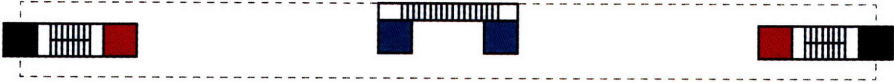
primary access: at each end of site
secondary access: in the middle of site



bathroom:
next to the primary access



trash:
next to the secondary access

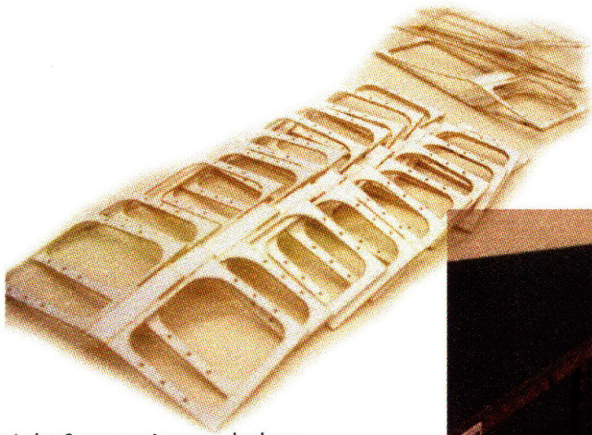
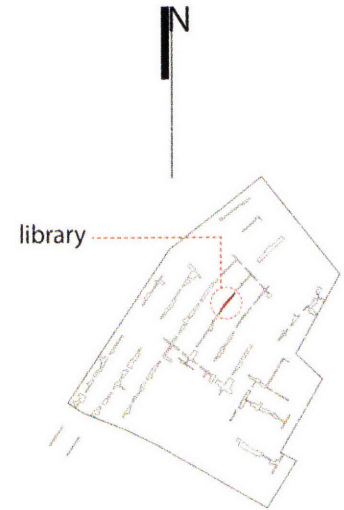


interior panel inserted



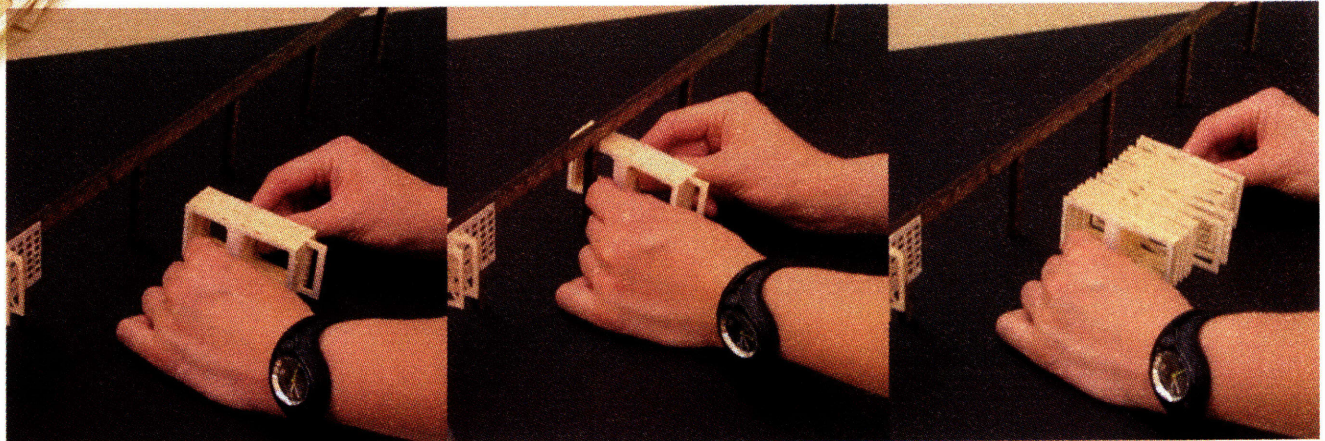
Underutilized Surface + Informality + Pleating Infill:
library

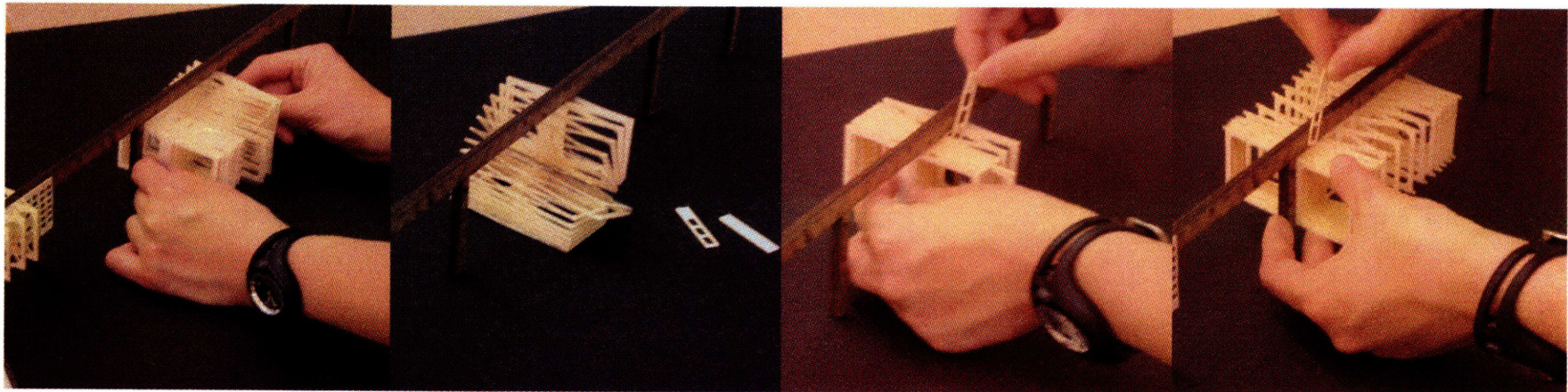
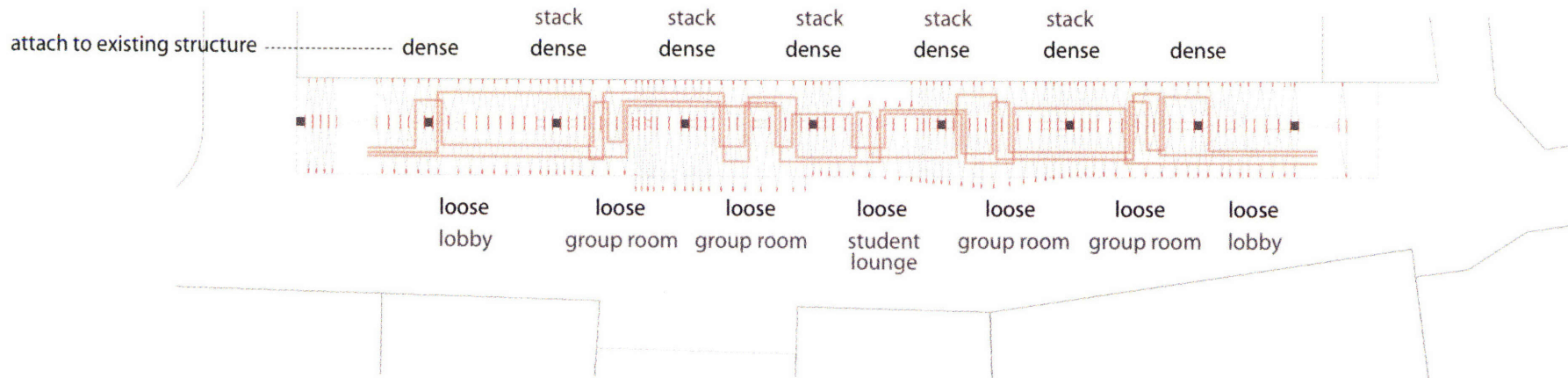
The new pleating structure clamps itself on the existing structure while intermediate panels are inserted in-between. Pleating structure can be pre-fabricated in the factory and transported in collapsed form. As it expands to create occupiable volume, panels are inserted to fix the position of the pleats. In this case, the panels become bookshelves or material stacks when placed in compressed pleats; they allow people to pass through when placed in expanded pleats.



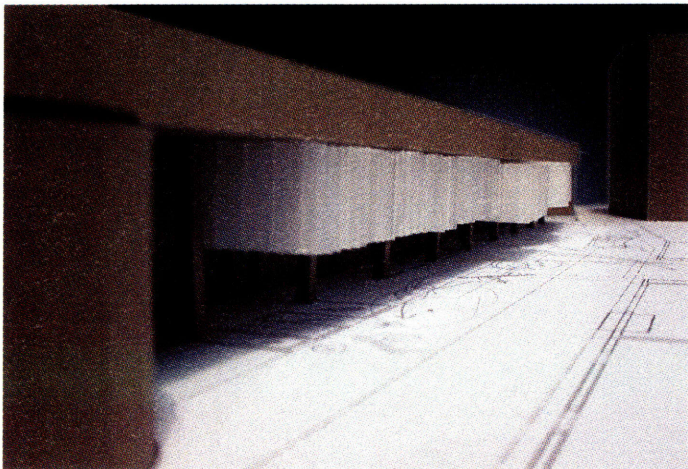
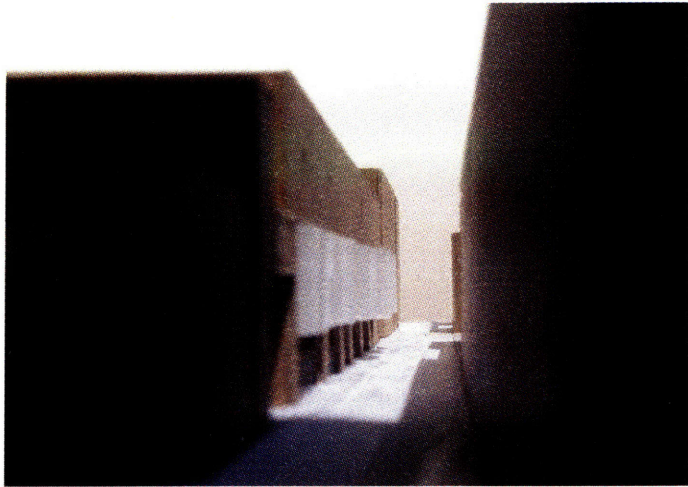
right & opposite page below:
[figure 86]
construction methodology laid out

