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UMI

multiplicity through abstraction
a design for medium density housing

Master's Degree Project
Submitted by **Laura Marlayne Plosz**
in partial fulfillment of the requirements for
the degree of Master of Environmental Design.

Faculty of Environmental Design
University of Calgary
April 28, 2000

Supervisor: Prof. Marc Boutin
External Advisor: Andrew Butler
Dean's Examiner: Prof. Catherine Hamel

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The University of Calgary

Faculty of Environmental Design

The undersigned certify that they have read, and recommend to the Faculty of
Environmental Design for acceptance, a Master's Degree Project entitled,
Multiplicity Through Abstraction: a design for medium density housing,
submitted by **Laura Plosz** in partial fulfillment of the requirements for the degree
of Master of Environmental Design.

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Supervisor: Marc Boutin

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Date _____

abstract

Earlier this century, advancements in technology prompted a reconsideration of the way in which we worked and lived within a condition of increasing universality. Issues of standardization and universality shaped cultural and architectural thought. Understood as a cultural paradigm, the resulting modernism came to represent functionality and rationality, although further investigation into this historical period reveals a more complex culture at work. As an architect of the Modern Movement, Alvar Aalto was rather unique in his ability to address the issue of universality and simultaneously express specific conditions of site, climate, culture, and materiality. He explored the possibilities of diverse elements within an international ideology, a multiplicity through abstraction.

Again, at the beginning of the 21st Century, we are confronting the perception of a trend towards homogenization - through the forces of globalization. Advancements in technology, the emergence of a global economy, and the increased means and frequency of travel, all contribute to a potential for homogenization of culture and environment. However, it appears that although there is a greater interaction between cultures on a global scale this does not necessitate a loss of diversity. We are at a time in which homogenization and diversification are not opposing forces, but rather the two trends in a global reality.[1]

Many of the theories and concerns presented by modern architects have been carried forward and further developed by contemporary architects in order to address our present condition. Universality and standardization have been re-conceptualized as sponsoring diversity. One such firm, Riegler Riewe of Graz, Austria, utilizes abstraction not to reduce a building to a pure functional expression, but to create an open backdrop for a variety of activities. The goal of diversity is then achieved through the multiplicity inherent within abstraction.

In this way, the trajectory of technology as a homogenizing factor is engaged as a means to provide a common ground for the discussion of diversity – as it relates to the user. The concept of user, and the need to expand our commonly accepted definition, is introduced through the discussion of my personal experience as the sister of a person with an intellectual disability. These experiences focus on the user and subsequent definition of home.

The theory of *multiplicity through abstraction* will be tested through the design of multi-unit housing to accommodate and integrate an expanded definition of user - including persons with intellectual disabilities. Within the context of globalization, described as both standardization and diversification, it is now appropriate for specific groups to find their place within our communities. This project aims to find the expression of a diversity existing but as yet unexpressed within our communities.

[1] Allen Scott (Ed.), *The Limits of Globalization: Cases and Arguments* (New York: Routledge, 1997), p. 4.

A **big** thanks:

To Mr. Bill, Marino, John, Bob, and Shelagh for putting back together those things that always seem to fall apart.

To Stewart MacLean of *The Vinyl Café*, for the borrowed title of the M.Arch 2000 graduating show, '*We may not be big, but we're small.*'

To Nicole, Will, and Jocelyne for helping to push me over those hills I couldn't quite get up.

To Marc and Andrew for providing guidance and a critical pair of eyes.

To Catherine Hamel for accepting the position of Dean's Appointee.

To my Aunt Laura for taking the time for Bernice.

To my brothers, David and Jason, for helping me understand something beyond myself.

To my grandparents, for always telling me I was the best.

To my own parents, as well as Troy's for supporting us over the years of too few phone calls and too few trips home.

And to Troy, my thanks and love.

As advocates, we must demand more than mere tolerance for our sons and daughters [and brothers and sisters] and friends in society. It is as important for our son Jim to <u>be</u> a friend as it is for him to have them. It's important for him to make some of the decisions about shopping, to take an active part in his everyday life, to learn the skills needed to interact with people as they spin by. Then, with any luck, Jim might have the courage to reach out when someone swirls by a little more slowly than the rest.[1]

Karin Schwier

You can't save the world, but you can set it an example.[2]
Alvar Aalto

[1] Karin Melber Schwier, *Couples with Intellectual Disabilities Talk about Living and Loving* (5615 Fiskers Lane, Rockville, MD: Woodbine House, 1994), p. 25.
[2] quote by Alvar Aalto taken from Lahti, Markku, "Alvar Aalto and the Beauty of the House," *Alvar Aalto: Toward a Human Modernism* (New York: Prestel, 1999), p. 49.

The Master's Degree Project provides us the opportunity to pursue issues that are important to one's self while also relevant to contemporary society. This project is informed by the realisation that while we can easily comprehend commonality, it is the unique and individual elements that challenge us to reconsider. This belief is based upon my experiences as a sister to Jay, an intelligent young man who has Downs' Syndrome, and a great sense of humour.

This personal experience influences the project in the definition of use and user – or rather the attempt to expand these definitions to include a greater diversity of individual through the design of our built environment. Through the discussion of the needs in housing that respond specifically to Jay's situation it is apparent that these needs are also common to other members of our communities who are concerned with aspects of change and flexibility.

The project examines housing and the societal assumptions that have created a homogeneity of form in our cities and communities and proposes a new model which addresses issues of flexibility and change. The flexibility within the design is to be understood as not the most ultimate of this form, but rather as one possibility within many, acting only as a catalyst in the continued creation of new housing forms within our cities.

Although the principles developed within this project are applied to the design of a multi-unit housing project it must be understood that they are applicable to any program dealing with issues of flexibility. Within our contemporary context this incorporates the complete built environment.

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As an investigation of the theory 'multiplicity through abstraction', the document seeks to determine a cultural relevance that is consequently addressed through the processes of architectural design. Four sections outline the proposed argument; I - cultural condition, II - architectural interpretation, III - context for evaluation, and IV - testing through design.

Section I, on the cultural condition, introduces the concept of diversity through globalization, outlining our society's previous experiences with the forces of globalization and standardization, and evaluating the similarities and differences to our current condition. It is proposed that globalization does not dictate homogenization, but in fact can provide the opportunity to understand a wider variety of cultural perspectives and information.

Section II addresses architectural responses to previous and current cultural conditions, and proposes a set of architectural sensibilities to guide design. From a contemporary perspective, the work of Alvar Aalto in Villa Mairea, is viewed as modernist but with strong connections to both the universal and the specific. Following, are critiques of several projects by the Austrian firm, Riegler Riewe. These works are demonstrated as building upon many of the themes addressed by earlier modernists. Drawing from concepts addressed earlier in the section, a set of architectural sensibilities is defined which will be tested through the design phase of the project.

Section III specifically addresses the context for design, studying both housing and user. Our traditional concepts of housing – more specifically single family housing are explored and challenged in relation to a changing cultural context. Recent examples of alternatives in housing that focus on flexibility are also discussed. Following, the concept of user and the need to expand upon commonly accepted definitions of this time is explored. This discussion relates directly to my experiences as a sister of a person with Downs' Syndrome, and the consequent implications in designing 'home'.

Section IV describes the application of the architectural sensibilities. Investigations of site, program, and design development allow the concept of 'multiplicity through abstraction' to be realized in the design of a multi-unit housing project that addresses issues of flexibility, community, and private space. Accompanying drawings and model photos may be found in the appendix.

Finally, the conclusion reviews the investigation of 'multiplicity through abstraction' in relation to a wider cultural context.

The cultural issue of diversity within a context of globalization continues to take on greater significance within and beyond our national borders. The recent spectacle, dubbed the 'Settle Showdown', at the World Trade Organization Summit in Seattle, attracted the attention of millions of people as a result of the fervent battle between those opposed and those in support of the reduction of national trade barriers. Trade unions, farmers, and environmental activists all joined in protest at the headlining rally and were treated to riot squads with tear gas and pepper spray. Underlying the conflict were the questions: "Can diversity be sustained within a condition of globalization?; Will individual countries and groups be able to maintain those things that are the defining elements of their cultures?"

From our western world perspective, it is obvious that this is not our first encounter with the forces of globalization – our world history includes the spread of the Romans, invasions by Vikings, and colonization by European nations. But there are some key differences that have determined the extent to which the global population is affected. Based upon the analysis of past and current conditions of globalization, it is proposed that diversity can be maintained, and may in fact grow. By utilizing technologies and facilitating shared under-standings, diversity may be maintained in both our cultural and physical environments. It is through the resulting interaction that globalization enables us to understand a wider variety of cultural perspectives and information.

Globalization, particularly within our contemporary context, is a difficult force to ignore. Seemingly it affects all of us, and yet is almost impossible to define due to its abstract and ephemeral nature.[1] The limits to globalization appear indeterminate. As a pervasive part of culture, we cannot perceive a specific beginning or point at which we were unaffected by globalization. We can however, see a time in which internationalism emerged as an integral part of culture: the age of modernism. During this time, advancing technologies in manufac-turing and travel opened an exchange between cultures that sparked the idea of a common existence, never experienced to this degree before.

It appears that the factors impacting our current condition of globalization are not related to a conceptual shift, but rather to an intensification of those qualities already present. One such factor is mobility, both physical and intellectual. As described in National Geographic,

> Human societies have always mixed and changed, but goods,
> people, and ideas move farther and faster today, spreading an urban-
> oriented, technology-based culture around the globe in just a few
> generations.[2]

The physical mobility of not only humans, but also of goods, is less restricted than ever before. As physical beings, humans are able to move freely across national borders and time zones. While air travel was certainly possible in the age of modernism, it was still associated with a glamorous lifestyle and attainable by only a small group.[3] In today's age

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of 'air miles' a great number of our population are able to attain internationality via air travel, due to a greater affordability and reduced restrictions between national borders. Trade agreements between countries, such as NAFTA, have also facilitated the increased movement of goods. Objects containing cultural information have spread to other nations, increasing a shared understanding. The movement of objects and people transports more than just a physical being or object.

Due to the developing technologies in communications, we have witnessed an increase in the potential to move ideas as well. Satellite connections and the internet both provide virtually instantaneous relay of information and allow for unprecedented levels of interaction. As a researcher of sociology, Hannerz supports this view:

> Two aspects of this encounter in particular seem to make the rules of the game for cultural organization rather different in the late 20ᵗʰ Century than they have been before: the mobility of human beings themselves, and the mobility of meanings and meaningful forms through the media.[4]

As discussed, it is the new forms of media that carry ideas across the previously insurmountable barriers of distance and national policy. But of almost greater importance is the way in which media carries these meanings and messages. As media becomes more advanced, it is able to communicate to a greater range of our senses, and so communicates more effectively with a greater number of cultures.

> Thanks to radio, television and videos this new world culture reaches virtually everyone, even the world's nearly one billion illiterate people.[5]

The popularity of North American music videos worldwide is a testament to this, as messages presented in both a visual and audible manner are less restricted by the limitations of language. Where as previous communication may have existed as only written words, or radio, we now have technologies that allow us to transmit signals that contain and translate audio and video, and are even interactive. An increased number of sensory cues enable us to communicate to a wider audience.

The advancements in physical mobility and communication provide the means to maintain and facilitate diversity in our contemporary condition. By developing a shared understanding, we create opportunities for new diversities and are better able to understand existing diversities through a comparative relationship.

1. Micheal Jordan is the most popular man in China, which is interesting considering that he has never stepped foot in the country.

As we witness a devaluation of meaning due to the pervasiveness of information, it may be argued that we lessen our ability to internalize or comprehend the information presented. However, the breadth of information that we come into contact with enables the individual to respond to and examine more closely those things that are relevant or spark interest. Within

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this condition of increased interaction is the element of choice.

Globalization may be described as a system that enables us to understand a wide variety of cultural perspectives and information due to our increased interaction. Through interaction, we are able to formulate a basic shared understanding, a common ground for communication. A common ground essentially provides a framework for the comparison of diverse elements. Hannerz describes this condition as, "The organization of diversity rather than a replication of uniformity."[5] Those entities that are not standard are highlighted as unique against a commonly understood background. In this way, individualistic elements receive greater attention than in an environment unaffected by globalization. Conversely, post-modernism provides a situation in which everything exists as an individual element, thus masking the importance of the unique.

As discussed above, globalization results from the exchange or sharing of technologies, knowledge or product. Implicit to this interaction is the concept of *transaction*, or a two-way exchange.[7] The exporter of a product cannot effectively sell a product without understanding the importing market. The same can also be held true for the importer, who cannot understand the product without understanding certain things about the exporter, the relationship is that of an equal partnership. Within the realm of education it is common to employ visiting lecturers to discuss new ideas. But, an understanding of the context in which those ideas were developed is critical for comprehension by the local audience. And, the same applies for the lecturer. For that person to effectively discuss the new idea, he/she must understand the local context. Regardless of which culture is the importer or exporter, the transfer is never one-sided – it is not simply a matter of replacing one culture with another. Thus, globalization as a two-way exchange ensures not only the maintenance of diversity, but also creates the potential to increase diversity.

Finally, globalization must be discussed as purely sponsoring an environment of increased interaction. With greater interaction comes the potential for new combinations – or new diversity. As described by Scott,

> "...globalization is held to be a complex interaction of globalizing and localizing tendencies (so called 'glocalization'). A synthesis of particularistic and universalistic values."[8]

The increased contact between cultures creates potentials for new diversity. Elements previously separate and self-contained interact and influence each other, resulting in new formations. Examples may be found in clothing styles, television programs, cuisine, etc. The potential for a greater number of previously independent variables to interact essentially produces a greater number of combinations.

From this argument it may be seen that globalization, within our contemporary condition,

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Global Culture

does not dictate homogenization. Due to the new technologies in communications and fewer restrictions to international travel we have been successful in furthering the development of a shared worldview. It is this common field of knowledge, or open back-drop that facilitates the discussion of diverse elements. And finally, further opportunities for new combinations, and thus new diversity, are provided by this increase in cultural interaction. Globalization does not limit our ability to value the local and unique but rather provides us an open condition in which we are able to discuss and understand the particular.

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[1] Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam: Nai Publishers, 1998), intro.

[2] Joel L. Swealow, "Global Culture," *National Geographic*, 196, no.2. (august 1999): 5.

[3] Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam: Nai Publishers, 1998), p. 33.

[4] Ulf Hannerz, *Transnational Interconnectedness* (New York: Routledge, 1996), p.19.

[5] Joel L. Swealow, "Global Culture," *National Geographic*, 196, no.2. (august 1999): 5.

[6] Ulf Hannerz, *Transnational Interconnectedness* (New York: Routledge, 1996), p. 237.

[7] Alan Scott, *The Limits of Globalization: Cases and Arguments* (New York: Routledge, 1997), p. 77.

[8] Alan Scott, *The Limits of Globalization: Cases and Arguments* (New York: Routledge, 1997), p. 7.

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Architects such as Alvar Aalto, from the age of modernism, and the contemporary firm of Riegler Riewe, have explored and continue to explore our conception of space as it relates to a diversity of use and interpretation. Common the work together is a shared cultural framework – globalization. As discussed in the previous section, globalization was experienced as an influential force during the age of modernism. Advancements in technology impacted and shaped a new global understanding, and architects consciously developed an architectural approach that was universally applicable.

Our contemporary condition may be seen as a superlative of the age of modernism, as we experience a renewed consciousness in the relationship between the universal and the unique. This condition is primarily due to new developments in the areas of communications and materials. With the recent intensification of globalization we are witnessing a return to certain modernist ideas, including abstraction and universality. These ideas have been re-examined and invested with new layers of meaning particular to our cultural condition. Previous notions regarding open space are rediscovered not as an emptiness, but rather a safe container, a flexible shell.[1] We are also witnessing a resurgence of the concept of abstraction or a, "rediscovering [of] the richness of simplicity".[2]

Through the examination and analysis of representative works from both Alvar Aalto and Riegler Riewe, a set of architectural sensibilities are developed to provide for the expression of a diversity existing but as yet unexpressed within our built environment. The architectural sensibilities, as concepts relating to spatial qualities and materiality, are responsive to our contemporary condition and address the theme of multiplicity.

[1] Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam: Nai Publishers, 1998), p. 62.
[2] Ibelings, *Supermodernism*, p. 89.

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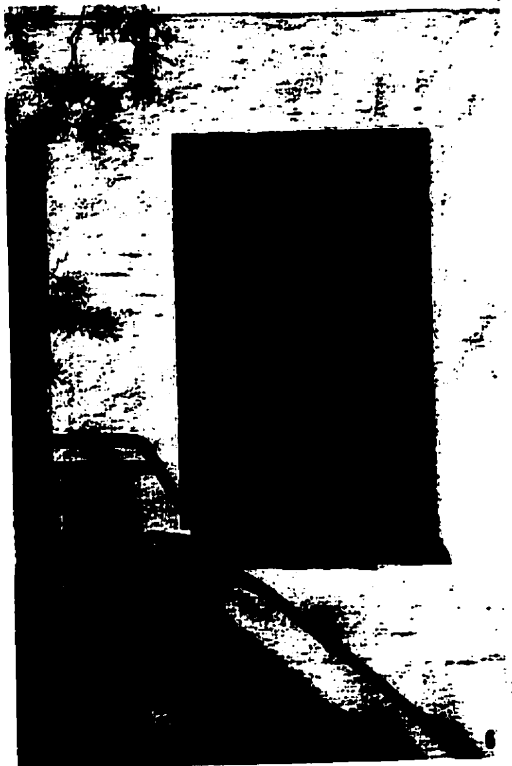
The design of *Villa Mairea* in 1939, was very much a product of its time and place, as is all architecture. Throughout Finland and much of Europe there was a newly found confidence in democracy, the benefits of industrialization, and the influential role of modern art, architecture and design.[1] It appeared that a new way of conceiving architecture was required to adequately address the shifts in cultural perception and ways of living. The clients, Harry and Maire Gullichsen, requested that Aalto design a setting for 'contemporary life', as their lifestyle was far from the traditional role of husband and wife. They desired their home in Noormarkku, Finland to be a place for the open discussion and development of emerging ideas, rather than a shelter specific to the physical needs of the body or the traditional gender roles associated with spaces. In response, Aalto sought to define space that was open to both interpretation and a variety of uses, effectively seeking a 'multiplicity through abstraction'. The following analysis of *Villa Mairea* focuses on several means employed in this investigation: the use of collage, the development of a humanistic architecture, the suppression of structural readings, a dissolution of the field, as well as the new sense of dynamic movement.

Aalto was intrigued by the new possibilities presented in modern art – particularly **collage**. He adopted and modified this technique in the design of *Villa Mairea*, as a means to address a limitation of modern architecture – the creation of a complete, finite thing.[2] Combining fragments and textures, with each suited to a particular purpose, formed new interpretations. Implementing the technique of collage allowed alterations, additions, and later improvements to be incorporated into the composition.[3] The layering of various materials, including plaster, brick, stone, and wood in the living area speaks of this technique in the way that they overlap and create inconsistencies, denying a set interpretation. It also allowed him to combine elements of the universal and the unique, referencing a specific place within the international. On the exterior, creeping plants are utilized to dissolve the hard edge of formal masses and create a visual play upon the surface of the building. As abstract surfaces, the elements are combined and fused together to create an environment that is dynamic, changing with the position of the user. While modernism typically produced logical and unified elaborations of a single main idea, Aalto pursued a multiplicity of readings and discontinuities achieved in part through superficial use of collage.

As Aalto searched for the means to create a multiplicity of spatial interpretation he found it necessary to reject the modernist notion of expressed functionality in favour of creating a **'humanizing architecture'**.[4] This was a radical shift in his theoretical basis as he had earlier advocated functionalism. Through the process of design for the *Villa Mairea*, he developed an alternative support of rationalization as it extended to the realm of psychology – the ephemeral qualities of space.[5] Aalto justified the shift in focus,

6. Villa Mairea. A collage of textures and material.

> It is not the rationalization itself that was wrong in the first and now past period of modern architecture. The wrongness lies in the fact that

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the rationalization has not gone deep enough. Instead of fighting rational mentality, the newest phase of modern architecture tries to project rational methods from the technical field out to human and psychological fields... technical functionalism is correct only if enlarged to cover even the psychological field. That is the only way to humanize architecture.[6]

In this new expression of a psychological functionalism tactile sensations and bodily experiences are elevated to a greater level of importance. As described in the essay by Winfried Nerdinger, "...the user has ever new impressions of the architecture as an expression of life and motion."[7] The wide range of textures, materials, and spatial experience create a multi-sensory experience within the *Villa Mairea* that was in direct contradiction to the primarily retinal experience of modern architecture.[8] As such, Aalto incorporated a psychological functionalism expanding the potential interpretation of the architecture beyond the simply functional.

In seeking to define a 'humanistic architecture' it became necessary to **suppress the structural reading**. According to Aalto, a structural reading would only serve to facilitate a functional interpretation – thus limiting the potential for multiple readings or multiplicity.[9] Both, the random grouping of columns and dynamic placement of forms within space, act to consciously suppress the reading of a regular structural grid. Columns appear either singly or in groupings of two's and three's, denying any logic based on structural loading. The surface treatment of the columns also varies throughout the spaces – some are bound with rattan bindings and others with vertical battens. This idiosyncratic variation relates to the spatial setting that each column exists within. The dimension, textures, and location within the space are all factors that determine the 'psychological function' of the column. Some columns on the exterior wall are expressed as an individual element as they appear alongside the window, but are then integrated into the wide windowsill and are hidden within the wall. Material treatment of the column often reacted to the specific lighting conditions of a room; reflecting light in dark rooms or articulating texture in southern exposures. The denied structural reading of the columns continues through to the section of the house. Columns appearing singly on the main floor may appear as doubles on the second, further masking the structural association of a column and articulating a purely spatial logic. While the structural association of a column is never completely removed it is nevertheless suppressed, allowing the column to participate as an visual element in the psychological definition of space.

Furthering the perceived ephemeral quality of space is Aalto's approach to mass and volume – a **dissolution of the field**. The field, as a volumetric concept of site, is broken into a series of independent episodes creating the potential for a variety of spatial extensions. Form is essentially abstracted as a series of parts that may be shifted or removed to facilitate a spatial complexity. The massing of *Villa Mairea* clearly articulates this concept – the

7. and 8. Villa Mairea.

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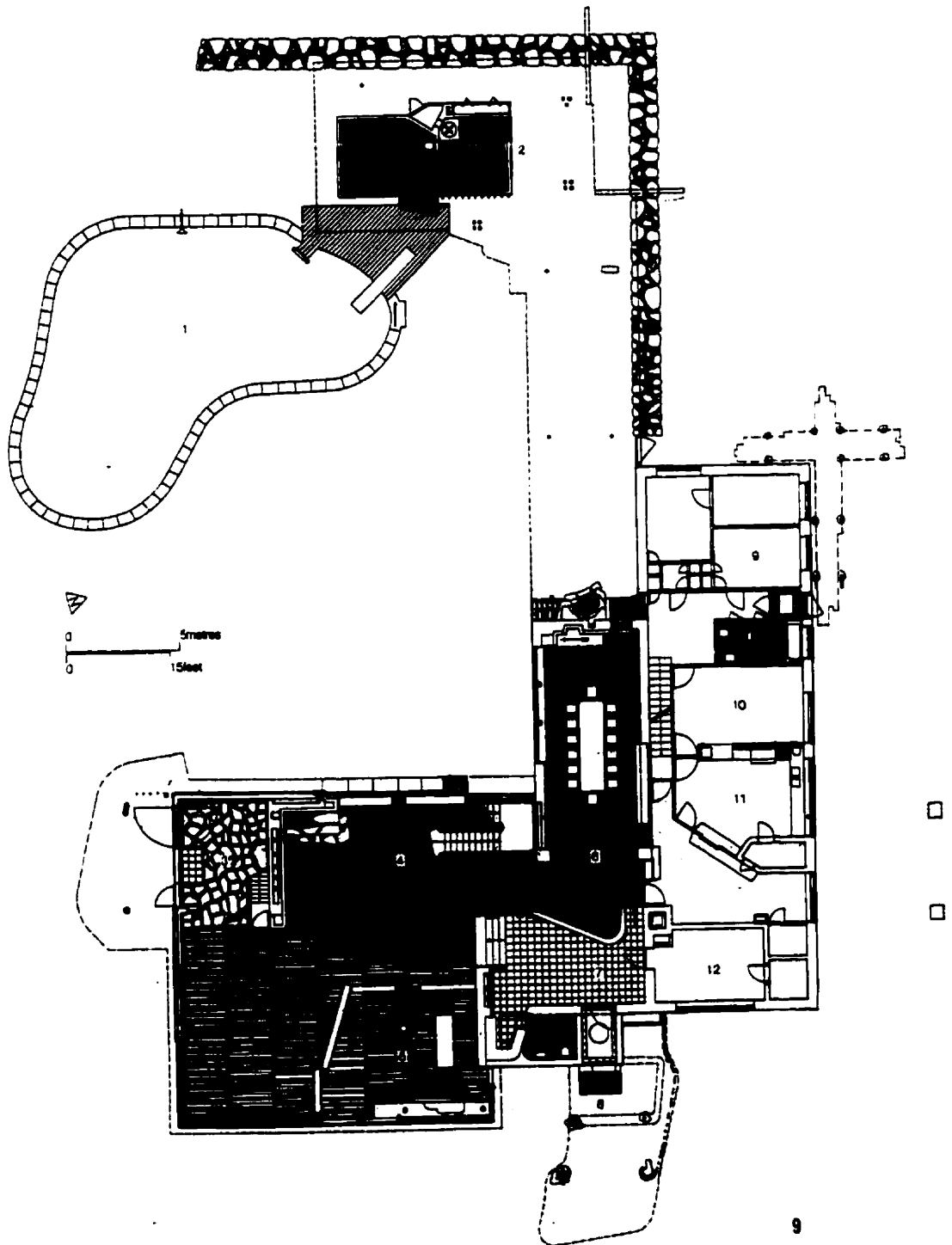
arrangement of form in an L-shaped plan permits the partial enclosure of the courtyard. As a result, there is a relationship of transparency between site and building as outdoor space extends to the interior and indoor spaces extend to the exterior. Site is incorporated into the architecture as a completion of the built form. Conceptually, the *field* is intermittently interrupted to provide a greater amount of spatial complexity. In the living area of the *Villa Mairea* the consistent treatment of the ceiling with wood strips creates a field that is interrupted by the formal elements of the library, stair, and fireplace. The ceiling is defined as the field upon which elements are placed to facilitate a process of dissolution.