opposite page above:
[figure 87]
density of pleat structure and circulation



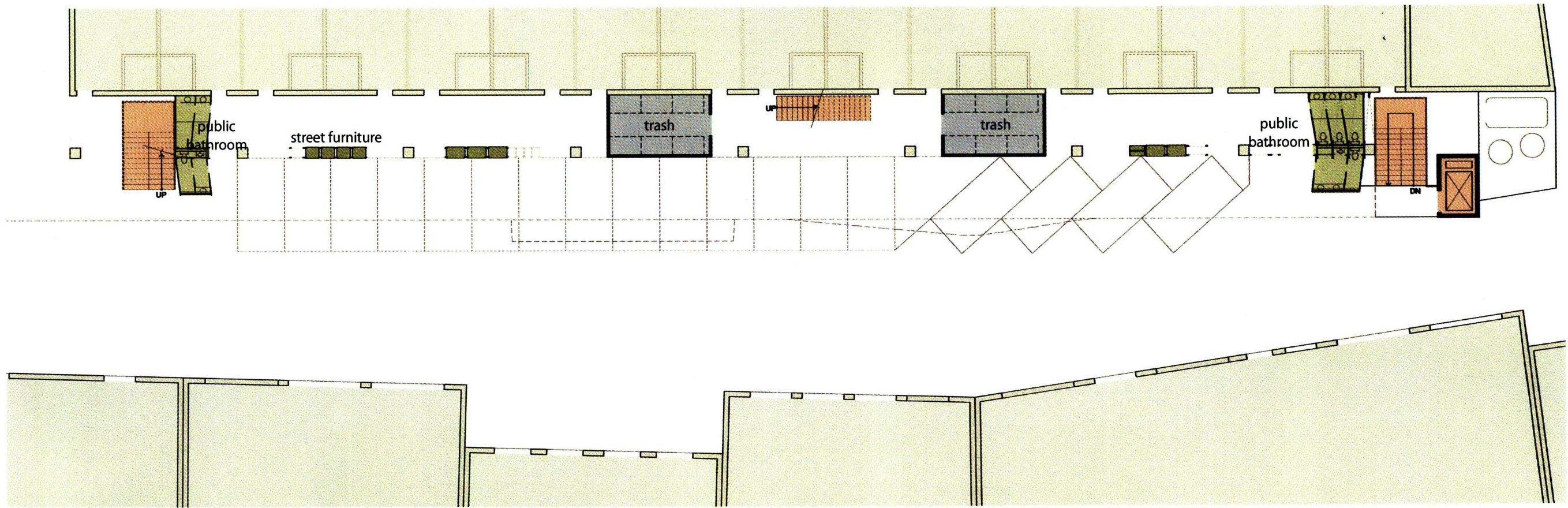


Underutilized Surface + Informality + Pleating Infill:
library



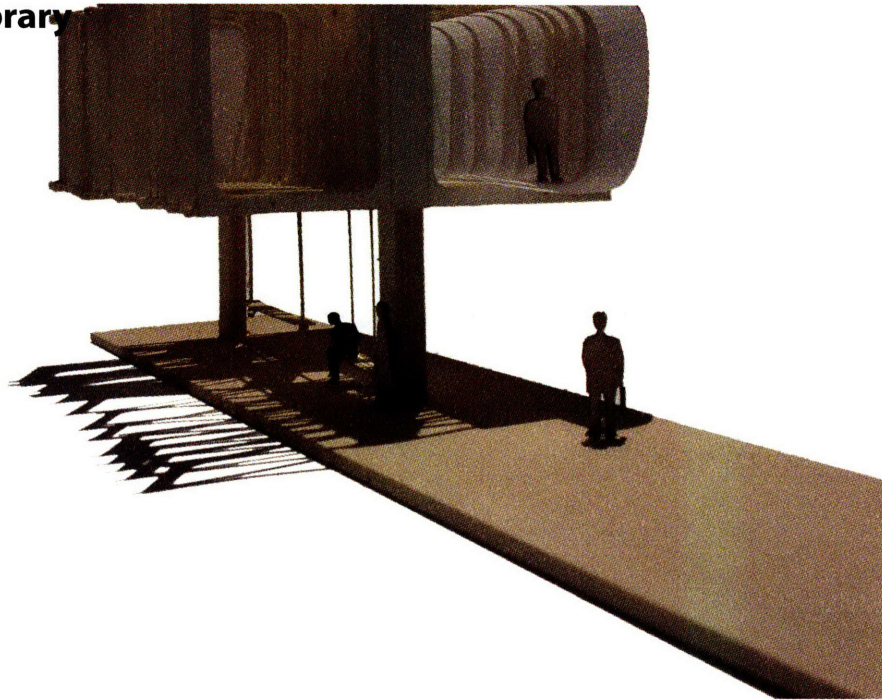
left:
[figure 88, 89] study model :
scale 1/16"=1'-0"

opposite page:
[figure 90] ground floor plan



Underutilized Surface + Informality + Pleating Infill:

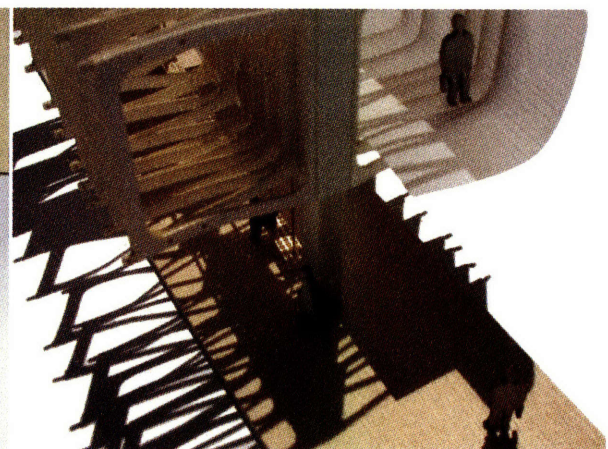
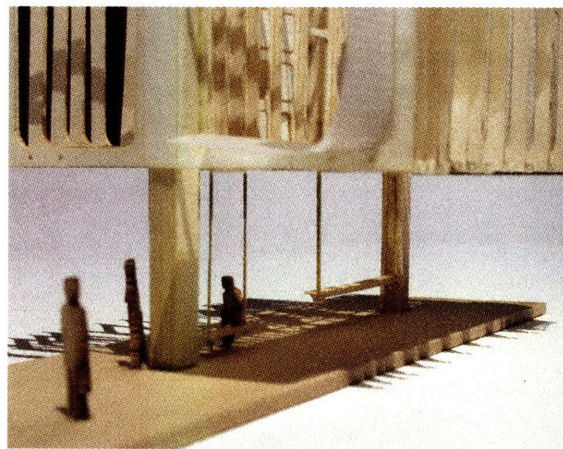
library

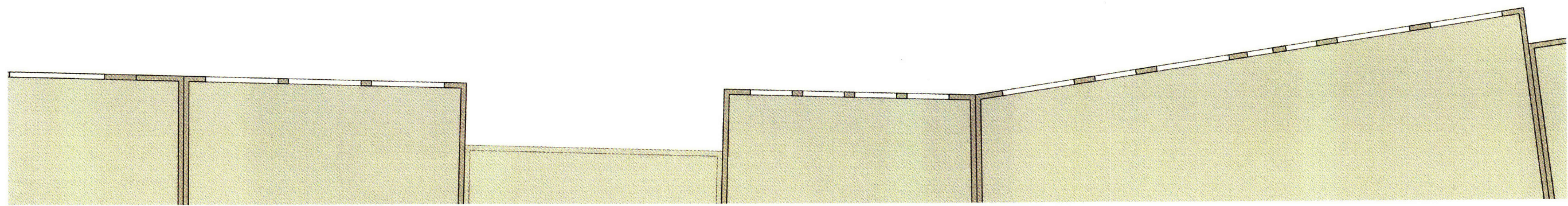
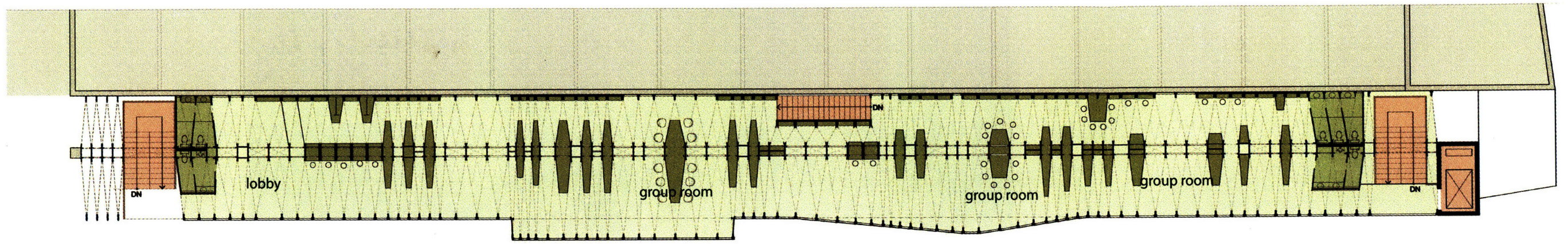


above, right:
[figure 91, 92, 93] study model:
scale 1/8"=1'-0"

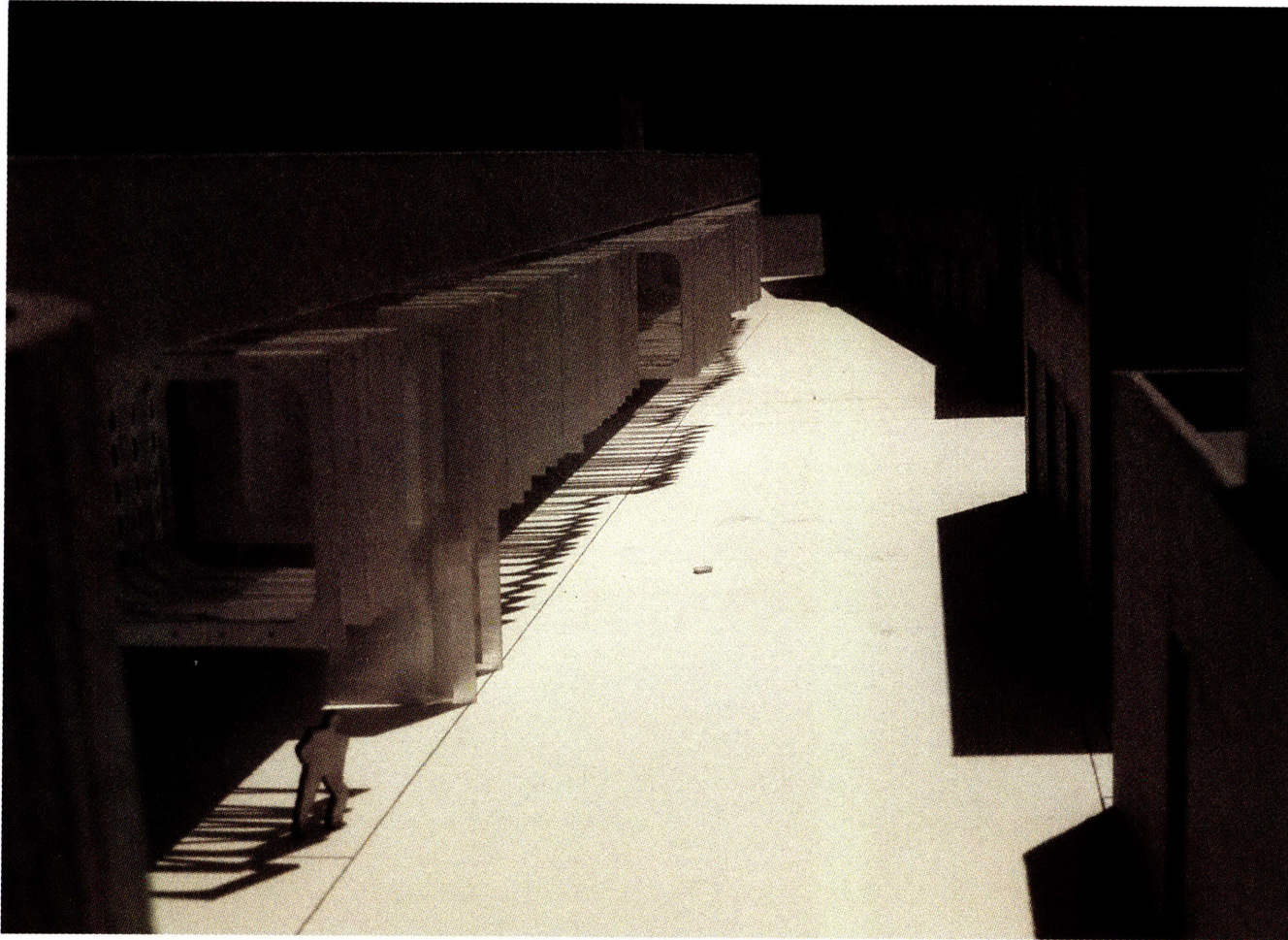
opposite page:
[figure 94] upper floor plan