The variety of spatial arrangements is further accentuated by the provision for *dynamic movement*. Although composed of a regular grid, the physical movement through the space denies any implication of a homogenous experience. Pallasmaa described this as creating a relaxed, informal atmosphere, a feeling of improvisation.[10] Set within the rectangular grid are numerous twists, skews, and curvilinear shapes interrupting the regularized field. The resulting movement is non-hierarchical, without distinct order or sequence due to the absence of an axis or centre-point dictating the organization of space. As the potential for new movement is created so is the possibility of new activity defined by the user. This challenges the traditional movement patterns within a home and sponsors an open-ended definition of both movement and activity.

As an architect of the modern movement, Alvar Aalto addressed the colliding cultural domains of the homogenous and the unique through an architecture that sponsors multiple interpretations and activities. Although operating within the framework of modernism, Aalto rejected the concept of expressed functionalism and instead focused on a psychological functionalism – the ephemeral qualities of space. It is through the integration of all these components that an architecture of multiplicity was ultimately achieved.

After examining the work carefully there are certain inconsistencies that must be addressed, based on the criteria of 'multiplicity through abstraction'. Among these issues are the elitist nature of the project, and the flexibility of certain spaces. Although valuable as an exploration of spaces for new lifestyles, this example is unaffordable to all but a few elite – it may have been more successful had the same principles been assigned to a more modest design. As well, the space was consciously designed for two specific users and did not incorporate the activities of the children (their space was upstairs in a highly conventional space). Various activities are possible in certain areas such as the living rooms, but many spaces are still prescriptive, i.e., children's play area, kitchen, dining room. The true 'multiplicity' of spatial configurations is slightly compromised by the formal interruptions of the larger spaces are fixed elements. The library, which is enclosed by bookshelves that are to appear moveable, is actually a fixed space. However, with all things considered, *Villa Mairea* does remain an outstanding example of the new potentials for multiplicity in architecture.

9. Villa Mairea. Plan.

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' Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 70.

[2] Richard Weston, "Between Nature and Culture: Reflections on the Villa Mairea," *Alvar Aalto: Toward a Human Modernism* (New York: Prestel, 1999), p. 66.

[3] Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 70.

[4] Alvar Aalto, "Humanizing Architecture," *Alvar Aalto: Sketches* (Cambridge, Massachusetts: The MIT Press, 1978), pp. 77, 78.

[5] Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 75.

[6] Alvar Aalto, "Humanizing Architecture," *Alvar Aalto: Sketches* (Cambridge, Massachusetts: The MIT Press, 1978), pp. 77, 78.

[7] Winfried Nerdinger, "Alvar Aalto's Human Modernism," *Alvar Aalto: Toward a Human Modernism* (New York, Prestel, 1999), p. 20.

[8] Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 90.

[9] Pallasmaa, *Villa Mairea*, p. 82.

[10] Pallasmaa, *Villa Mairea*, p.80.

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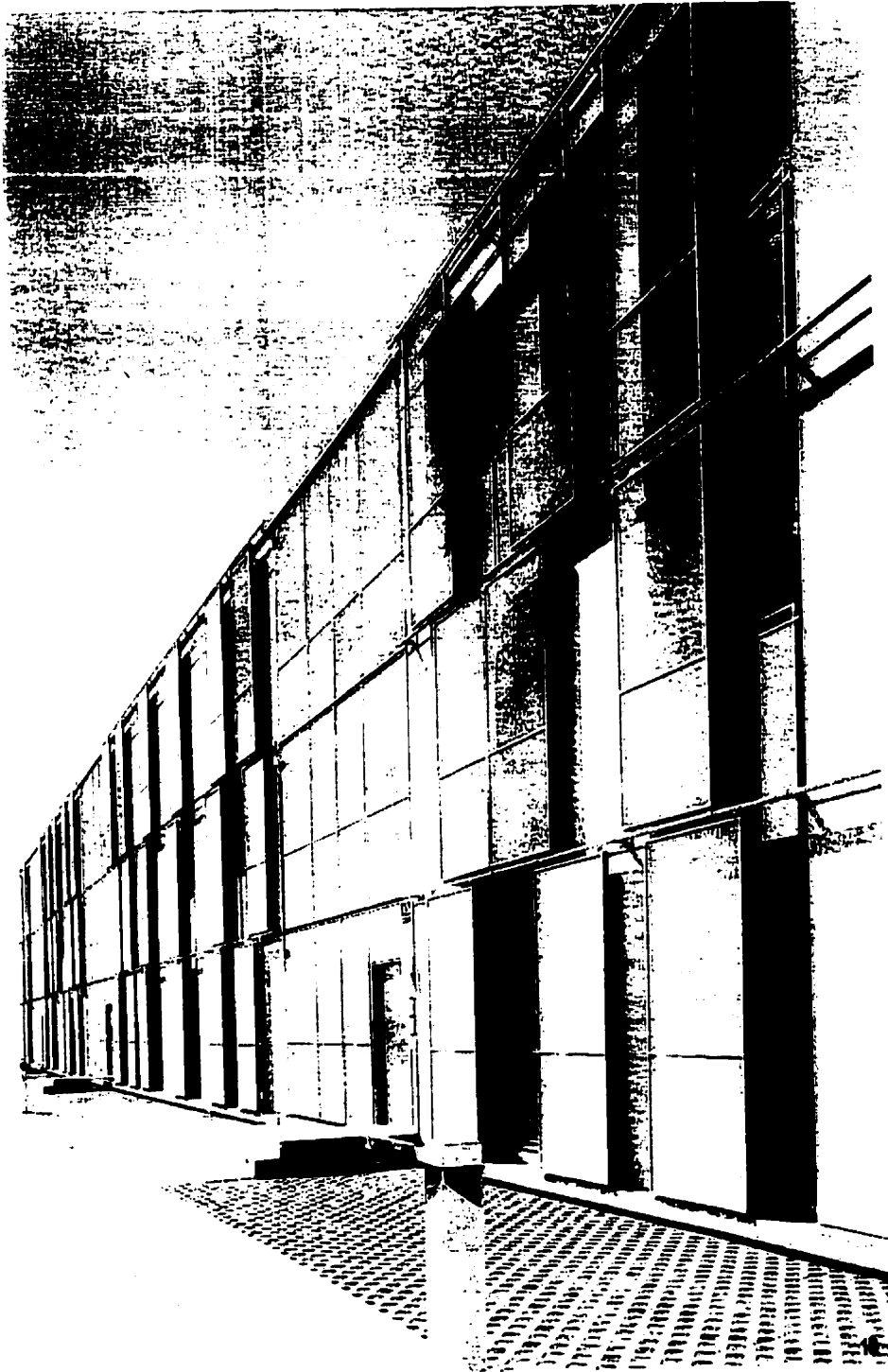
The Austrian firm of Riegler Riewe borrows from the basis of modernism to develop a contemporary understanding of user. They retain the concepts of boundless and undefined space and abstraction, but shift the focus from functional rationality to use. A focus on the user rather than prescriptive function allows space to be interpreted as open-ended and ultimately may be defined by the user. These concepts will be discussed and analyzed through recent projects (1987-present) including the *Technical University*, *Graz Airport*, and *Strassgang Housing Block*. Riegler Riewe employs several means to achieve the resulting inherent multiplicity: a denial of reference, a suppression of part, a conditioned openness, a dissolution of the whole, and finally an engagement of the user.

In order to create spaces that serve the user, the architecture of Riegler Riewe seeks a *denial of reference*. Their designs do not refer to the surrounding site or even to itself, in terms of material or detail. Influences, beyond that of the user, are interpreted as applied and cumbersome, detracting from the creation of open-ended spatial configurations. Essentially, references apply only assigned meaning. Encompassed within the realm of referenced meaning are site specificity, materiality, and structural and functional expressionism, thus rejecting certain concepts prevalent during modern and post-modern phases of architecture in favor of a purely spatial expression. Hans Ibelings discusses this desire for neutrality,

> ...an architecture that refers to nothing outside itself and makes no
> appeal to the intellect, automatically prioritizes direct experience, the
> sensory experience of space, material, and light.[1]

Formal abstraction plays a large role in the denial of reference, as it provides for new arrangements, resisting the fall into stable and fixed relationships. Material is selected based on the criteria that it must not be 'loaded' with references but rather be neutral and open to interpretation. The *Strassgang Housing Block* exemplifies this concept, a *denial of reference*. Situated in a suburb of Graz, it is surrounded by housing projects also designed within the last decade – with obviously very different objectives. While many of the buildings compete noisily for a voice and 'sense of place' with outward complexities, it is the project by Riegler Riewe that stands out with its quiet nature and self-confidence. The simple rectangular forms create a plaza addressed by the regular yet dynamic rhythm of the façade with operable screens. The use of concrete and metal, rather banal materials, continues to deny culturally loaded meanings. The elements of the design focus on creating an architecture that is not applied with reference but is open to interpretation by the user.

The overall spatial concept is strengthened by a conscious *suppression of the part*. As the individual quality of an element is minimized, it is incorporated into the central focus of the design. The part is essentially subsumed in the process of design. An interpretation relating only to a part or detail inhibits the potential occupation of the space – it *prescribes* an interpretation of the space. Within this context, surfaces retain importance not as structural pieces or representative elements but as phenomenal components interacting with other

10. Strassgang Housing
Project.

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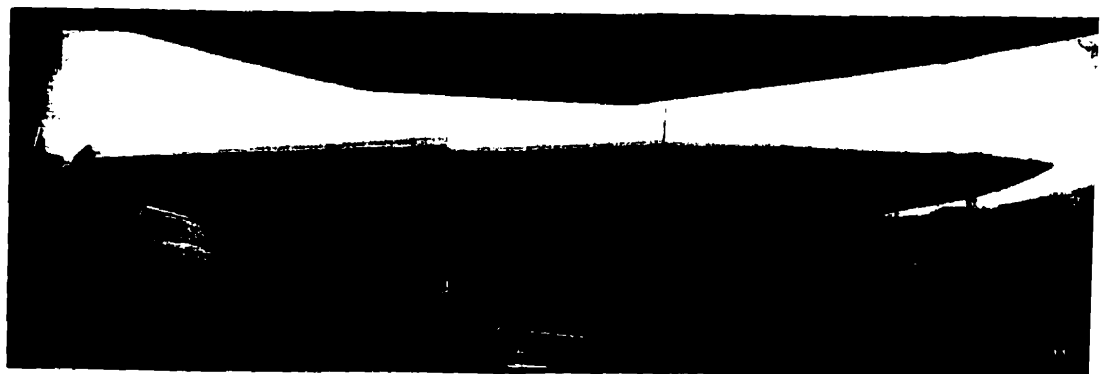
elements. In this way the facade may be described as a skin - *conditioning* the volume or space contained. The envelope of the *Strassgang Housing Block* is composed of concrete, glass, and moveable metal and nylon screens. The façade achieves the effect of a skin partially due to the use of screens, which are physically dynamic in their ability to respond to the needs of the user, by sliding over or clearing the expanse of the window. In mass, the screens – as parts - modulate and unite the long façade, abstracting the flexibility inherent in plan.

Conceptually, a suppression of the part may then be extended to the structure, when understood as only one part of the complete construct. Structural expressionism is commonly termed 'high-tech' – the aesthetisization of the constructive detail. It is the obsession with the part that is problematic within this conceptual framework. By extrapolation of this definition, the work of Riegler Riewe may be described as 'low tech'. For ultimately, the detail should become inseparable from the whole in a 'sophisticated simplicity'.[2] The roof element of the *Graz Airport* exemplifies this point: the structural interpretation is suppressed in favor of a larger spatial reading. The roof structure is expansive, encompassing the entire experience of moving through an airport, from entry to check-in to boarding. The sheer scale of the roof and the extreme cantilever extending beyond the envelope could be expressed by large trusses or articulated columns (as high-tech), but instead the roof is clad with a smooth skin and is regularly punctured by skylights. Its function and articulation remains focused on the definition of space beneath the objectified roof. The roof and large overhang further serve the extensive space beneath by shading the glass envelope, permitting greater transparency and spatial extension and allowing the entire space to read as a field.

The ability to integrate details into concept has become more of a reality today than was possible during modernism. Today's minimalism is even purer due to advancements in materials and technology. Never before have we been able to achieve truer monolithic volumes and clearer transparencies and translucencies.[3] The floor-to-ceiling, mullionless glazing of the *Graz Airport* creates an almost non-existent façade that continues the spatial flow rather than interrupting it. As the technical components of details attain a higher level of sophistication and subsequent integration the overall spatial concept is strengthened.