88 BACK TO SCHOOL: alternate ground of integration



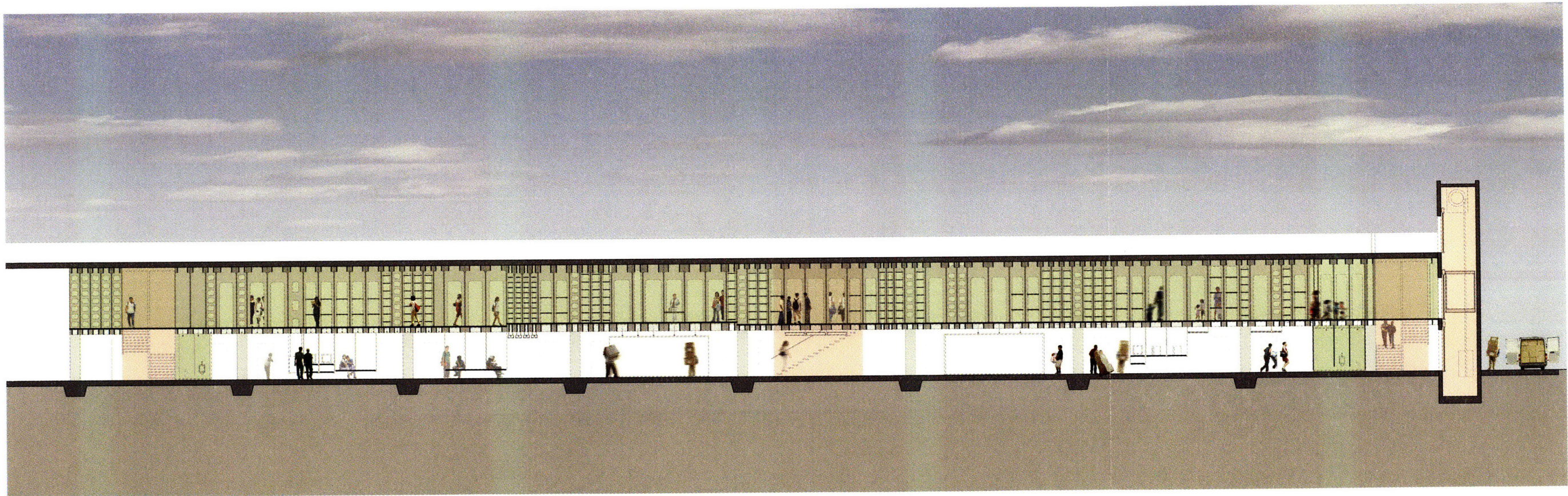


Underutilized Surface + Informality + Pleating Infill:
library



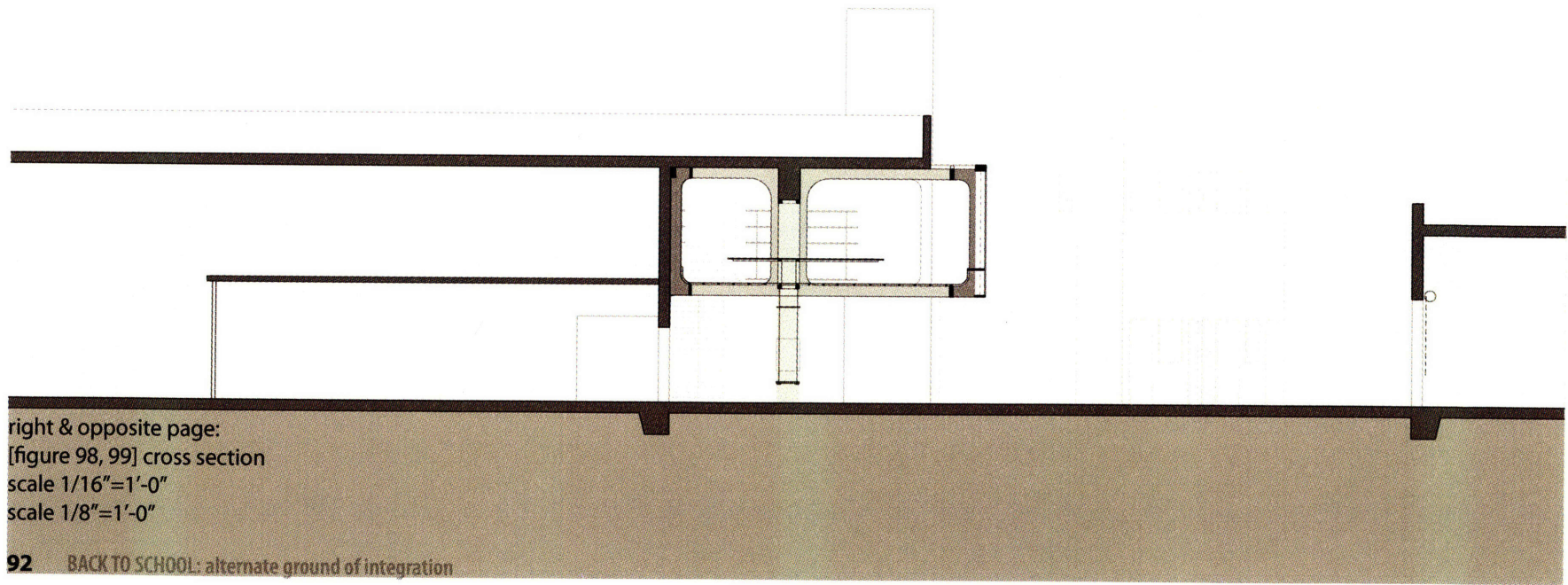
left:
[figure 95, 96] study model
scale 1/8"=1'-0"

opposite page:
[figure 97] longitudinal section

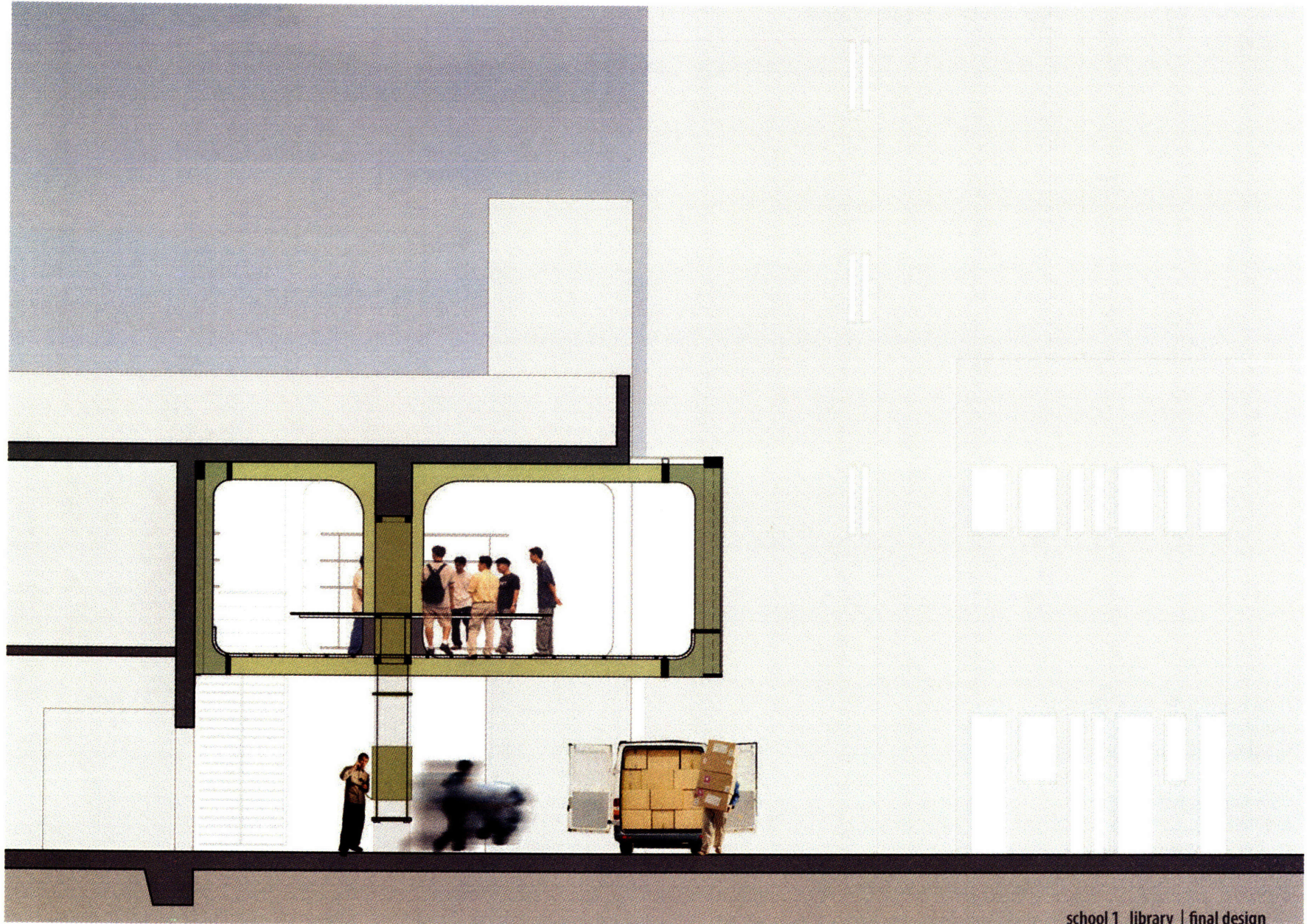


0 1 5 10 50ft

Underutilized Surface + Informality + Pleating Infill:
library



right & opposite page:
[figure 98, 99] cross section
scale 1/16"=1'-0"
scale 1/8"=1'-0"

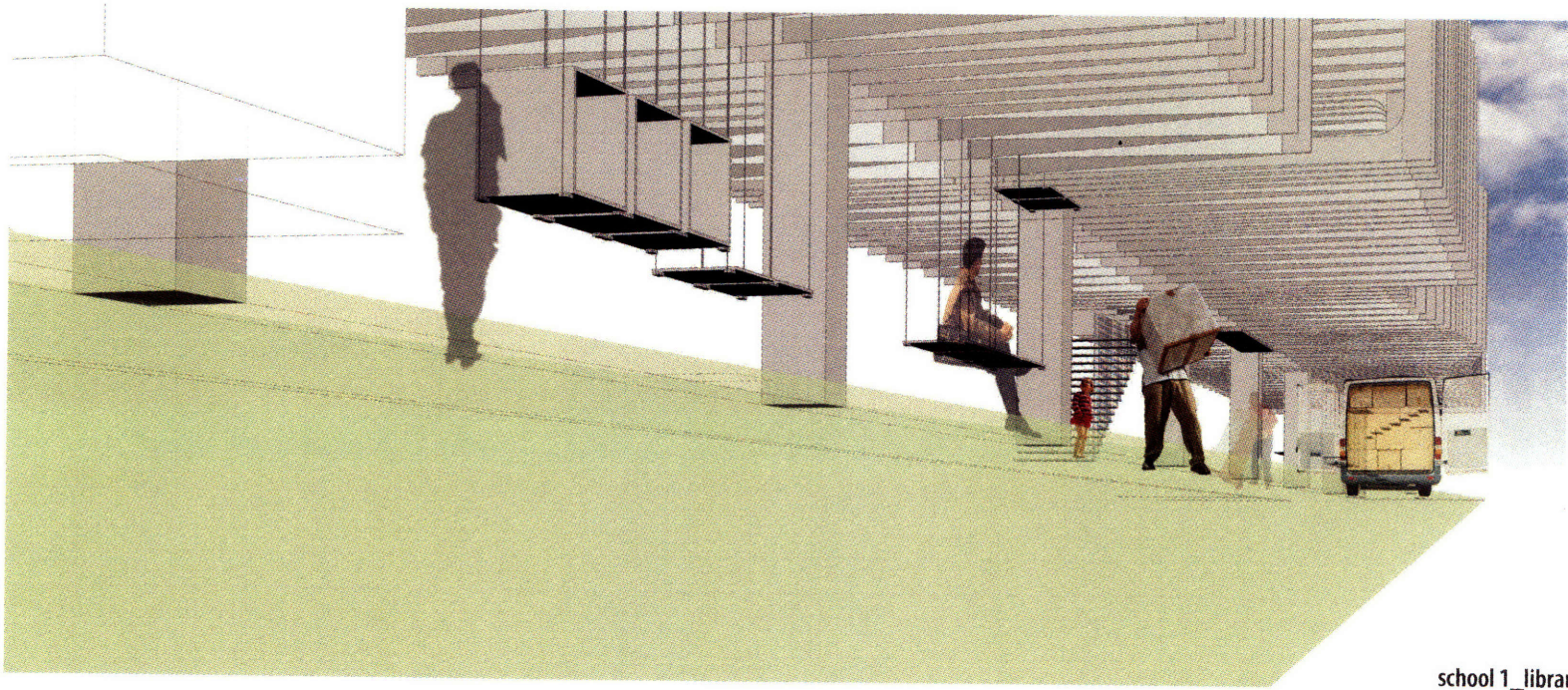


Underutilized Surface + Informality + Pleating Infill:
library

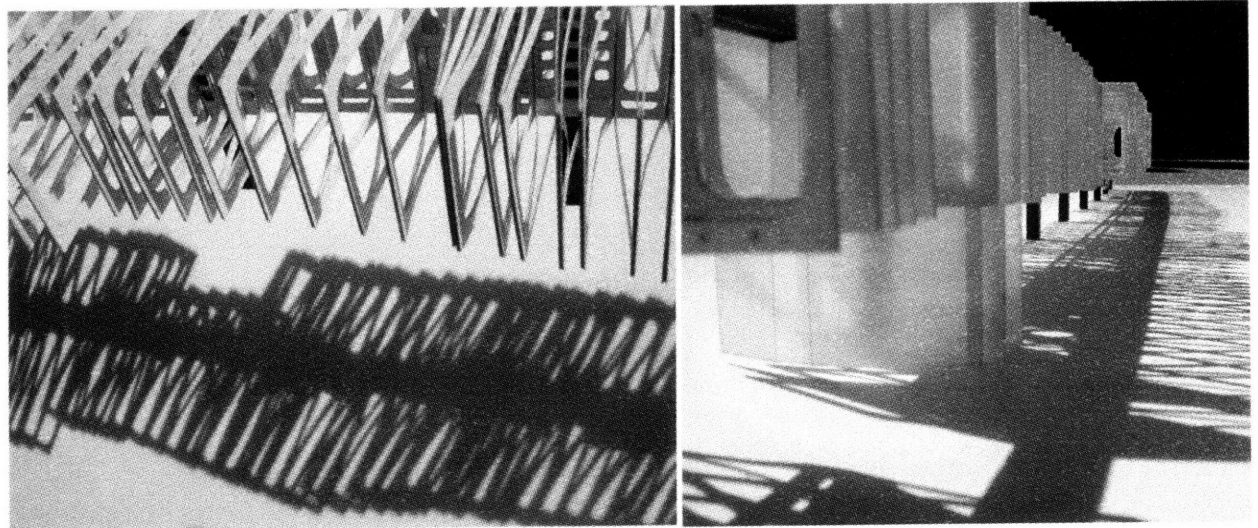
right & opposite page below:
[figure 100]
render_interior of library