The part, although minimized an individual element, is also recognized as an integral component in the concept, '*conditioned openness*'.[4] Parts are required to create a disjunction in abstract, undefined space - it applies conditions to open space. Defined elements within an unprescribed framework add complexity and richness to an otherwise undifferentiated space. They act as catalysts, implying the multitude of spatial configurations possible. There are several spatial readings due to the way in which the formal geometries are disintegrated. This is a departure from pure modernist principles, which advocate purely homogenous space, and moves toward the multiplicity inherent in heterogeneous space. The Housing

11. Graz Airport.

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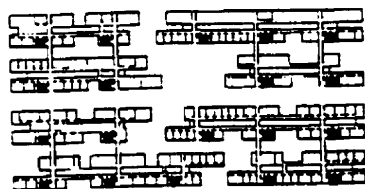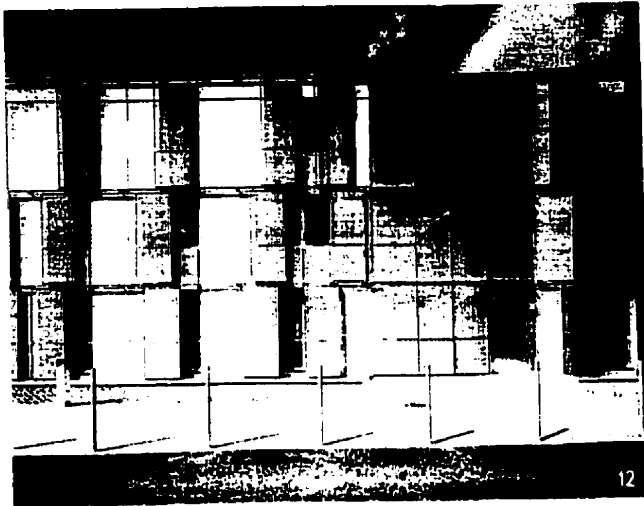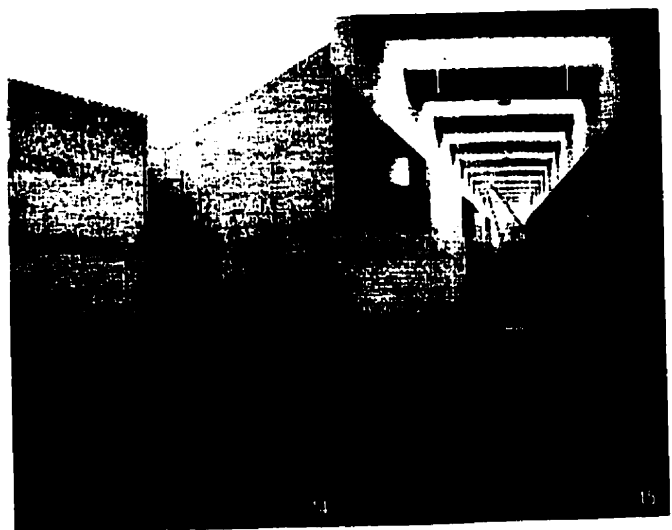
Block at Strassgang clearly articulates a conditioned openness. The interior of the rectangular bar is divided to provide units that extend from front to back (with equally sized windows on each façade) and contain a defined service core. The remaining space is undefined in terms of program, orientation, and spatial interconnections. Large sliding doors, interstitial spaces and the volumes of the service core allow the space to be arranged in various public or private configurations. A 'conditioned openness' provides the user with a spatial complexity that is open to multiple uses.

The building may in the end be understood as a *dissolution of the whole*, rather than simply a sum of parts. From an initial volumetric field, pockets of space are defined as solid and void, creating a greater spatial complexity within a previously homogeneous field. The interwoven nature of space and form articulate more clearly a sense of scale and spatial possibility. This process may be applied to a volume of space contained by either a building envelope or an entire site. In the example of the Technical University the process of dissolution is applied to the entire site. A basic volume, necessary for programmed and unprogrammed elements, is translated into form as four long bars of partially enclosed space. Within each of the bars, program is inserted as necessary. Voids occur in locations where program is undefined, effectively breaking each of the long bars into two. The voids of undefined program occur vertically and horizontally and align in some instances to produce views through or between the programmatically defined areas (i.e., as skylights). Similarly, the two volumes of the Strassgang Housing Block are rectangular, constructed of concrete and articulated with metal (or nylon) screens over glazing. The metal screens over the windows and enclosing the stair act as modulators, diffusing the interior light during the night and reflecting light during the day. As the stair volumes are clad completely in metal screen, the translucency at night erodes the continuous reading – dissolving the geometry of the rectangular bar.

In stating that the ultimate goal for space is to achieve an open-ended interpretation, Riegler Riewe recognizes certain processes of inhabitation – in the *engagement of the user*. In creating an architecture of open-ended use, the user is required to engage in the space around them. This is a radical shift for both architecture and the user – the architecture must be at a certain level undefined; and the user is required to contribute to the definition of space. In the words of Riewe this may provoke a 'phase of irritation' in the user as they are required to construct their own rules for utilization (be it living, working, playing, etc.).[5] As architects, Riegler Riewe acknowledge the processes in which a user takes responsibility for a space, i.e. the creation of home. In this way it is the user who must define program, spatial relationship and the circulation in the Housing Block in Strassgang. A space is provided with limited definition (the service core) and maximum flexibility (large sliding doors and interstitial spaces). Placement of electrical outlets on all sides of the rooms carries this idea to the level of furniture arrangements. The variability of arrangement instills a spatial richness that

12. Strassgang Housing Project.
13 - 15. Information Technology and Electronics Institute. Technical University.

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transcends the undefined box and allows the user to engage the space.

In analyzing various works of Riegler Riewe it appears as if there appear certain inconsis-
tencies between theory and implementation. The main area of contention is in the discussion
of materials. Although they attempt to use materials that are without 'loaded meaning' it seems
that most materials do carry some cultural understanding. As an example, the use of
concrete and metal on the exterior of the Housing Block at Strassgang is not without
reference. For many people these would be read as cold materials, particularly when
extended to the treatment of the exterior plaza separating the two buildings. As monolithic
volumes articulated in concrete they read as similar to the failed modernist attempts at low-
cost housing in many of the large North American and European cities. These materials are
also associated with an industrial vernacular - not a housing reference, but still a reference.
Beyond this however, the examples of architecture discussed are inspiring and point to new
directions for allowing and expressing multiplicity.

[1] Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam:
Nai Publishers, 1998), p. 89.

[2] Roger Riewe, interview: Nicole Howard w/ Roger Riewe, *In Situ: Critical Explorations
in Architectural Culture* (Calgary: Triad Press Ltd., 1998/99), p. 16.

[3] Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam:
Nai Publishers, 1998), p. 51.

[4] Roger Riewe, interview: Nicole Howard w/ Roger Riewe, *In Situ: Critical Explorations
in Architectural Culture* (Calgary: Triad Press Ltd., 1998/99), p. 15.

[5] Riewe, Interview, *In Situ*, p.14.

16. Information
Technology and
Electronics Institute.
Technical University.

In examining the works of Riegler Riewe and Alvar Aalto, there appears both unique and shared approaches to the design of spaces expressing multiplicity. From these a set of design sensibilities for implementation in the design phase are to be defined. The design sensibilities, as concepts relating to spatial qualities and materiality, will be responsive to our contemporary condition and address effectively and evocatively the theme of multiplicity.

At this point, it is useful to introduce the concepts discussed by Jeffrey Kipnis in his article, 'Towards a New Architecture' to guide the organization of two of the proposed design sensibilities. The article by Kipnis, develops several points (originally set out by the new-modern social theorist Roberto Mangeiberra Unger) for the creation of an architecture appropriate to our contemporary condition. He advocates an architecture that resists settling into defined interpretations. Kipnis explains,

> Where Le Corbusier's points are directed towards producing a broadly democratic space by achieving homogeneity, Unger's are directed towards a similar political goal by achieving a spatial heterogeneity that does not settle into stable alignments or hierarchies.[1]

Two points in particular from his article - vastness and blankness - provide guidelines for categorizing the design principles previously discussed. The remaining three principles are presented in terminology explored in the previous sections - dissolution of the whole, suppression of the part, and an engagement of the user.

'Vastness' as defined by Kipnis, "...negotiates a middle ground between the homogeneity of infinite or universal space and the fixed hierarchies of closely articulated space".[2] This is in direct correlation with the concept of 'conditioned openness' as discussed and implemented by Riegler Riewe.[3] Points of specificity within the homogenous space act as definers and catalysts in the creation of multiple spatial configurations. There is a necessity for some level of finitude for heterogeneous space, but which includes spatial extensions to separate it from past definitions of closed space.[4] In the design of Villa Mairea, Aalto conveys a vastness through the open configuration of the living area. The expansive wood ceiling defines a homogenous space articulated with objects such as the stair and the bookshelves of the library. A semi-transparent screen above the units provides acoustic privacy for the library and allows the ceiling to be perceived as an uninterrupted plane. The Strassgang Housing Project by Riegler Riewe utilizes a strategy of placing objects upon a field as well. The kitchen, bath and storage spaces read as objects, set upon a plane which may be subdivided in a number of ways. It is this ability to create disjunction in space that articulates the potential inherent in an open field.

17. Villa Mairea.
18. Strassgang Housing Project.

Only through the suppression of referenced meaning, or a 'blankness', can spaces be designed that may be perceived in new ways. By avoiding figural reference, architecture

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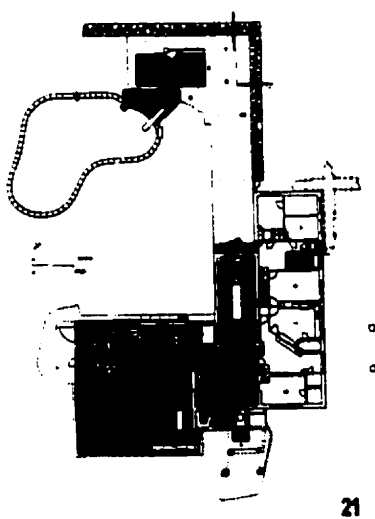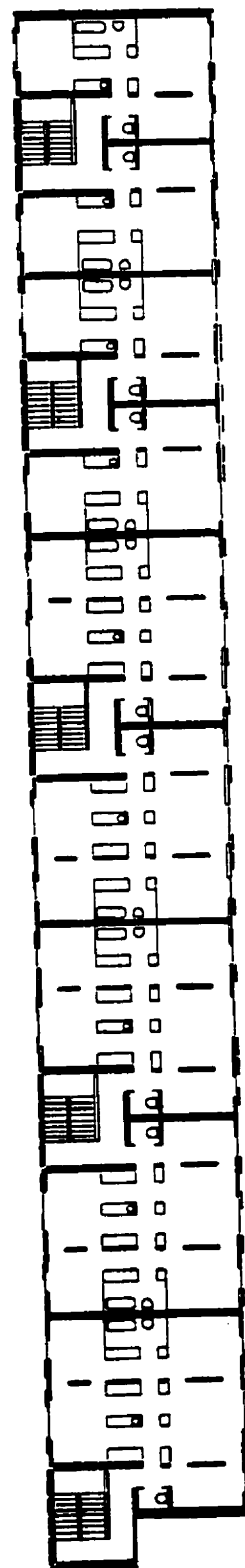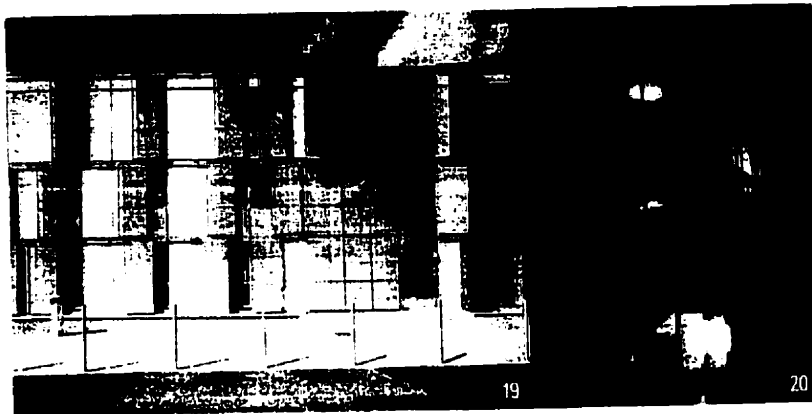
can engage in unexpected 'formal and semiotic affiliation' without entering into fixed align-ments.[5] The goal of multiplicity is achieved through the use of formal abstraction - the suppression of quotation. Both the works of Aalto and Riegler Riewe share this sensibility, although each pursues it in a very manner. In the *Villa Mairea*, Aalto uses collage to create re-combinations in which elements are unable to maintain their traditional references and instead contribute to new meanings. In Riegler Riewe's work the opposite technique is employed, instead utilizing a minimalist approach to form and material. The form is a simple yet evocative monolith, focused on the creation of the perfect backdrop for activity. Conventional references to housing are suppressed in favour of a multiplicity of space and user.