opposite page above:
[figure 101]
render_exterior of library

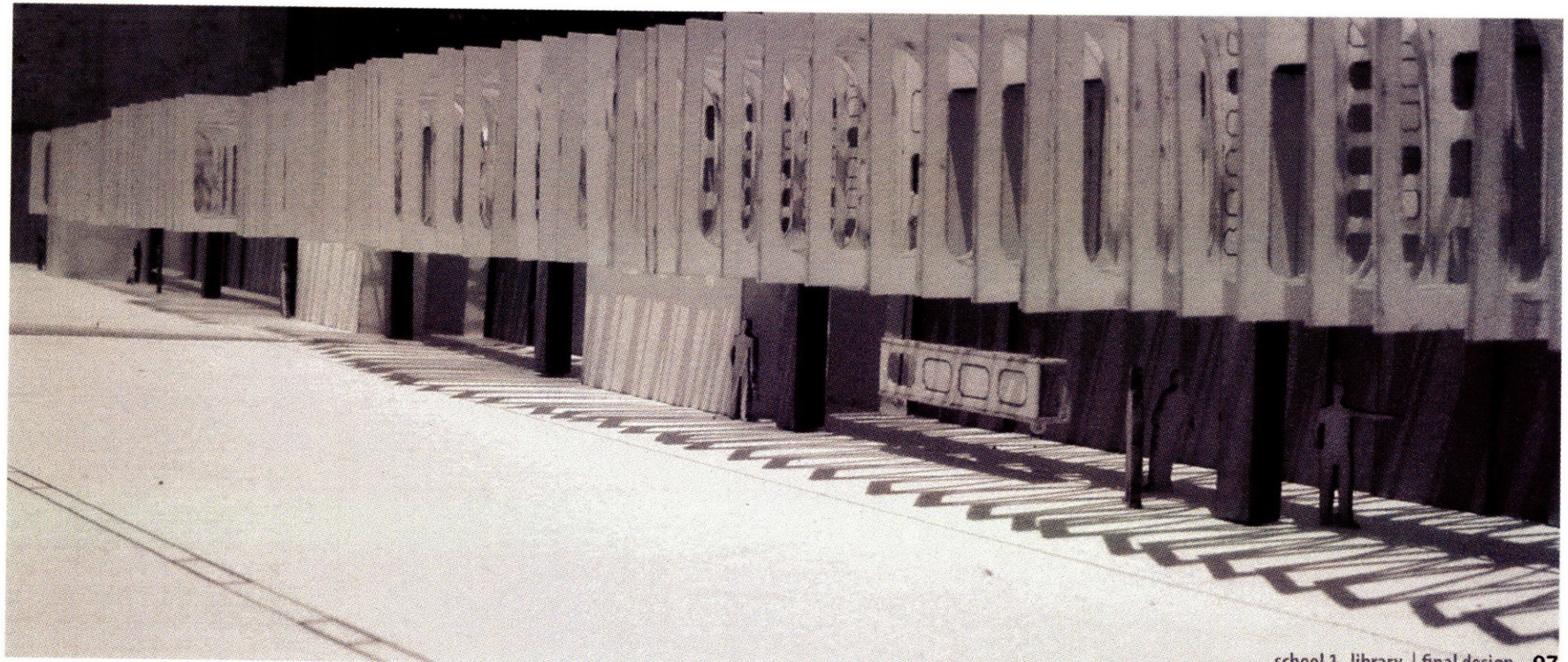




Underutilized Surface + Informality + Pleating Infill:
library



right & opposit page below:
[figure 102, 103, 104]
study model:
scale 1/8"=1'-0"



Other applications:

Bridge: Distance Learning Support Center

The distance Learning Support Center is composed of two enclaves of wholesale stores. One takes advantage of the space underneath the roof structure for material collections and small group rooms. The other sits on the top of the roof and extends further out over the surface parking area while creating a larger gathering space for occasional seminar and classes. This is resource center to serve other small satellite centers; one can wander around the materials, pick up any source from shelves and use the group rooms or reading cells or for material, which can be delivered for the class at the satellite centers.

Similar to the library, the pleating contracts near the existing structure while it expands for gathering places or pathways. When it expands, it allows more sun lightings; when it contracts it controls lighting from the material shelves.

right:

[figure 105, 106, 107] Distance Learning Center

pleat density

upper floor plan

ground floor plan

opposit page:

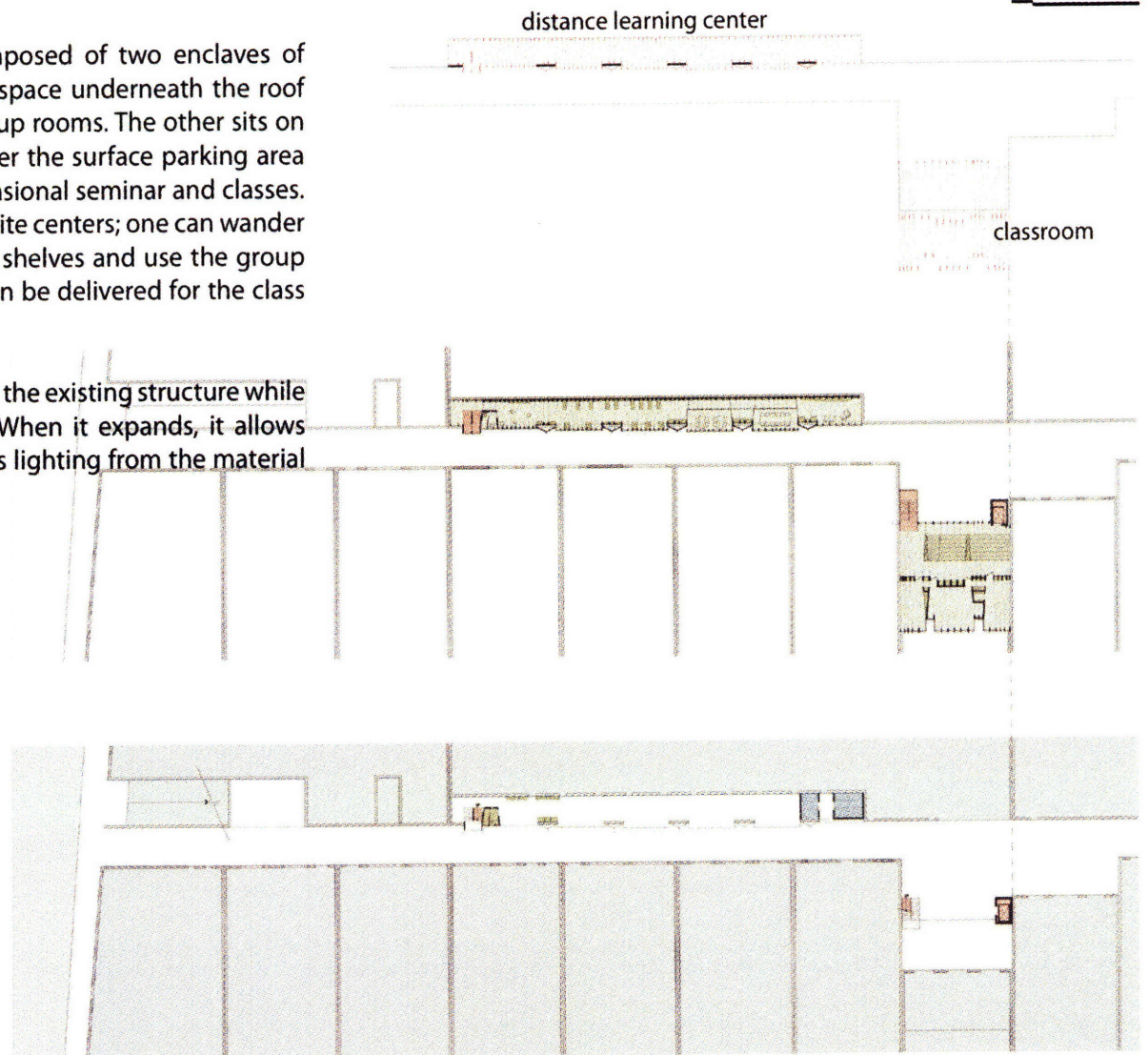
[figure 108] Distance Learning Center

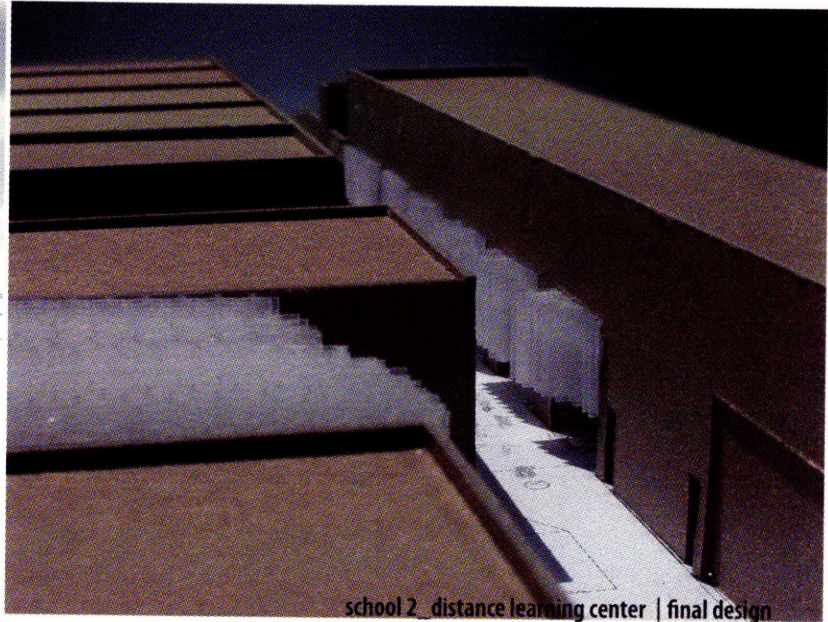
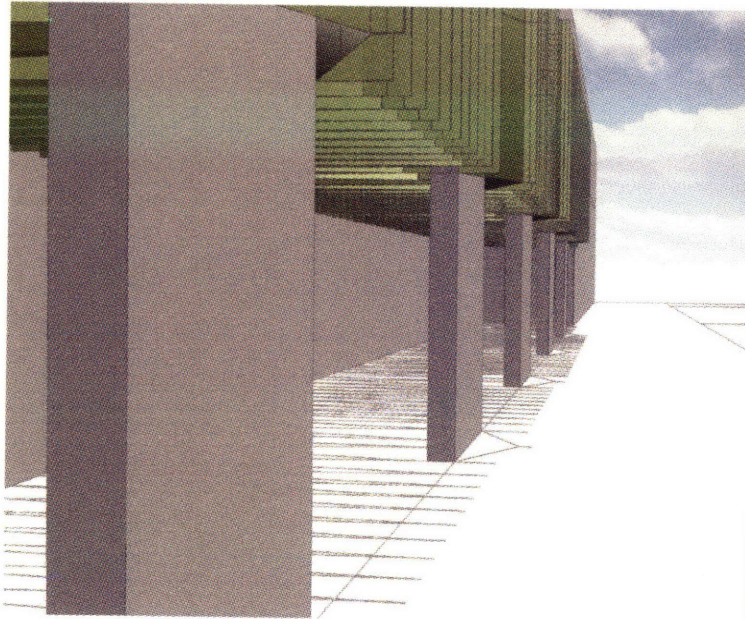
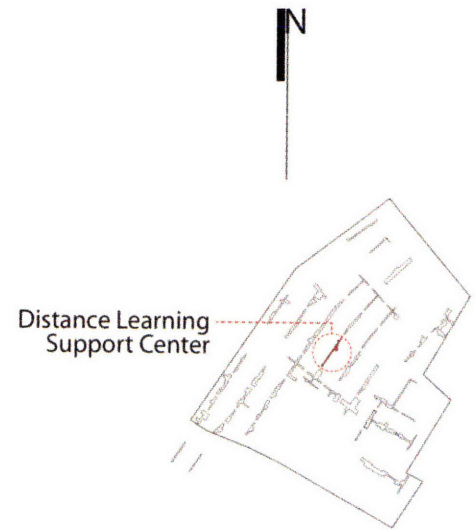
rhyno study model of pleating structure

[figure 109] study model :

scale 1/16"=1'-0"

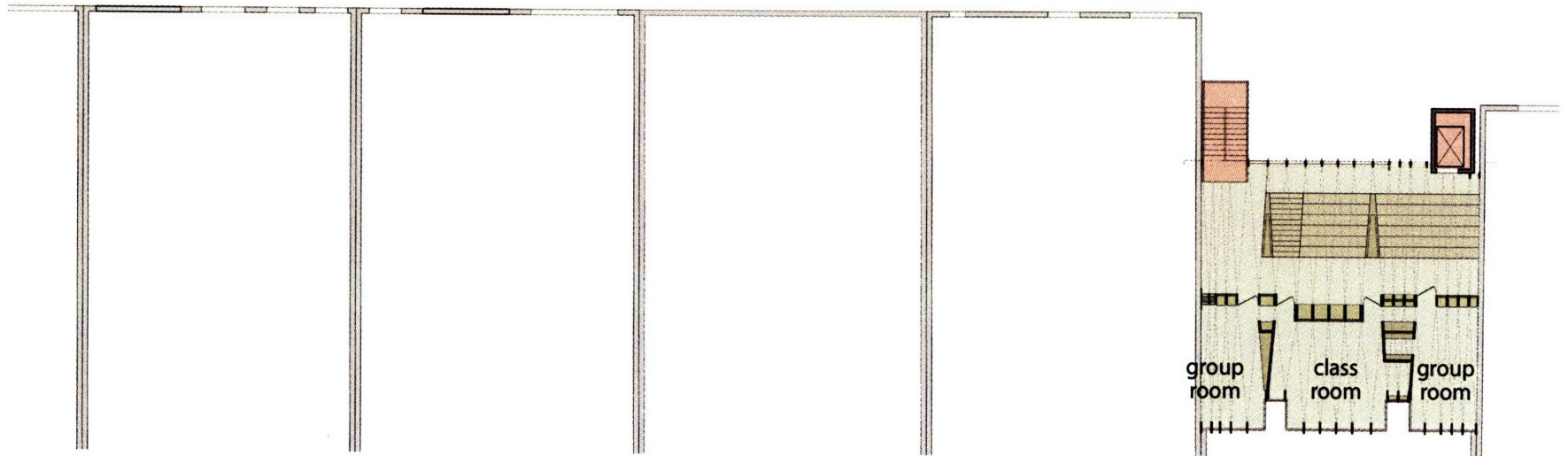
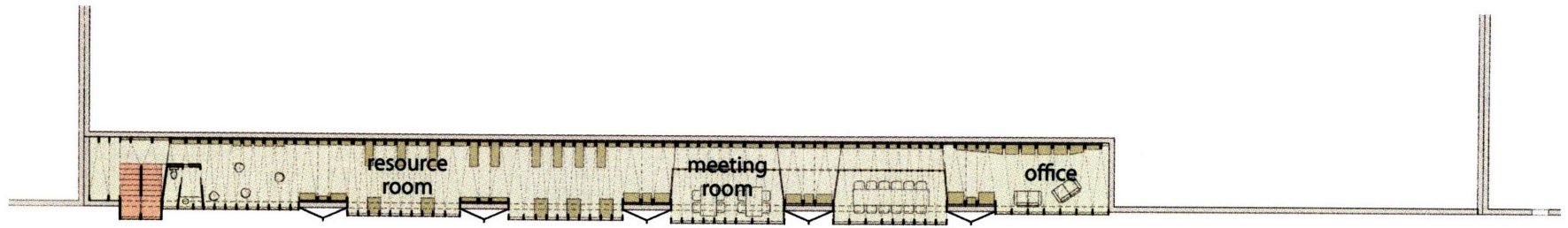
0 10 50ft





school 2_distance learning center | final design

opposite page:
[figure 110] Distance Learning Center
upper floor plan
scale 1/32"=1'-0"



school 3_daycare center | final design 101

Other applications:

Center: Childcare Center

Childcare is the center of the school system; it is the center of supportive network for adult education and is the center for the next generation. It is also located at the center of LA Fashion District. It resides on the rooftop of underground parking access of Bendix factory building – women’s jean apparel manufacturer – of which tall antenna attracts people’s attention.

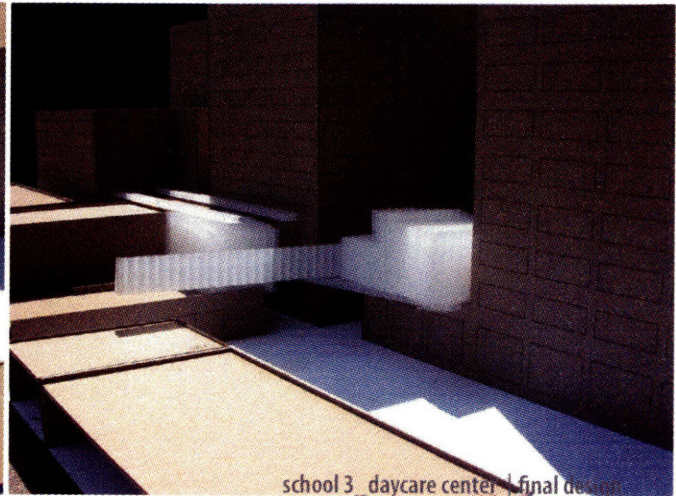
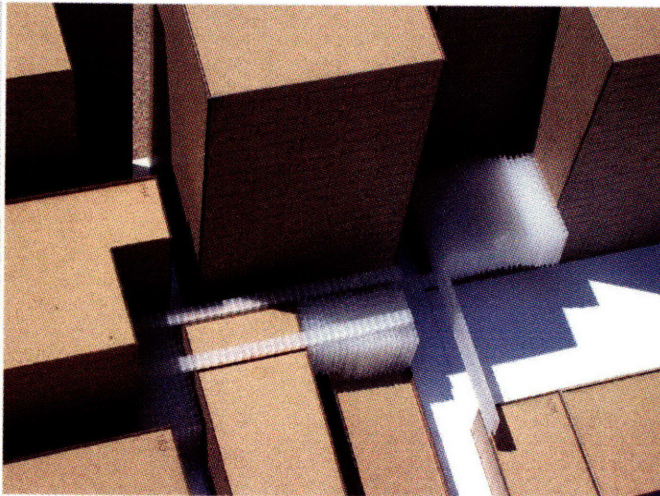
Pleating structure sits on the top of the roof and on bridges over the warehouses connecting with other school facilities such as the job consulting center and the administration office. The density and size of the pleat varies according to the size of the site and required program. On this location, I intended children – particularly in the active area – to be seen from the street or from the factory.

0 10 50ft



opposite page:
[figure 111] Childcare
density of pleat structure
: scale 1/32"=1'-0"
[figure 112, 113] Childcare
upper floor plan
ground floor plan
: scale 1/32"=1'-0"

below:
[figure 114] render image
[figure 115, 116] Childcare
study model
: made in scale 1/16"=1'-0"

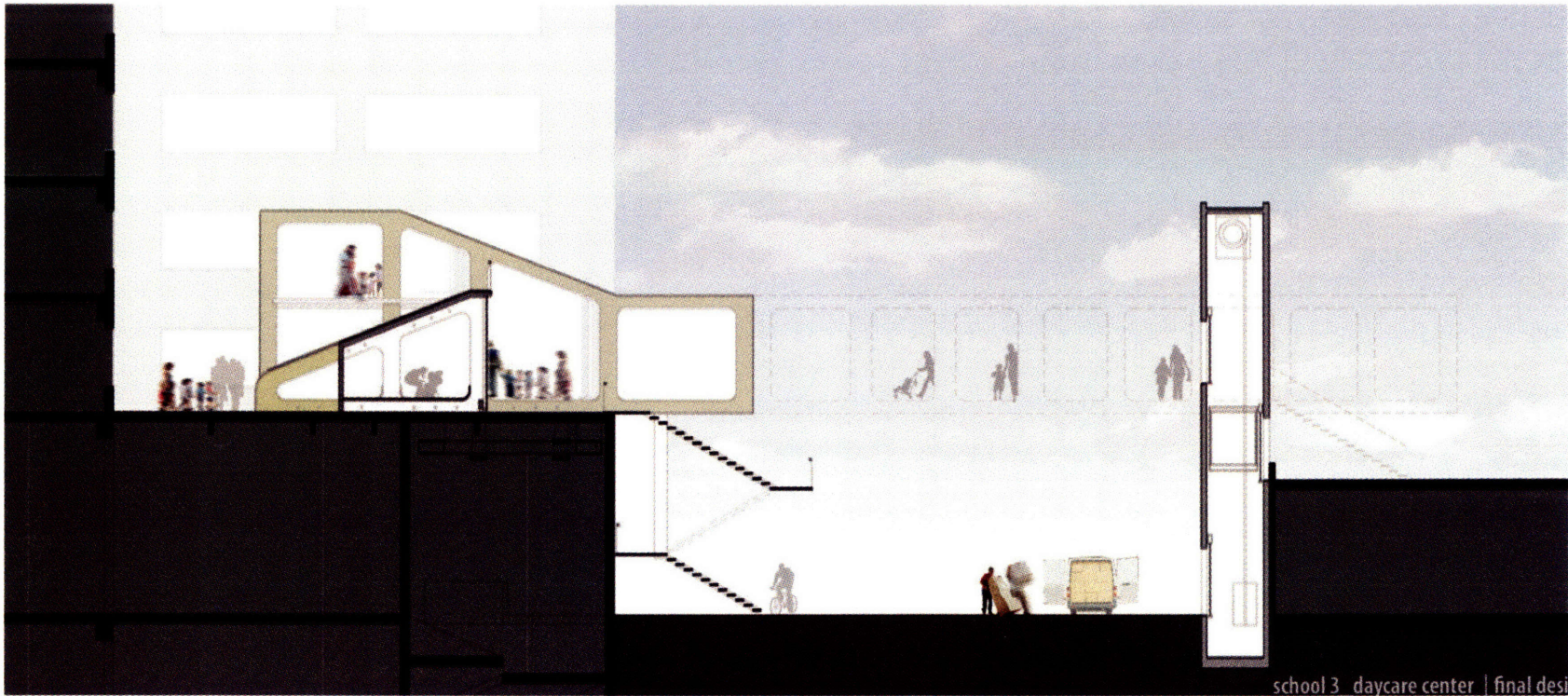


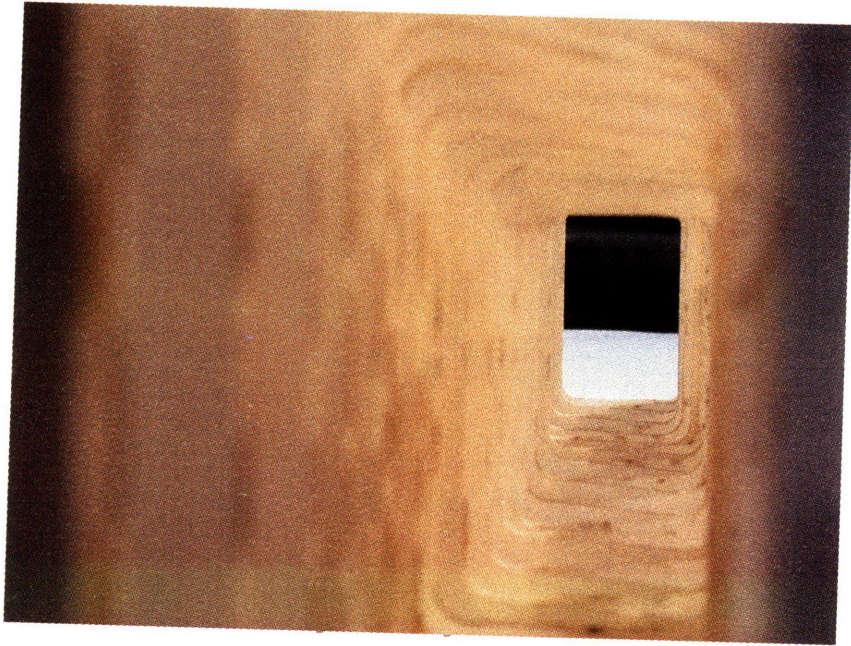
school 3 _ daycare center | final design