Both precedents utilize a **dissolution of the whole**, expanding beyond the building enve-lope and allowing the design to be defined by both form and void. An expansive quality of space unites interior and exterior – increasing the number of potential spatial readings. In this definition, materiality and light relate directly to the concepts of form and void, as each manipulates and interacts with the other element.

The significance of site in the design of *Villa Mairea*, unites the building with its Finnish landscape and traditions. Site and building engage in a dialogue as each takes on properties of definition and dissolution. With one formal move, the L-shaped plan provides simultaneous conditions of containment and expansion. In the example from Riegler Riewe, it is the fenestration and voids of the stairwells in the *Strassgang Housing Project* that speak to a dissolution of the whole. At night particularly, the mesh-enclosed stairwells emit a glow that interrupts the solidity of the monolithic form, creating the visual effect of a series of units. Windows and adjustable screens act to enliven the façade, as they are juxtaposed against a static field.

To support the dissolution of the whole there must be a **suppression of the part**. This relates not only to the 'blankness' referred to above, but also to an integration of the part into the overall concept. The suppression of the part allows the facade to act as a skin in the analysis of Riegler Riewe's work; and allows the structure to submit to an expression of ephemeral space in the example of Aalto's *Villa Mairea*. The part, as an individualized element, has no place other than to interact with other elements in a way that speaks not of one piece and its aesthetic qualities, but of the greater concept. In this way, a singular definition, as may be attached to an aesthetisization of detail or material, is avoided in favor of a multiplicity of interpretations.

In the example of *Villa Mairea*, Aalto consciously suppressed the structural reading of the columns, by varying the tactile treatment and number of columns. Rather than responding to the structural requirements for loading, the columns appear individually or paired, and with vertical slats or horizontal bindings based on their spatial context. In *Strassgang*, no structural system is apparent as load bearing walls cleanly transfer the structural stresses. This provided for a greater flexibility as spatial configurations were not dictated by the

19 and 20. Strassgang
Housing Project.
21. Villa Mairea. Plan.
22. Strassgang Housing
Project. Plan.

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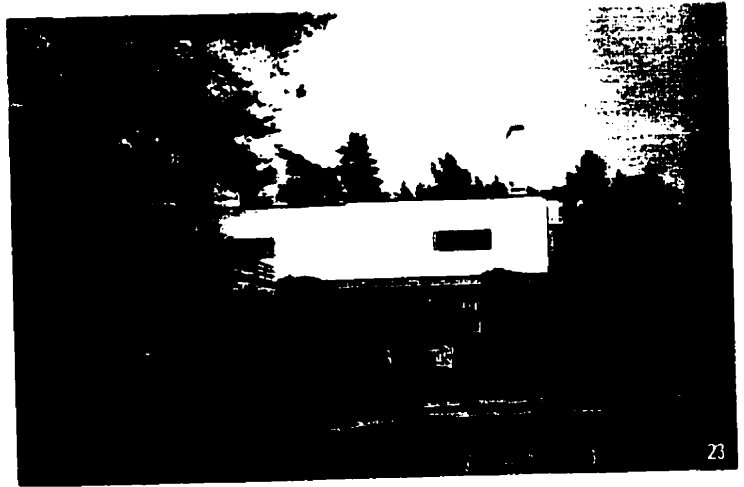
placement of internal columns or internal load bearing walls. In this context, the skin (which functions as envelope and structure) is not treated as a separate element but as part of the overall concept of flexibility.

Finally, I will discuss the *engagement of the user*. Returning to the article by Kipnis, he believes that a new architecture, "...must point to the emergence of new social arrangements and to the construction of new institutional forms."[5] Future occupation and the importance of the user are crucial to the development of a spatial multiplicity. The architecture must provide a level of indeterminacy, in order that the user may take possession of the space, and not merely consume it.[7] The ability to engage a space encompasses not only the spatial configuration of a space but also the quality of light. It is through the manipulation of these particular factors that a wide range of spatial types may be created by the user.

The plan of *Villa Mairea*, when compared to other, less projective, houses, demonstrates a re-conception of space within the home. In the work of Riegler Riewe, definition is left to the user – spaces are defined neither as bedroom, living room, or dining room. The user is understood as a variable and changing entity, requiring environments that allow, support and express multiplicity.

In the previous two chapters, architectural principles associated with previous and contemporary conditions of globalization and multiplicity were discussed and analyzed. This analysis sponsored the development of the five architectural sensibilities discussed above; vastness, blankness, dissolution of the whole, suppression of the part, and an engagement of the user. These architectural sensibilities suggest an architecture of multiple spatial configurations and interpretations, as well as a diversity of user. Ultimately, it is the user, rather than the designer, will define the way in which the space it is engaged. These architectural sensibilities will be tested through the program, multi-unit housing, and the definition of user identified in the following chapters.

[1] Jeffrey Kipnis, "Towards a New Architecture," *Architectural Design Profile: Folding in Architecture*, 102 (1993), 43.

[2] Kipnis, "Towards a New Architecture," p. 43.

[3] Roger Riewe, "A Search for a Conditioned Openness," transcription of lecture, *In Situ: Critical Explorations in Architectural Culture* (Calgary: Triad Press Ltd., 1998/99), p. 11.

[4] Kipnis, "Towards a New Architecture," p. 43.

[5] Kipnis, "Towards a New Architecture," p. 43.

[6] Kipnis, "Towards a New Architecture," p. 43.

[7] Roger Riewe, "A Search for a Conditioned Openness," transcription of lecture, *In Situ: Critical Explorations in Architectural Culture* (Calgary: Triad Press Ltd., 1998/99), p. 11.

23. Villa Mairea.
24. Detail of column
treatment in Villa Mairea.

The Rancher in Levittown

$59 A MONTH

No Down Payment for Veterans!

26

The issue of diversity within our communities is a relevant concern if the number of articles and escalating public concern are any indication. A complete issue of the Harvard Design Magazine, published in the summer of 1999, addressed this issue under the title of Housing and Community. The articles composing the issue make a strong case for the relationship between housing and community. The means by which a culture houses its members indicates much more than just economic standing, it relays information about the relationship between individual and community. The discussion of this relationship by the architectural profession is important for several reasons:

1. Our constructed environment exemplifies 'both the prevailing culture and cultural politics'.
2. It discusses professional responsibility and fiduciary duty as well as societal responsibility.
3. This topic requires objective design rigor and discipline.[1]

Housing, as it relates to diversity, will be discussed and analyzed – the prevalence of the single-family dwelling; the changes in society that have left this form unacceptable and out of date; and examples of alternatives. Other possibilities, besides the single family home have the potential to benefit community and city.

The single-family dwelling remains the most prevalent housing model today in both Canada and the United States, due primarily to a cultural obsession with an idealized model. It is a model that has been passed down from another era – post-war North America. During that time, the previously unattainable single-family house became instituted as a 'right', as single-family housing was offered to returning war veterans with no down payment.[2] Each man had the right to protect his private, fenced piece of property and family. This obsession with the private, fenced piece of land and detached home has continued with each generation; as each person dreams of one day having the type of home they were raised in, or wished they were raised in. Despite the economic and social impossibility of sustaining this model, single detached housing continues to be the most prevalent building type in North America, due to the power and support of certain influential players.

Shareholders invested in the housing industry - bankers, insurers, private developers, construction companies and governments - look to the traditional definition of a family unit and ignore the increasing diversity within our culture. Rather than acting as leaders and implementing catalysts for change, they continue to build out-dated models. This may ensure re-election or economic security but it is not in the best interest of the population or health of a city. Our cities are defined by political and economic systems incapable of dealing with change, for change involves a certain level of uncertainty and risk. Davis describes this problem,

> The lesson of Thatcherite and Reaganite policies, well learned by
> their successors, is that there are more votes in reducing taxes and
> creating misery for a minority of uninfluential people than in bearing

25. 'Snakes and Ladders'.
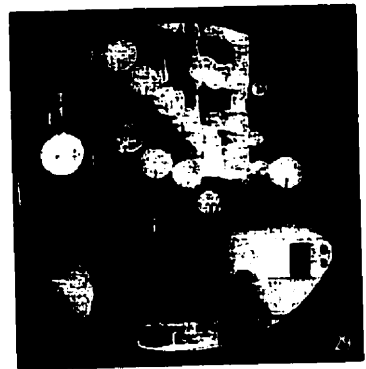
the ever-increasing costs of raising standards of service, comfort and
hygiene for all.[3]

Consideration beyond the accepted, standard definitions of housing is dismissed as unimportant or financially unreasonable. It is this sentiment which has manifested itself as a sprawling cityscape defined by a common homogeneity.

Government policy, specifically in the form of traditional city planning, has acted only to further the persistence of the homogenous city. We are left with segmented cities and communities as differing programs were segregated within the city to isolate potential negative impact. Of course, this results in the negation of all impact, both negative and positive, and the suppression of diversity within our urban environments. As a result, we witness cities disintegrating by zones as they age or become obsolete due to their singular nature. The lack of residential use in downtown districts exemplifies this problem in almost every large North American centre. Creative solutions - which are beginning to surface - require planning that focuses on the catalytic rather than the reactionary.

The dominance of the single-family model is based upon misconceptions. It is assumed that the only viable form of living unit is the nuclear family – a heterogeneous couple with children. This statistic is changing and is no longer accurate as other forms of living units increase in percentage, reducing the dominance of this one type.[4] There are also other underlying myths perpetuating the blind acceptance of the single-family model: that everyone will marry, that everyone's goal will be to own a private home, and that everyone needs an island of privacy.[5] It is simply inappropriate that our housing form is based on an *assumed* and inaccurate homogeneity.

Furthering the continuing acceptance of the single-family model is the conversely negative perception of shared housing. Compared to the single-family dwelling all other options appear as second-rate; acceptable alternatives only when other possibilities are financially or physically impossible. The stigma attached to shared or communal housing may be due to the lack of design and funding applied to the existing models in North America. Most shared housing projects are government funded and provided for those on subsidized incomes, thus potentially limiting the priority of such work. However, examples from Europe prove that forms other than the single-family dwelling can be successful and desirable for people of all income levels.[6]

Among the reasons for challenging the dominance of single-family housing is the issue of *use*. Activities within the home have increased in number and diversity, due to advancements in technologies and subsequent changes in business. Communication technologies in the form of the internet, satellite and VCR all bring entertainment directly into the home to co-exist with the traditional activities of meal preparation, laundry and relaxation. Increasingly,

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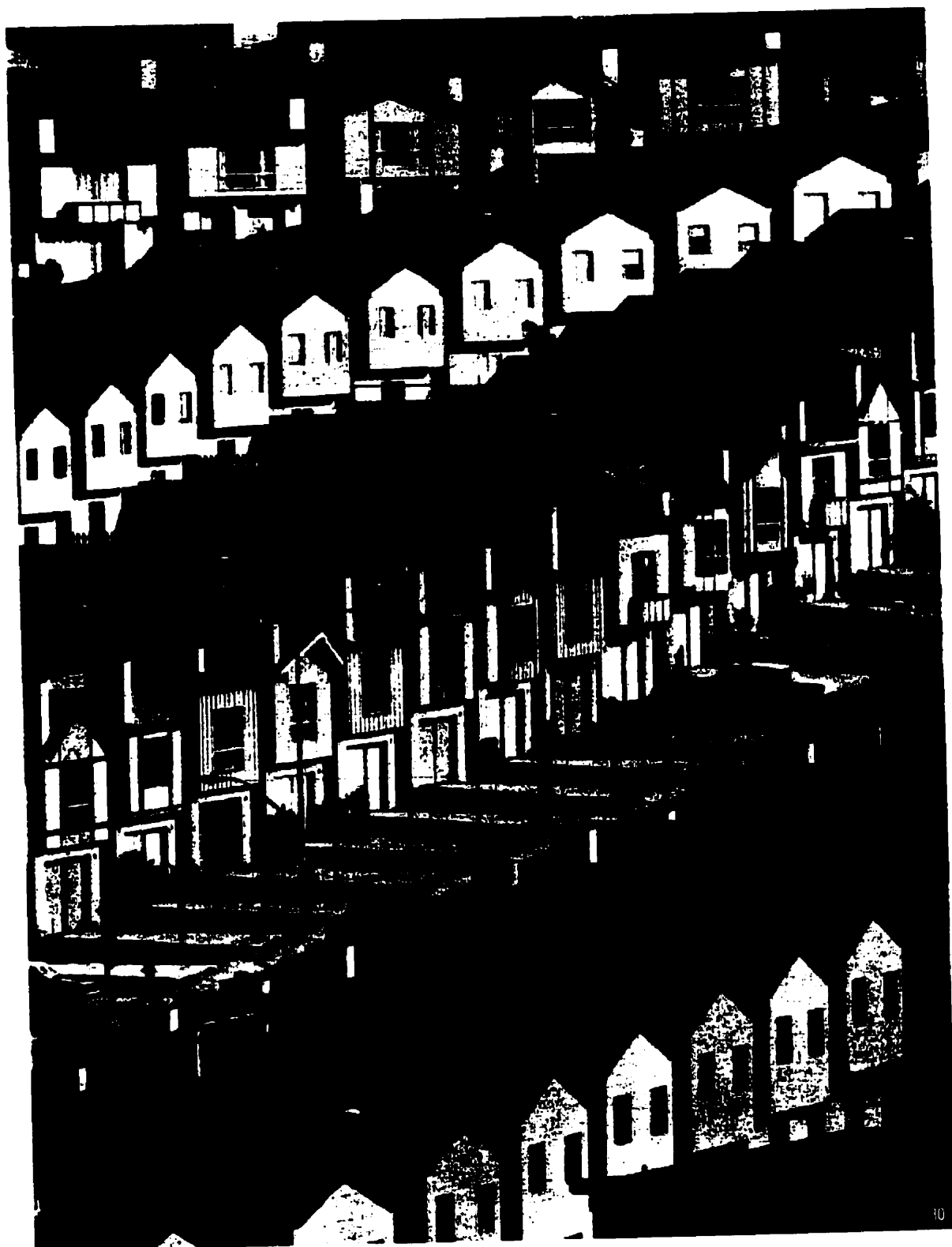
governments are providing health care services to the home in an attempt to free more costly space within the hospitals – services are provided directly to the user in their own environment. The expanding telecommunications network has resulted in a substantial increase in home businesses as well as the opportunity to conduct company work from the home office.[7] Shopping from home and other specialized services such as banking and investing are now also a part of activities conducted from the home. Other lifestyle changes, often associated with our aging population, have brought fitness and more hobbies (gardening, woodworking) into the realm of the home. Collectively, these changes describe a very different conception of home and a need for new spaces.