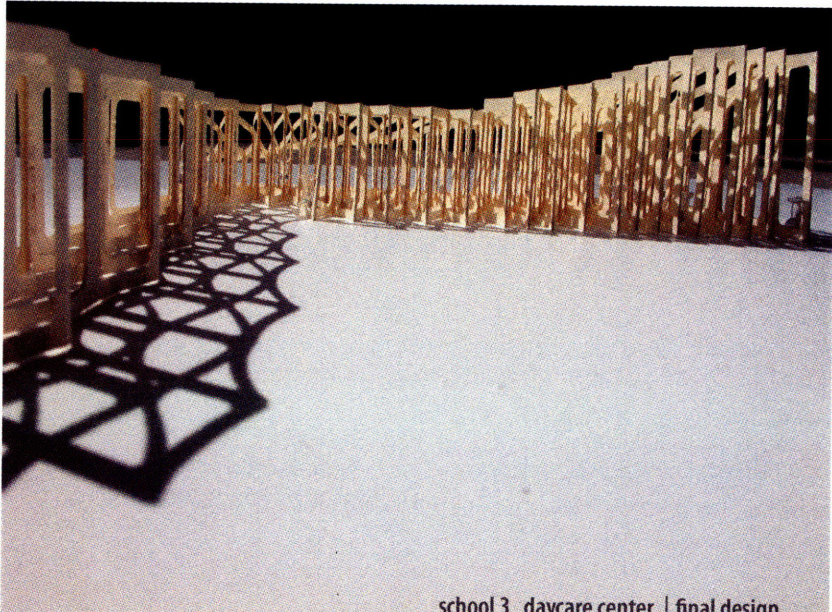
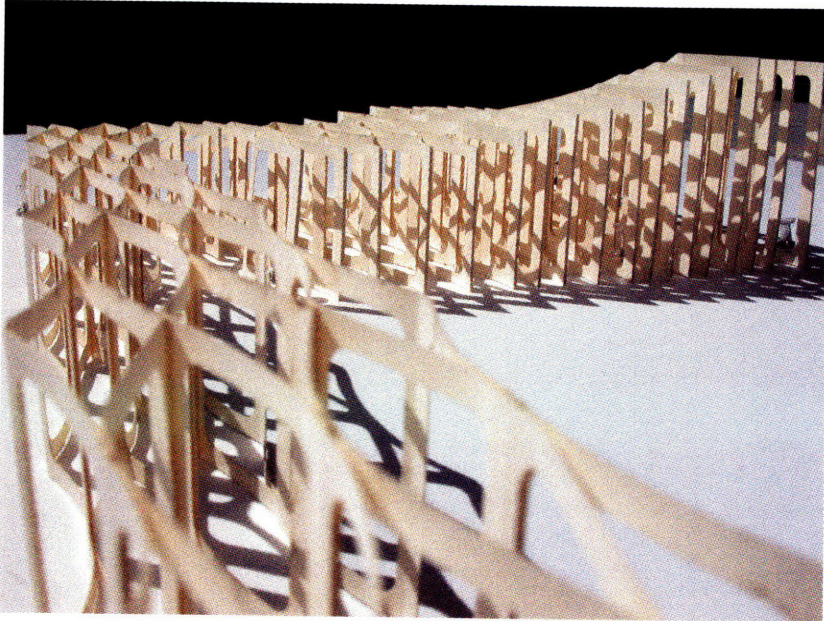
right:
 [figure 117] Childcare
 upper floor plan
 : scale 1/32"=1'-0"

opposite page:
 [figure 118] Childcare
 cross section
 scale 1/16"=1'-0"





[figure 119, 120, 121, 122] Childcare
study model
: scale 1/8"=1'-0"



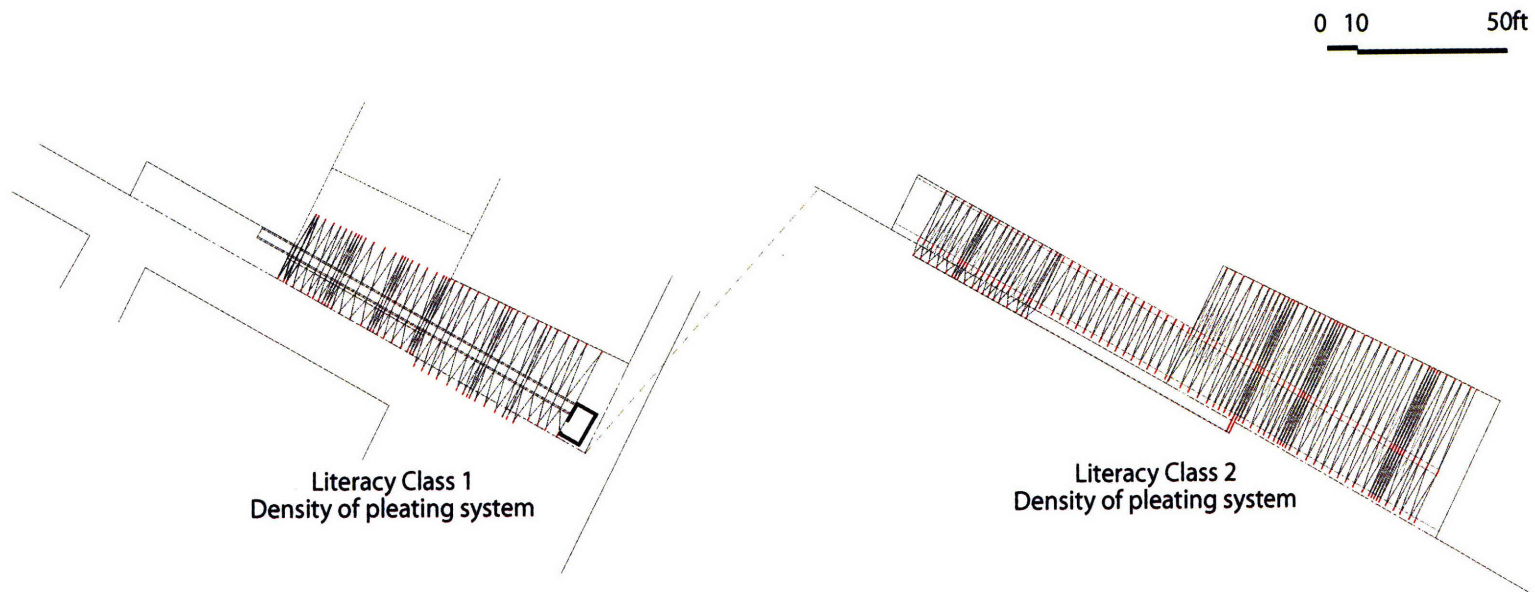
school 3_daycare center | final design

Other applications:

Center: Literacy for Adult Immigrants

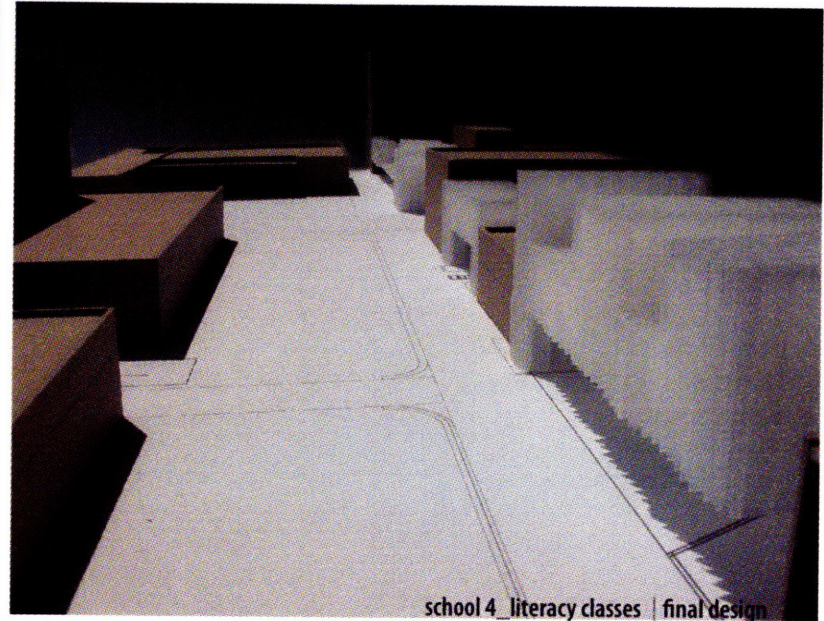
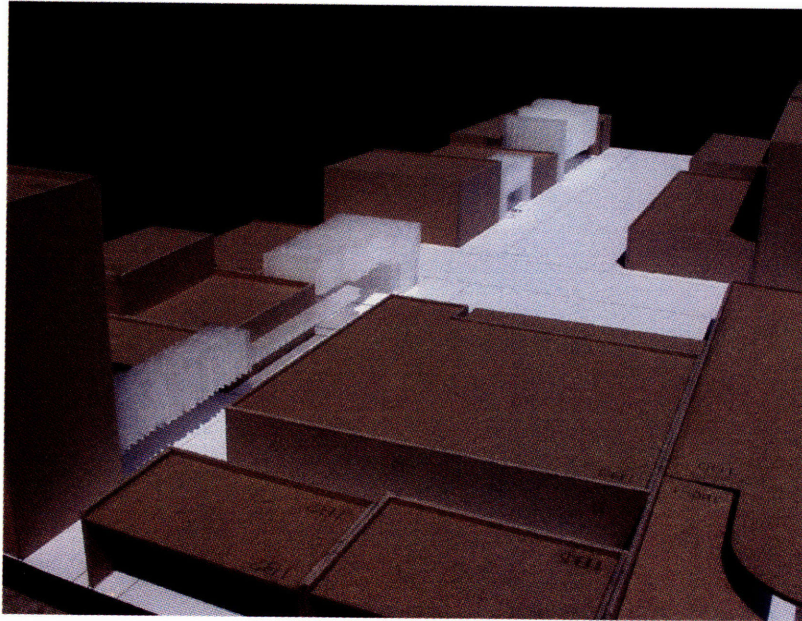
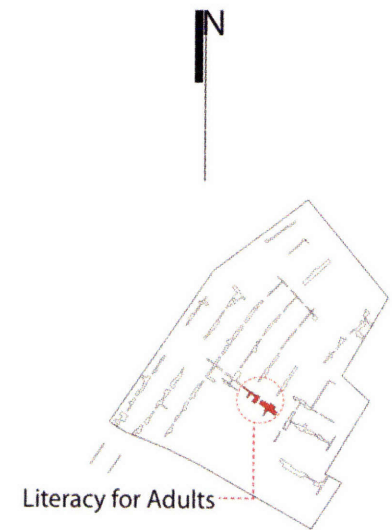
Literacy class 1 and 2 span over the two blocks of kid's wear and women's wear sub-sector. They are designed to offer basic literacy and computer literacy classes. This most dependent type of class consists of a large classroom with small group rooms. The adjacent small group rooms support larger classroom as consulting room and/or group meeting room.

Pleating density expands for occupiable rooms while it contracts for storage or material stack purposes. Intermediate panels are inserted between pleats for storage and screening.

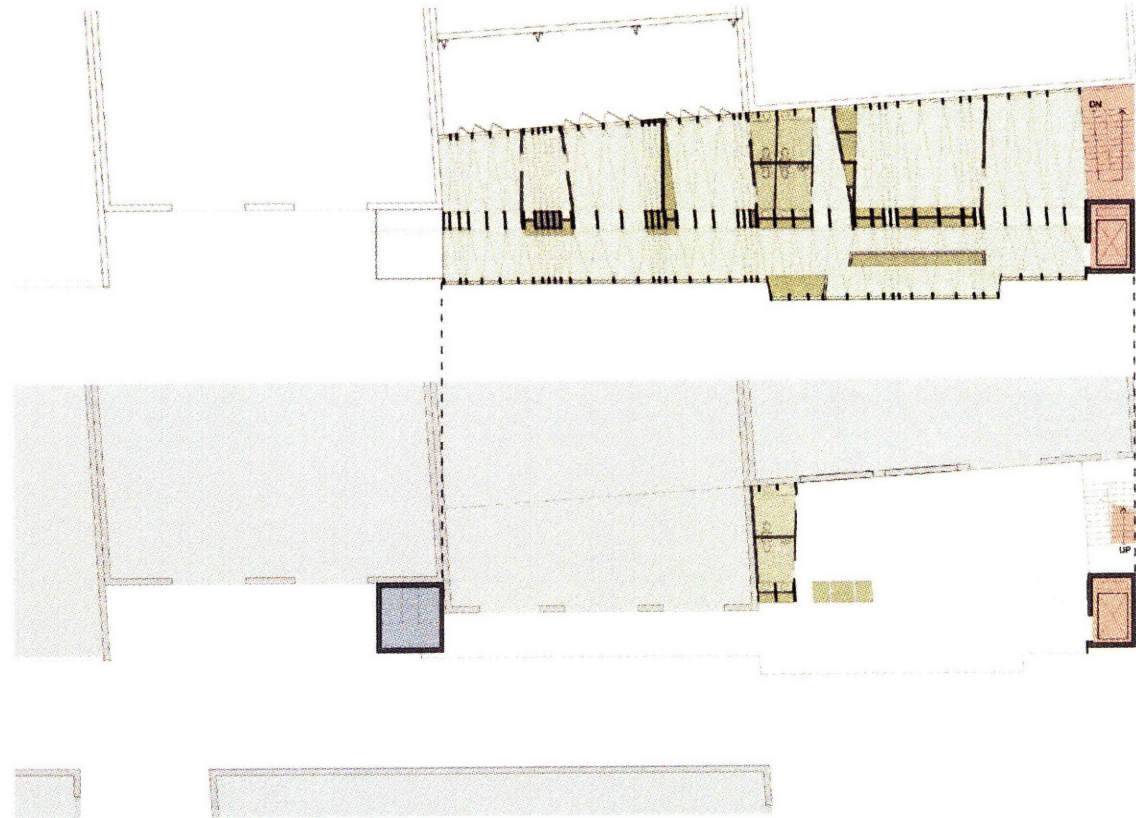


opposite page:
[figure 123] Literacy Class 1, 2
density of pleat structure
: scale 1/64"=1'-0"

below:
[figure 124, 125] Literacy Class 1, 2
study model
: scale 1/16"=1'-0"

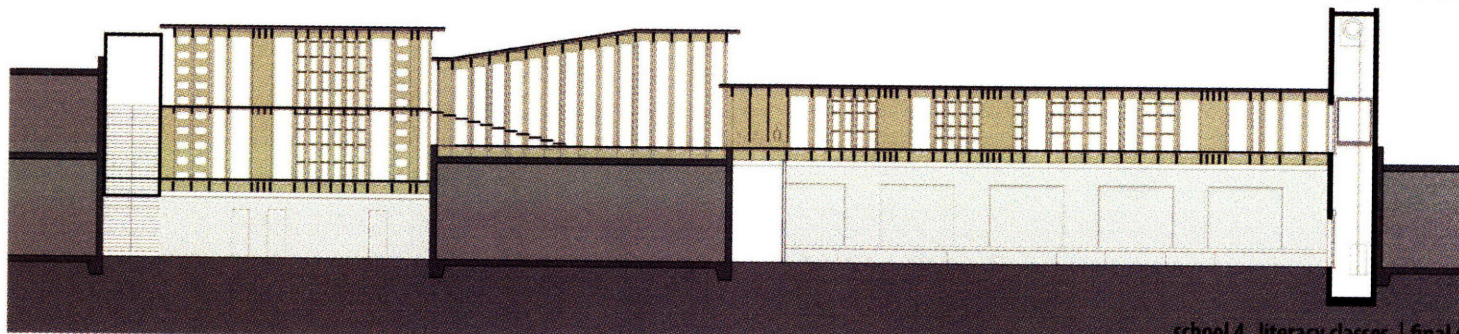
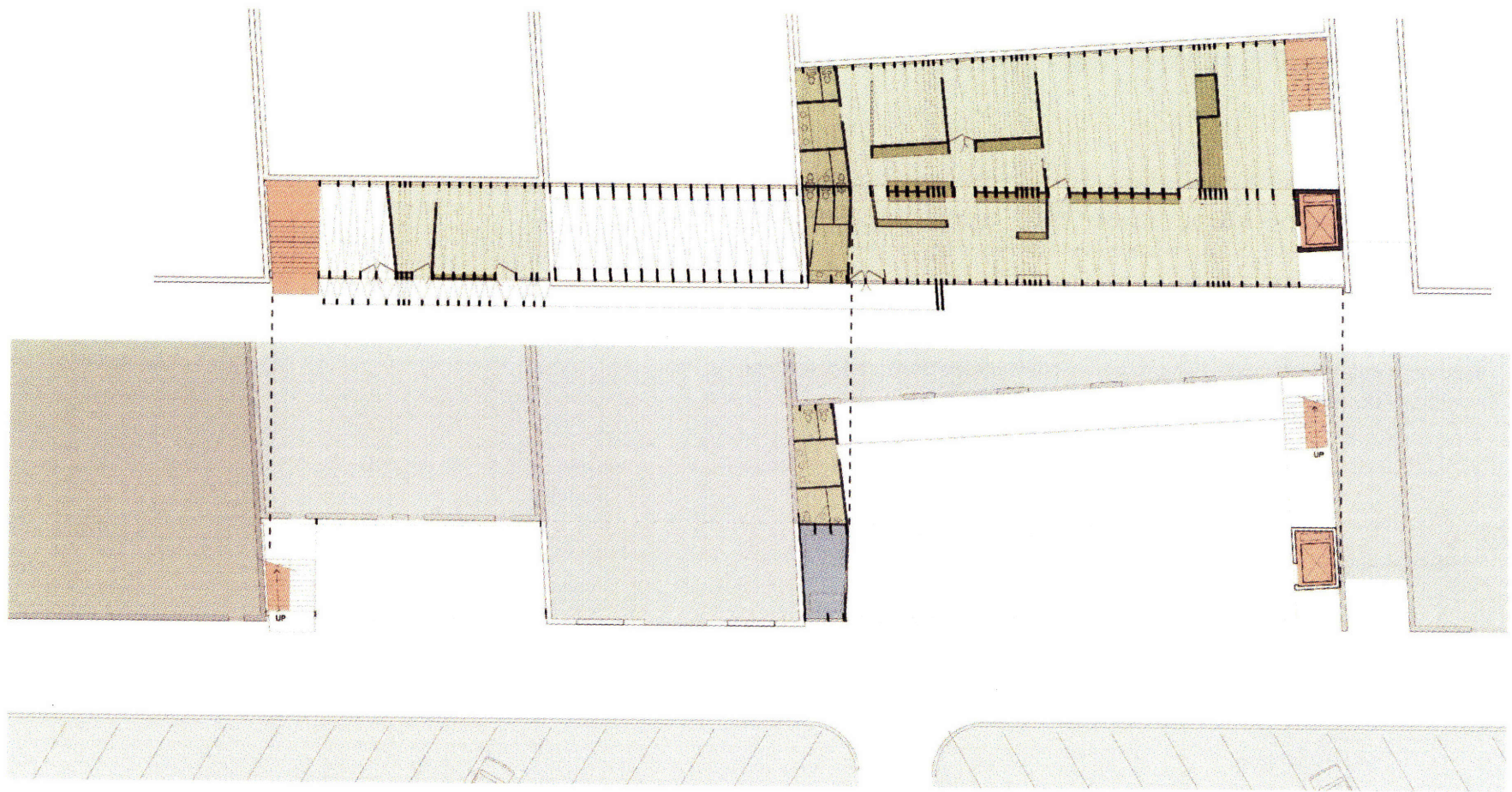


school 4_literacy classes final design



above:
[figure 126] Literacy Class 1
upper floor plan
ground floor plan
: scale 1/32"=1'-0"

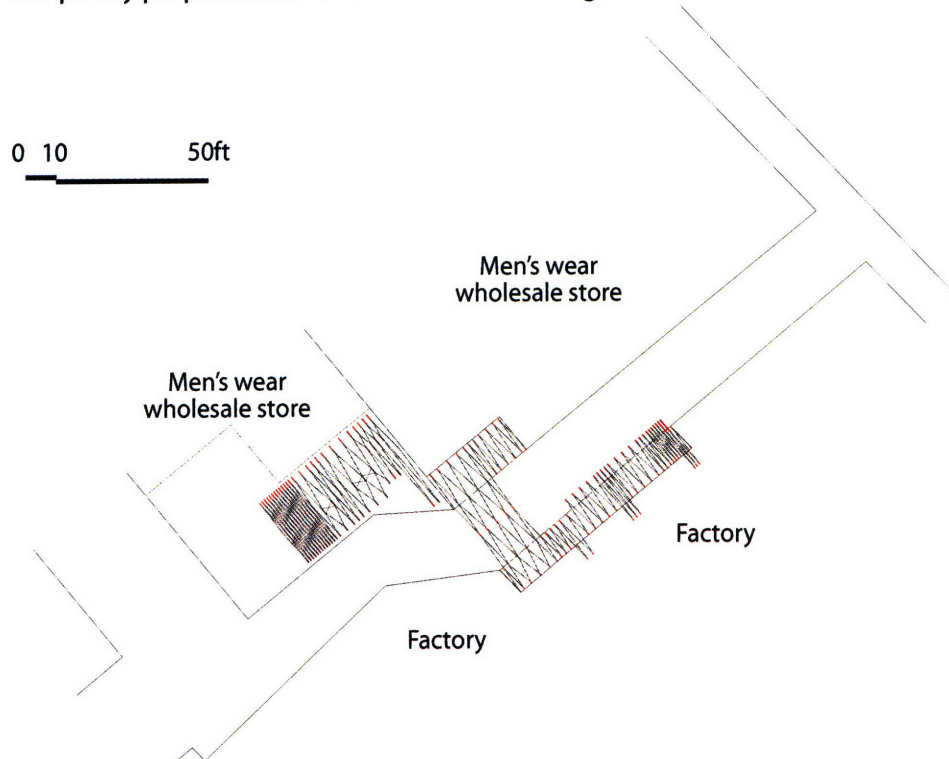
opposite page:
[figure 127, 128, 129] Literacy Class 2
upper floor plan
ground floor plan
longitudinal section
: scale 1/32"=1'-0"



Other applications:

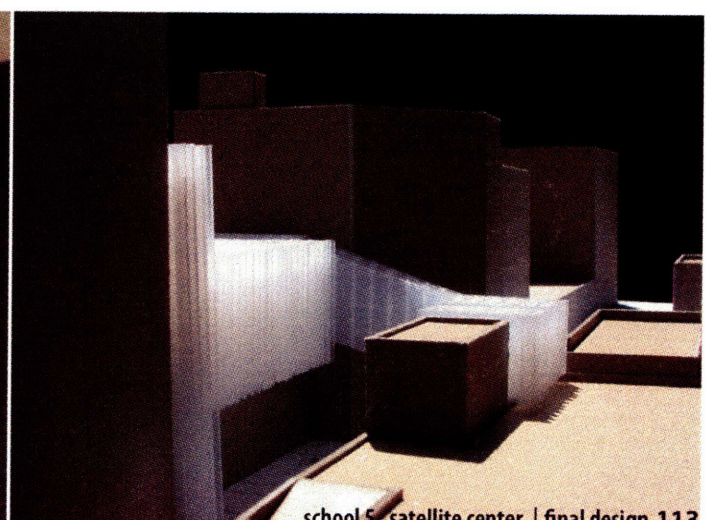
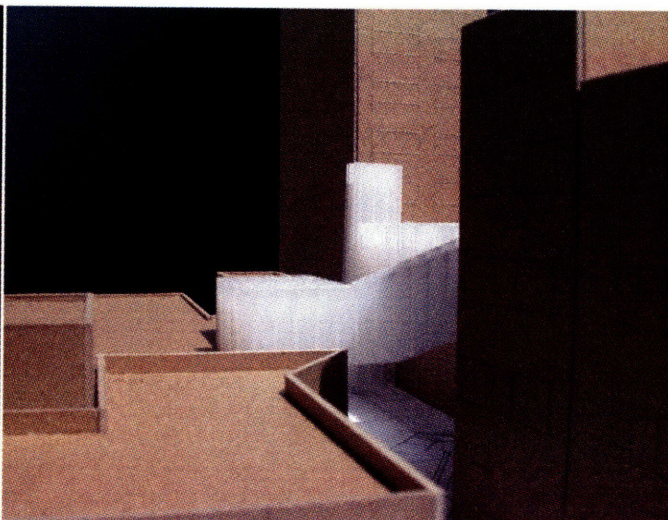
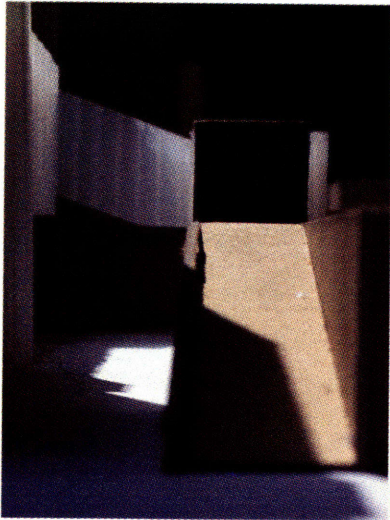
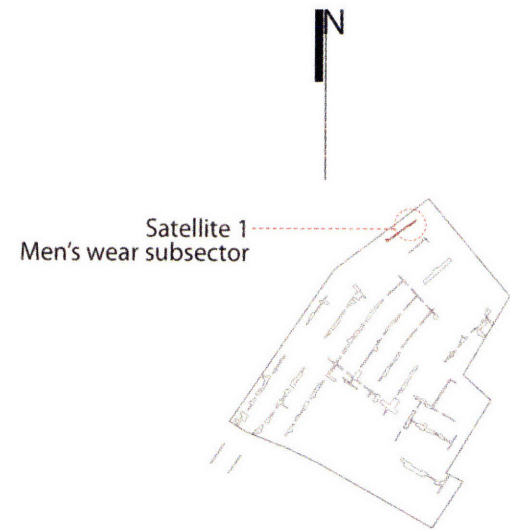
Satellite: Satellite at Men's wear sector