In light of a changing definition of user and activity within the home, the spatial relationships of the single-family housing model are no longer acceptable. Within the home, a defined spatial hierarchy assumes joint ownership. The master bedroom with bath and subsidiary bedrooms, located on a private level, is an arrangement solely appropriate for two people.[8] Other spaces within this arrangement are also typically quite private, regardless of their function. Spaces such as living rooms are often quite isolated from other functions – despite the fact that adjacencies or shared space may be desirable. There is a need to provide alternatives that explore varying levels of spatial definition in terms of light and privacy.

The relationship of the typical home to others within the community also carries certain assumptions. A specific public/private relationship is associated with a home, and dictates a spatial arrangement that is defined as specifically owned, rather than shared. Physical boundaries such as fences and thick planting limit the potential to move beyond the definition of the private. Exterior spaces, including backyards and side-yards, might be in fact safer and/or more desirable without the strict divisions. Extending green spaces could instead be shared, physically or just visually. The firm articulation of division is indicative of the typical separation of the family from community life, home and surrounding property are perceived as only private.[9] This is evident in the building form - each house has a public façade but little or no public or semi-public space. Variations of the arrangements of public and private space may be useful in some situations and promote a stronger tie to community. The potential benefits of interstitial space, to the individual and community, need to be explored further than that present in the single family home.

It is increasingly evident that diversity may benefit a community both socially and economically. A diversity of income level and accumulated skill allow for the potential dispersal of income and knowledge. Lower paying service jobs are difficult to fill in communities lacking workers with varying skill levels as transportation costs inhibit the ability of a worker to travel. Older residents may also find that their children are unable to live in the neighborhood in which they grew up, due to a lack of 'starter homes' within the community. Beyond the economic impact of diversity, social factors play a crucial role in the health of a community.
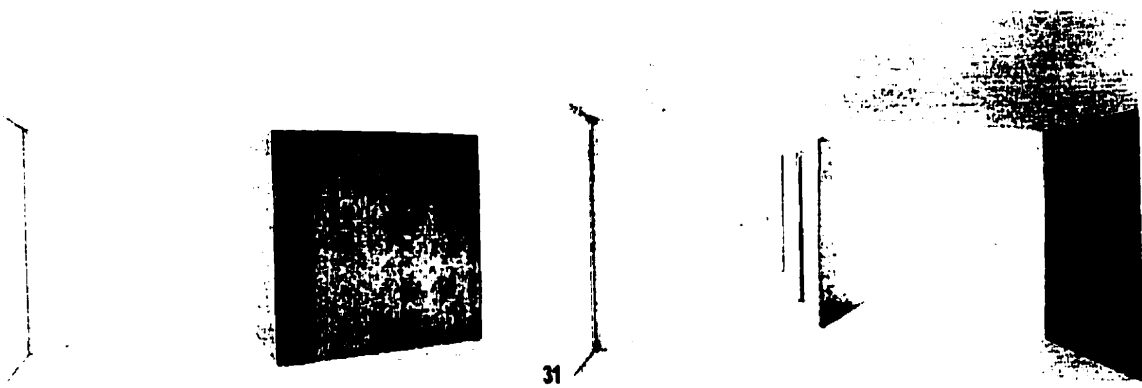
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If one group is segregated the cultural contract binding citizens in a city or community is weakened.[10] A healthy community needs to understand and integrate the various individual aspects within the larger group. As the relationships within a community approach a symbiosis, the benefits apply to both the individual and group.

The preceding discussion indicates the need to encourage a greater variety of housing options within our cities. The physical expression of our communities conveys more than just a developer's vision, "Whatever their configuration, our homes carry important shared meanings. More than just shelter they convey identity and social standing."[11] To adequately address new requirements it is useful to look at precedents specifically relating to spatial flexibility within the design of housing projects. Pertinent to this project are: *Fukuoka Housing* by Steven Holl; the *ABC System* by Actar Arquitectura; and the previously discussed *Strassgang Housing Project* by Architecturbo Riegler Riewe. Each of the projects discusses themes introduced by Manuel Gausa in Housing: New Alternative, New Systems, exploring new ideas of the object, open space and the conditioning skin as they relate to indeterminate space.[12]

> Just as the city is no longer a nexus of harmoniously grouped
> elements, so housing ceases to be a nexus of meticulously distrib-
> uted rooms and becomes a 'space intended for habilitation': a space
> defined from a functional periphery and manifested as an emptiness
> to be appropriated[13]

The flexibility demonstrated in Steven Holl's housing project in Fukuoka, Japan relates to the diurnal, episodic, and seasonal changes experienced within a home. The living room is able to borrow space from the bedrooms during the day; rooms may be added or subtracted to accommodate grown-up children leaving or elderly parents moving in; and walls may be adjusted to react to the path of sunlight or wind through the apartment. These are all accommodated through a strategy of 'hinging' that activates the space as well as the user, "The hinged space engages each inhabitant in manipulating and changing the nature of interior views and space."[14] These manipulations allow the spaces to be personalized, responding to the needs of the individual. "One of the most important aims of housing in the wake of the failings of modern-movement housing projects is to introduce the humanizing dimension of individual differences."[15] Complex interlocking floors share in the conception of open space while providing exposure to several sides and a unique plan for every unit. It is this unique quality which in the end connected all of the residents. "When we revisited the totally inhabited building in 1992 the residents had formed themselves into a community group and held sake parties every month on the roof. They had all met showing each other the differences in their apartments."[16] It is this expression of the individual within the group that speaks to the success of the project.

31. Fukouka House.
Closed 'hinge'.
32. Fukouka House.
Open 'hinge'.

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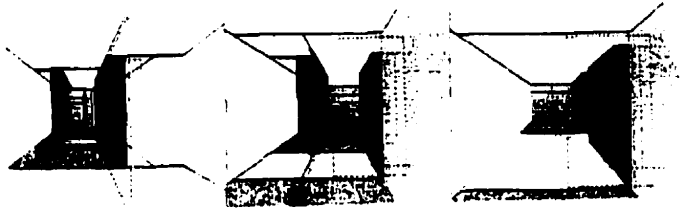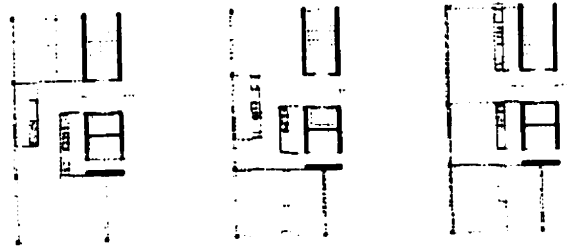
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Similarly, Actar's *ABC System* seeks to find answers to the issues of flexibility as well, although within much tighter economic and spatial constraints. The contained volume of each unit is identical and demonstrates spatial variety instead through the placement of interior 'objects'. As discussed by Manuel Gausa, diversity is achieved through a structural indeterminacy.[17] Objects pertaining to specific functional requirements (storage, bath, kitchen; or in Spanish, *armario, bano, cocina*) are conceived as self-contained units which may be plugged into functional strips integrated in the floor system. The objects serve to imply the spatial division of the remaining undefined space. The concept of flexibility is continued through the elimination of interior partitioning in favour of sliding panels. The possible combinations include more conventional one and two bedroom schemes as well as a more open loft type. On the façade, the placement of the object is visible both in form and colour, creating a variable elevation.

As previously discussed, flexibility in the *Strassgang Housing Project* is explored through the indeterminate interior layout, or 'open space', as well as the moveable louvered system, a 'functional skin'. By utilizing a large structural span, conventional interior partitioning is unnecessary, instead providing the opportunity for an open and relatively undefined spatial environment. This movement towards the 'emptied-out rather than partitioned off' is described by Manuel Gausa as able to, "...permit a progressive freeing of the interior space..."[18] Activity may be assigned to the various spaces but is unprescribed by the design of the space. He further describes the façade treatment employed in projects such as this,

> The use of the façade, no longer as a simple 'interior/exterior' dividing
> line, but as an effective services support, an alveolar thickness (or
> 'filter façade') of equipped or empty superfluities, which allow light
> and air to penetrate....[19]

This description is physically expressed through the moveable louvered system defined as a nylon screen on the north facing façade and a metal louver on the south facing façade. The user is able to modify their relationship to the exterior environment by sliding these elements into the desired position, creating variability in light, translucency, and opacity. In the case of the south facing façade, the louvres may be adjusted to modify the quality of light entering the space. Flexibility in the example of the *Strassgang Housing Project* is achieved through the use of the louvred system and the indeterminate plan.

Each of the projects discussed employs one or more strategy to achieve a degree of flexibility – sliding or hinged partitions, sliding louvres, moveable objects, and/or variable spatial configurations. In each instance, it is the balance between the prescribed elements and the undefined that create a successful project.

33. 'ABC' System.
34. Strassgang Housing Project.

[1] William S. Saunders (Ed.), (Introduction,) *Harvard Design Magazine: Housing and Community* (summer 1999): 3.

[2] John J. Palen, *The Urban World*, 5th Ed., (Toronto: McGraw-Hill, 1997), p. 205.

[3] Sam Davis, "Can We Overcome Me?," *Harvard Design Magazine: Housing and Community* (summer, 1999), p. 12.

[4] Sherry B. Ahrentzen, "Choice in Housing," *Harvard Design Magazine: Housing and Community* (summer, 1999), p. 63.

[5] Sherry B. Ahrentzen, and Karen A. Franck, *New Households.* (New York: Van Nostrand Renhold, 1989) p. x.

[6] Based on a conversation with Roger Riewe of Rigler Riewe in Graz, Austria, November, 1999. The initial project, intended to house persons with lower income, became 'the place to live'.

[7] Sherry B. Ahrentzen, "Choice in Housing," *Harvard Design Magazine: Housing and Community* (summer, 1999), p. 63.

[8] Sherry B. Ahrentzen, and Karen A. Franck, *New Households.* (New York: Van Nostrand Renhold, 1989) p. 5.

[9] Sherry B. Ahrentzen, "Choice in Housing," *Harvard Design Magazine: Housing and Community* (summer, 1999), p. 62.

[10] Jerold S. Kayden, "Diversity By Law: On Inclusionary Zoning and Housing," *Harvard Design Magazine: Housing and Community* (summer 1999), p. 45.

[11] Sherry B. Ahrentzen, "Choice in Housing," *Harvard Design Magazine: Housing and Community* (summer, 1999), p.64.

[12] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), pp. 21-35

[13] Gausa, *Housing: New Alternatives*, p. 29.

[14] Steven Holl, *Edge of a City* (New York: Princeton Architectural Press Inc., 1991), p. 50.

[15] Holl, *Edge of a City*, p. 50.

[16] Steven Holl, *Intertwining* (New York: Princeton Architectural Press Inc., 1996), p. 18.

[17] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 23.

[18] Gausa, *Housing: New Alternatives, New Systems*, p. 29.

[19] Gausa, *Housing: New Alternatives, New Systems*, p. 29.

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The basis for my strong belief in diversity - as a necessary component for a healthy community - is rooted in my experiences as a sister. I am fortunate to have two brothers, twins in fact, who are at the same time opposites and yet so similar. They share in the common desire to have an education, employment and a home and differ in that Jay has Downs' Syndrome and Dave does not. Jay's situation may appear to be unique to many people, but in fact it brings to light the existing diversity in our communities and forces us to reconsider previous definitions and boundaries. It will be seen through the discussion of Jay's situation that there are many assumed definitions and boundaries associated with the user, particularly in the area of housing. There exist many groups in our society -single mothers, aging couples, young professionals, or persons with intellectual disabilities – which could benefit from an expanded definition of user, in the design of our built environments.

Although each of my brothers experiences life from a slightly different perspective, they have shared a common path from childhood to adolescence to adulthood. Thanks to the persistence of our parents, Jay was able to attend the same rural schools as Dave and myself and has moved on to part-time employment with the Department of Education, Book Bureau in Regina. The societal expectations regarding education and employment for Jay were vastly different from those for Dave, who fit rather easily into the accepted definitions of student and employee. In his journey, Jay has unconsciously redefined social systems and boundaries, as he sought to participate in and contribute to fundamental components of society. Pre-conceived notions regarding the definitions of such terms as *student* and *employee* have been reconsidered to incorporate those values that are in fact at the essence. A *student* is a person who desires to learn (there is no requirement for a certain level of knowledge); an *employee* is a person who wishes to utilize certain skills that he has developed (speed of performance may not be the most important quality). The next challenge is to redefine the concept of *home* – to focus on the right and ability of a person to choose their own personal environment.

Implicit to the idea of *home* is ownership. This does not necessitate financial ownership, but rather a psychological ownership in which the individual feels that a space is able to accommodate his/her needs and to facilitate an expression of their his/her individuality. The term *home* is meant to highlight the importance of choice in selecting one's living arrangement and that there are many possibilities along the continuum of dependence to independence.

As Jay enters adulthood, it appears that there are limited options available to accommodate this conception of *home*. The options range from the historical solutions - of living in institutions or 'with the parents'; to the more recent answer of living in group homes.

Traditionally, due to low levels of education, people with intellectual disabilities have either lived in an institution or at home with their parents. This is no longer acceptable, as most

35. Dave and Jay Plosz.

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people with intellectual disabilities are now provided the opportunity to learn both social and life skills. As well, expectations regarding quality of life have increased tremendously and now exist on par, at a constitutional level, with the rest of society.[1] The growing view is that people with intellectual disabilities have the same rights to life, love, and happiness. All people deserve the opportunity to grow and experience life as an individual. By extension, it is no longer acceptable that a person continues to live in a situation that does not allow them to evolve and express their individuality.

In our more recent history, we have seen the development of group homes - run by various agencies and charities specifically for people with intellectual disabilities. These are appropriate models for people with greater social and physical needs as they provide highly controlled environments. However, a controlled environment limits the ability of a person to develop and evolve. And, it is generally assumed that those individuals who enter group homes, continue to live in that type of segregated setting for the rest of their lives. Such an environment creates a type of isolated sub-culture as the diversity of the individual is restricted and the interaction with care-givers exists at the level of authority figures rather than socially equal room-mates. There is also a low level of consistency in this type of environment as employees are non-permanent members of the household, rotating in and out, according to work schedules.

The only remaining options are apartments and houses. Both, however, present certain problems. Apartment units are typically isolated units designed for the 'generic' user-type – spaces provide the minimum requirement for a defined activity and typically lack communal interaction. Due to the high level of definition and the inability to immediately manipulate the space, these options fail to provide flexibility. Single family dwellings are problematic for the reason that these too are not typically adaptive and are financially restrictive, as the most expensive housing option. This type of housing is also related to a perception of independence rather than interdependence, as was discussed in the previous chapter.

The living arrangements discussed above fall short of providing environments that sponsor the proposed definition of home. Each lacks the ability to accommodate change. To meet the needs of individuals, including Jay, and allow him/her to take possession of a space that environment must allow a person to evolve. It is crucial that the user be able define and re-define their environment as related to their changing needs along a continuum of dependence and independence.[2]

Change is implicit to the act of evolving, and is a part of most people's lives. Like Jay, many people experience change in their environmental needs over time in relation to their shifting skills, responsibilities, and finances. To accommodate this concept of change, designed environments addressing the new definition of home must be inclusive, adaptive, and

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expressive of the individual.

An *inclusive* environment provides the opportunity for people to benefit from a wide range of interaction and knowledge. Skills, knowledge and information are passed on directly and indirectly from person to person. Isolating people with similar knowledge bases is counter-productive to the growth of a community, as it does not facilitate the transference of ideas and information. Encouraging, or providing the potential for social interaction may be achieved by overlapping the private and public. A program relating to the wider community encourages not only a 'positive sense of community' in the form of a common physical tie but also enables information to be dispersed directly among the individual members. This symbiotic relationship is beneficial to the health of a community, as each entity is supportive and able to adapt to the other's needs.

As was discussed earlier, it is crucial that a responsive living environment be *adaptive* to the changing needs in a person's life. The space should accommodate an individual as they move from various living situations of dependence or co-dependence to that of independence (and potentially back again). Rather than uprooting and leaving behind the social and community ties developed in one situation, it would be socially and financially beneficial to maintain the social setting and manipulate the physical environment to accommodate change. In the housing example presented previously, Fukuoka by Steven Holl, it is assumed by the architects that living circumstances will change over time - a grown child may leave home or an elderly parent may move in, resulting in new spatial requirements. This describes a phenomenon that is not isolated to one group of society – rather, the experience of change is common to everyone. Neither are the changes limited to one type of situation. The need for new configurations may be a result of social, physical, or economic developments. Change is a constant.

By extension, a responsive living environment must also be *expressive of the individual.* There must be a legibility of the individual within the group and a conveyed respect for the private domain. The user must be able to engage the space, taking possession of it - creating a space that is suitable to their specific lifestyle. Critical to the definition of an individual is a sense of both privacy and identity. The physical qualities of a space, such as colour, size, scale and the more experiential qualities of light, sound, and ambience are all important in the definition of space for a particular user. A person needs to feel a sense of personal empowerment in order to accept responsibilities and make decisions. Personal *choice* is crucial to ownership.

The qualities identified for supporting the concept of *home* are applicable to all segments of society – essentially they make sense for any person or group that will experience changes in their requirements for living space – be they young professionals, single mothers, aging

couples, or persons with intellectual disabilities. It applies to those individuals and groups that do not find traditional, single-family housing to be responsive to their needs. This particularly holds true in our contemporary society in which the traditional nuclear family is no longer as dominant as in the previous generations. The benefit in discussing Jay's specific situation, which is considered beyond the norm, is to draw attention to those assumed boundaries and pose new alternatives in their place – thus expanding our definition of user.

[1] Joel Bakan, *Just Words: Constitutional Rights and Social Wrongs* (Toronto: University of Toronto Press, 1997), p. 47.
[2] Based on input from John Coffin, Executive Director of Regina and District Association for Community Living, Feb. 2000. Defining the ultimate goal as independence may actually limit, rather than enable, some persons.
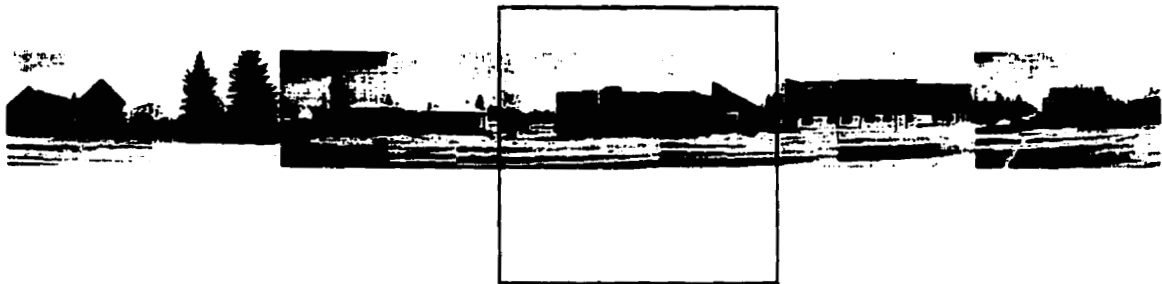
The theory of multiplicity through abstraction is to be tested through the design of a multi-unit housing project. This program was selected in response to the overwhelming homogeneity of housing prevailing in our communities. An expansive gap exists between the diversity of user and the housing types provided. The following design explores only one potential of the architectural sensibilities and their possible manifestations, focusing on one particular context.

Site Selection

The site chosen is located within the community of Ramsey, in the south-east quadrant of the city of Calgary. It is known as a re-developing community, recovering from years of neglect by the city, as well as other issues common to inner-city neighbourhoods. The existing diversity in form, housing, and residents and a willingness to regenerate suggests that the community is an appropriate testing ground for new concepts of housing.

A broad diversity of form exists within the neighbourhood, due to the mixed nature of activities. Large warehouses associated with industrial activity bound the south and east edges, sharing streets with residential buildings in many cases. The architectural scale and language of these larger forms is clearly removed from the language of residential buildings. They range from single storey flat-roofed structures to larger warehouses with sloped-roof clerestoreys above. Materially they vary from wood siding, concrete, or metal, enhancing the more limited residential palette of wood and stucco. Commercial buildings within the area introduce different building forms again, relating more closely to the scale of the residential, and even in some cases incorporating both functions. Each of these functions and forms are quite different, yet manage to co-exist and create a unique texture in the neighbourhood of Ramsey.

Housing presently available in the neighborhood is already somewhat removed from the typical suburban single-family house with accompanying small yard and double car garage out front. This is due in part to the age of the community and housing. As much of the housing was built in the early part of the century, the houses are smaller and relatively cheaper than those available in the suburbs. Additionally, as the housing has aged much of it has been renovated or replaced, injecting another layer of diversity. Many of the homes from the turn of the century are two-storey, but bungalows from the 60's also exist. Lots are typically narrow and long, creating tight side-yards and considerable back yards. The densities are also greater than in the suburbs, due to the narrow lot sizes and smaller houses. Parking solutions also range from alley-accessible garages, street accessible garages, to on-street parking. The sum of each of these factors indicates the potential to explore housing as a form beyond the traditional single family model.

36. Site photo, taken from 8th. Street. Extents of the site indicated by the square.

This diversity of housing types translates to (or is dictated by) a range of occupant, from first

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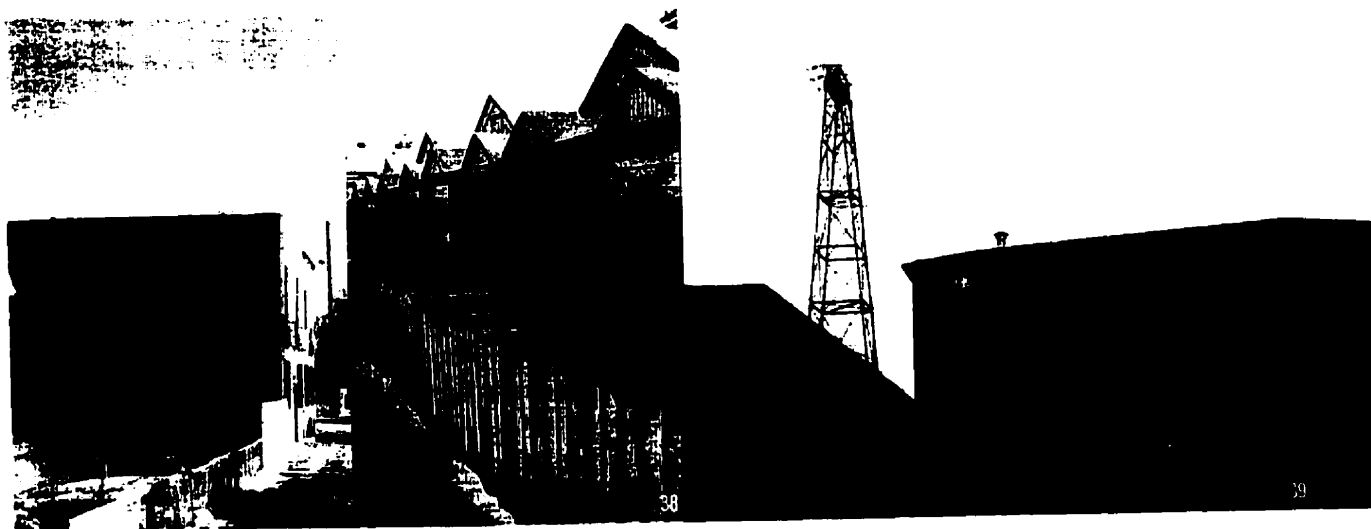
time homeowners with young families, to professionals working in the city centre, to long-term residents who have stayed in the family home. Among the reasons for choosing to live in this neighborhood (economics, proximity to downtown, etc.), may also be the desirability of diversity not present in many suburban communities.

The Ramsey Community is relatively isolated from neighboring communities due to the boundaries of the Elbow River, the rail tracks, and the industrial zone directly to the south. For this investigation the containment is viewed as a positive characteristic, as it creates a strong sense of community ownership and identity among the residents. 8ᵗʰ Street SE acts as a 'main street' in the community, leading north from Spiller Road to connect with 9ᵗʰ Avenue SE at the entrance to Inglewood. Local convenience stores and restaurants are interspersed between residential buildings, creating a rhythm that fluctuates in response to the diverse functions.