Located on the Northwest corner of the Fashion District, this satellite spans over the three buildings: a factory and two wholesale shopping warehouses. Thus the school can be accessed from those three buildings; from the roof of the wholesale stores and the second floor of the factory as well as from the ground level independently. It offers small group classes specialized on men's wear design and marketing in addition to the basic literacy class. Another wing, which currently drawn as compressed form, expands for temporary purposes such as childcare and for larger classes.



left:
[figure 130] Satellite School
density of pleat structure
: scale 1/64"=1'-0"

opposite page:
[figure 131, 132, 133] Satellite School
study model
: scale 1/16"=1'-0"



below:

[figure 134, 135]

photos of pleating study model

: scale 1/4"=1'-0"

{figure 136, 137}

photos of pleating study model

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

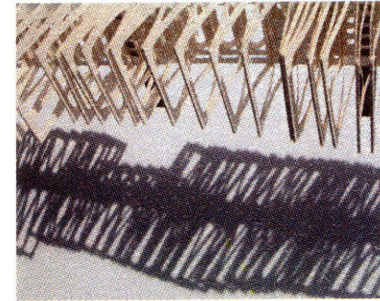
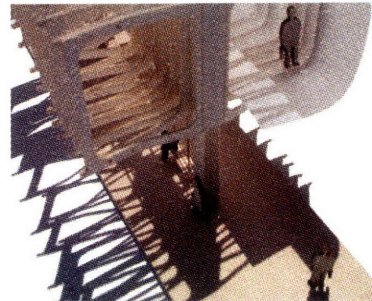
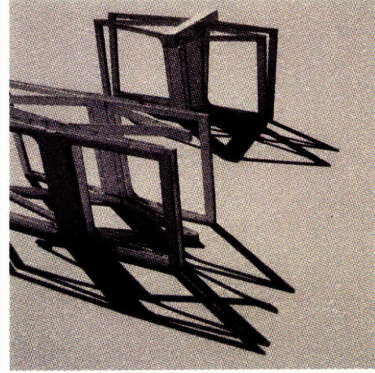
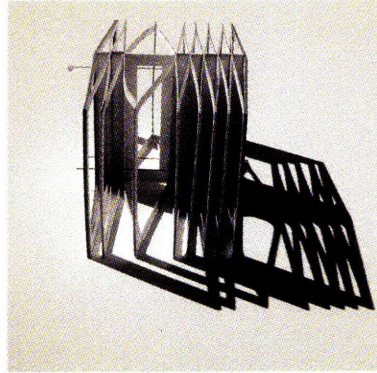
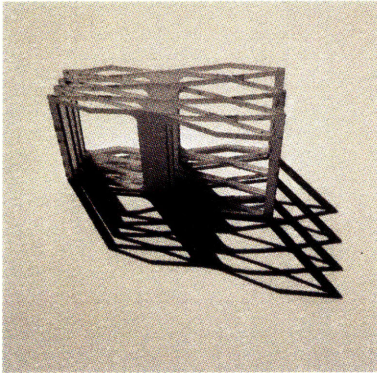
opposite page:

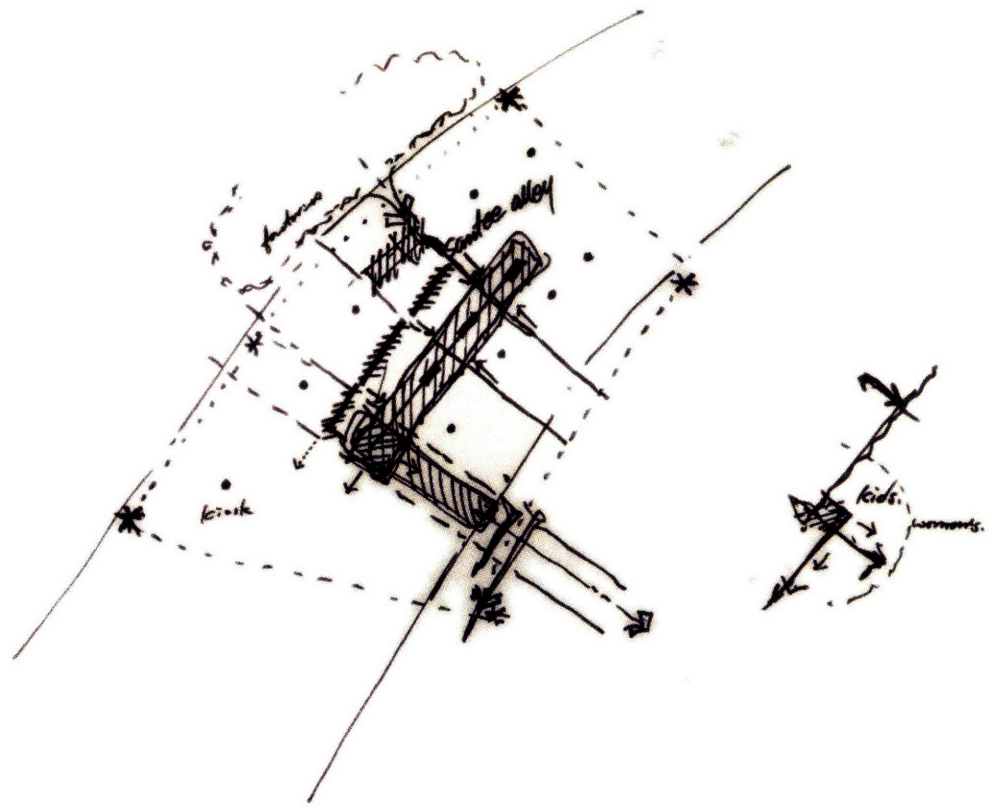
[figure 138, 139]

site photo

[figure 140]

sketch by author





Bibliography

about Los Angeles

Nancy Fraser, "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy," in Bruce Robbins, ed., *The Phantom Public Sphere* (Minneapolis: University of Minnesota Press, 1993).

Margaret Crawford, "Contesting the Public Realm: Struggles over Public Space in Los Angeles," *Journal of Architectural Education* Vol. 49, No. 1 (September, 1995), pp4-9.

Margaret Crawford. "Introduction" *Everyday Urbanism*. (New York: the Monacelli Press. 1999).

Michael Foucault, "Of Other Spaces(1967), Heterotopias". In *Architecture/ Mouvement/ Continuïte* (1984).

Ed. by Edward W. Soja and Allen J. Scott, *The City: Los Angeles and Urban Theory at the End of the Twentieth Century* (Berkeley, Los Angeles: University of California Press, 1996).

Edward W. Soja, *Postmetropolis: Critical Studies of Cities and Regions*. (Oxford, UK; Malden, Mass: Blackwell Publishers. 2000)

Allen J Scott and Edward W. Soja, *The City: Los Angeles and Urban Theory at the End of Twentieth Century*. (Berkeley, Los Angeles, London: University of California Press. 1996).

Michel S. Laguerre, *The Informal City*. Houndmills, Basingstoke, (Hampshire : Macmillan. 1994.)

Michael Storper, *The Regional World: Territorial Development in a Global Economy*. (New York: Guilford Press. 1997).

Michael Storper, "Society Community and Economic Development" *Institutions, Incentives and communication In Economic Geography*. (Heidelberg: Franz Steiner Verlag 2004).

Michel de.Certeau, *The practice of everyday life*. translated by Steven Rendall. (Berkeley : University of California Press. 1984).

about Fashion Industry

Edna Bonacich, *Behind the label: Inequality in the Los Angeles apparel industry*. (Berkeley: University of California Press, 2000).

Edna Bonacich, "Asian and Latino Immigrants in the Los Angeles Garment Industry: An Exploration of the Relationship Between Capitalism and Racial Oppression" *Institute of Social Science Research*, 1989-90, Vol. 5, Number 13. <<http://repositories.cdlib.org/issr/volume5/13>>

Allen J. Scott, "Competitive Dynamics of Southern California's Clothing Industry: The widening Global Connection and its Local Ramification," *Urban Studies*. 39 (8): 1287-1306. 2002.

Jack Kyser and George Huang, "The Los Angeles Area Fashion Industry Profile". (Los Angeles: Los Angeles County Economic Development Corporation. 2003)

<http://www.laedc.org/reports/>

"Crisis or Opportunity?: the Future of Los Angeles' Garment Workers, the Apparel Industry and the Local Economy," *Sweatshop Watch Annual Report* <<http://www.sweatshopwatch.org/>>

Brook Hodge, *Skin + Bones: Parallel Practices in Fashion and Architecture*. organized by Brook Hodge. (New York; London: Thames and Hudson, 2006)

Colette Wolff, *The Art of Manipulating Fabric*. (Iola: Krause Publications. 1996).

California Fashion Association < <http://www.calfashion.org/>>

Los Angeles Fashion District < <http://www.fashiondistrict.org>>

about Learning and School

Victoria Marsick, ed. Streumer, Jan N. "Informal Strategic Learning in the Workplace" in *Work-Related Learning*. (Dordrecht, Netherland: Springer. 2006).

Jack Goody, 1998. "Literacy and the Diffusion of Knowledge across Cultures and Times" *Creation and Transfer of Knowledge: Institutions and Incentives*. ed. B. Giorgio Navaretti, Partha Dasgupta and Domenico Siniscalco, (New York: Springer 1998). p167-177

Mark Robins, *Schools for Cities: Urban Strategies*. (New York: Princeton Architectural Press. 2002).

Roy Strickland, *Designing a City of Learning: Paterson, NJ*. (New York: Reynolds-Dewalt Printing. 2006).

Creative Community Building: 2003 Rudy Bruner Award for Urban Excellence. 2004. Cambridge, MA: Bruner Foundation.

Infed < <http://www.infed.org/>>

Puente Learning Center < <http://www.puente.org/>>

Centro Latino de Educación Popular < <http://www.centrolatinoliteracy.org/>>

Camino Nuevo Charter Academy < <http://www.caminonuevo.org/>>

Anita Rui Olds, *Child Care Design Guide*. (New York: McGraw-Hill. 2001).

Image Credit

Figure 2, 3, 4, 8 Sweatshop Watch Annual Report <<http://www.sweatshopwatch.org/>>

Figure 10,28 Msn Live Search < <http://maps.live.com/?q=los+angeles%2C+ca&FORM=MSNH&mkt=en-US>>

Figure 14, 15, 21 Literacy Network of Greater Los Angeles < <http://www.puente.org/>>

Figure 22, 23 Camino Nuevo Charter Academy < <http://www.caminonuevo.org/>>

Figure 24, 25 Machado and Silvetti

Figure 64, 66, 67 Colette Wolff, The Art of Manipulating Fabric. (Iola: Krause Publications. 1996).

Map 01 Literacy Network of Greater Los Angeles
Report "Literacy @Work" <<http://www.literacynetwork.org/>>

note: all site photos, diagrams, drawings and model photographs by author unless noted otherwise