The site selected for the housing units is located on this main street, near its intersection with 17 Avenue SE. Although currently occupied by the Ramsey Community Centre, it is assumed that this property will soon be available for re-development, as this function will be relocating to a site adjoining the school. The lot size is approximately 52 by 47 metres – roughly the equivalent of four narrow residential lots. It is neighboured by a number of bungalows to the north and a three-storey senior's housing complex to the south. This specific site within Ramsey was chosen for its accessibility to amenities (grocery and public transportation), prominent public façade and street texture incorporating both residential and commercial.

The physical quality of the site presents several considerations for design at the macro and micro scales. At the macro scale, both a rhythm in street elevation and the public/private relationship to the ground plane must be considered. At a smaller scale, the building site also has its own complexities: a change in topography and relationship to the adjacent buildings. The rhythm of the street elevation is established by the repetition of houses and reinforced by the prominent front entry on each of the houses. Presently, this quality is lost at the extent of the site, and reemerges as a fenestration pattern on the elevation of the senior's housing complex. Secondly, with the exception of the senior's housing complex, each building has a specific and direct relationship to the ground plane. Each house claims ownership of a piece of land that is clearly demarcated from those neighbouring. Divisions of public and private appear to be quite conventional with little justification or advantage from such an arrangement. Rigid physical and visual divisions limit the type of interaction and activities that may occur between the owner and members of the community. The topography of the site slopes from the street to the alley, presenting the opportunity for subtle manipulations of the ground plane to address conditions of privacy and publicity. Adjacent to the site on the north is a one-storey, pitched-roof bungalow, while on the south is the three storey senior's housing

37 - 39. Site photos of the community.

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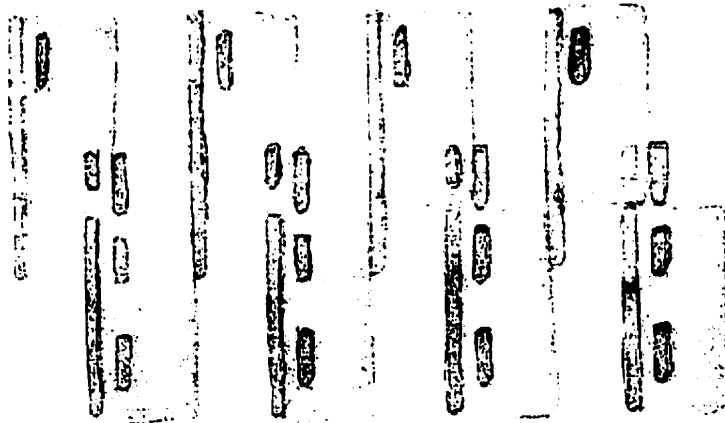
complex, stretching through several lots to the corner of the block. The design must find a common ground between these two forms, bridging the lower scale residential and the larger massing of the apartment-style complex. Each of these physical qualities of the site must be addressed through the design.

It should be noted that this project explores and tests the ideas of diversity and standardization as they relate to our conceptions of community and housing. This exploration does not attempt to deal with the realities of building code and the legalities of ownership –these are arenas for testing that will most certainly be explored in continuing investigations conducted through internship and practice.

Program Definition
In order to address the new definition of home, as set out in *Chapter 6: The User*, the housing designed should respond to these criteria:

> **an inclusive environment**
> provides the opportunity for people to benefit from a wide range of interaction and knowledge.
> **an adaptive environment**
> allows an individual to accommodate the changing needs in his/her's life.
> **expressive of the individual**
> requires the user to take possession of the space, creating an environment that is suitable to their specific lifestyle.

From these guidelines the program was developed to include seven residential units, plus one unit with commercial activity below (in the form of a coffee-shop) and leaseable space above. (It was noted on an extremely cold day of conducting site research that the community was in dire need of a coffee shop.) Although a coffee shop may seem a banal program for introducing a community aspect to the project, this is a function that provides the opportunity for people to meet on a daily basis in a relatively neutral environment.

The individual units range from approximately 135 to 165 m² and include a kitchen, one-and-a-half baths, one to three bedrooms and 'living' space. This size was selected to accommodate a range of users and user types. It provides more than the minimum spatial requirements for a self-contained unit, but is also smaller than the average home built in the suburbs. Each unit is provided a significant amount of exterior space in the form of an enclosed courtyard, a second floor balcony, as well as a patio area on the ground level. Due to the staggered arrangement of the units and exterior space, each unit faces the street and is accessible from this direction. In response to the exterior spatial arrangement and the desire to utilize a southern exposure, two unit types were designed – differing only in the placement

40. Sketch. Arrangement of the eight interlocking units.
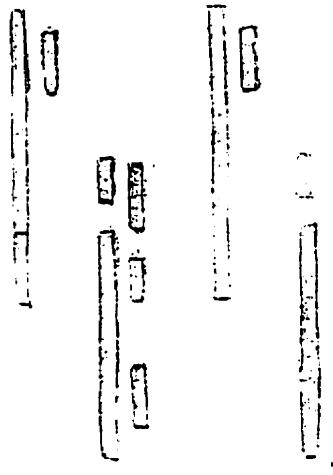
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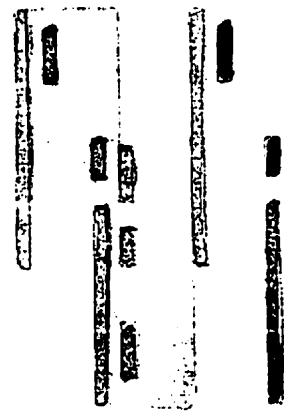
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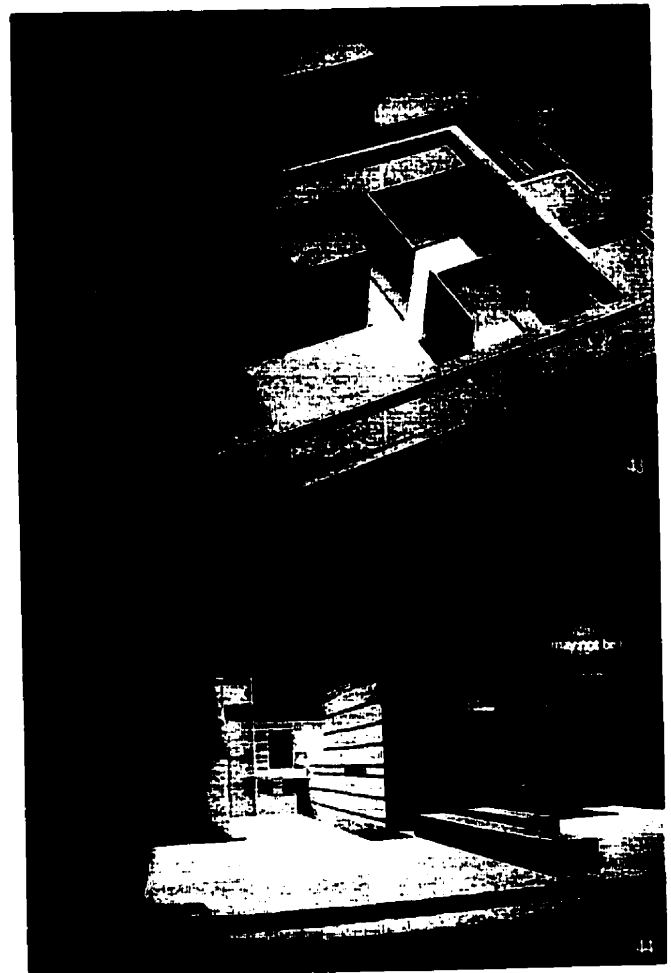
of the programmatically defined spaces (kitchen, bath, and storage). Unit Type A is located closer to the street edge, while Unit Type B sits on the rear portion of the site. Off-street parking is provided for each unit, with vehicular access alternating from street to alley according to the orientation of the plan.

Implementing Design Intentions

In keeping with the considerations of the user and the new definition of home, the units were designed to be inclusive, adaptive, and expressive of the individual. These goals were addressed through the implementation of the design intentions and will be discussed accordingly.

Vastness

To provide points of specificity within homogenous space.

The points of specificity within a relatively undefined space appear as bars within the open plan of each unit. These bars contain the programmatically defined functions associated with kitchen, bath and storage and permit the remaining space to exist as an unprescribed field. When arranged parallel and in close proximity the bars imply a space, which is necessary for the user to physically engage in the function provided within the shell of the bar. For example, in the washroom on the first level, the toilet and sink are located within the long bar along the outer edge of the unit. The placement of the parallel, small bar implies a space between the two bars – with a visual extension through. This implied space is then defined when two pocket doors are extended to enclose the space for privacy – the defined space becomes the open floor space for the bathroom.

Blankness

To permit a multiplicity by suppressing formal references.

At the level of the individual unit, unprogrammed space provides for a multiplicity of use and experience ultimately defined by the user. The spaces accommodate multiplicity, rather than limiting activities, due to a strategy of non-prescription by the designer. The goal is to provide a 'backdrop for activity', defined only by a relationship to light and privacy. A range of light conditions and privacy levels is present within each unit and may be manipulated further by the user. At a larger scale, the overlap of exterior space between the neighboring units provides the opportunity for various levels of interaction to occur between the users, in contrast to the rigid separation of traditional single-family housing.

41. Sketch. Programmatic bars.
42. Sketch. Bars and interior space.
43. Model Photo. Second level of a two-bedroom unit.
44. Model Photo. View from the street.

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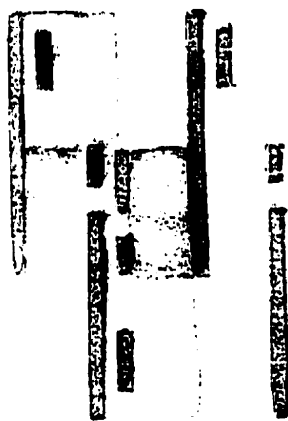
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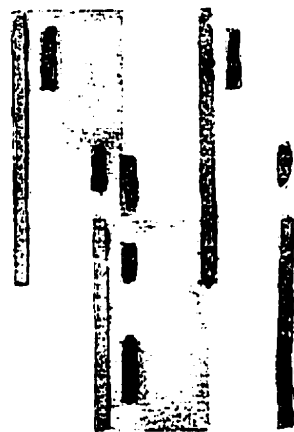
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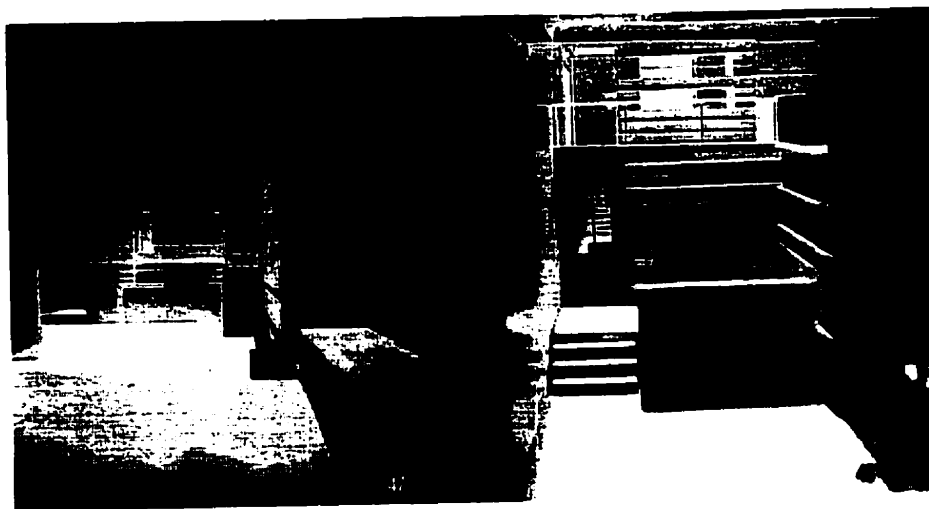
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Dissolution of the Whole

To perceive a whole through the inclusion of space (or void) beyond the building envelope

The units as a group are perceived as a whole through an interplay of solid and void, suggesting multiple spatial relationships that extend to and beyond the limits of the building envelope. Outside the building envelope, interstitial spaces are identified as 'owned' at a physical level while also existing as a shared visual field, intensifying the perception of spatial overlaps and the range of possibilities for activity. Subtle changes in the section of the ground plane indicate ownership without disturbing the flow of space.

45. Sketch. Spatial extension parallel to the bars.
46. Sketch. Spatial extension perpendicular to the bars.
47. Model Photo. View along the path to back unit.
48. Model Photo. View to the enclosed courtyard of the front unit.

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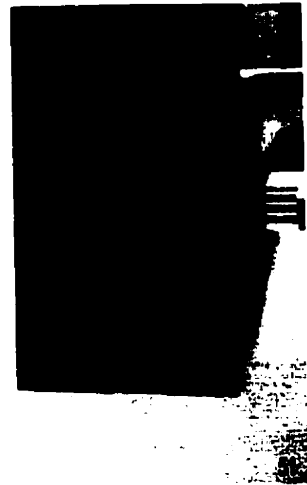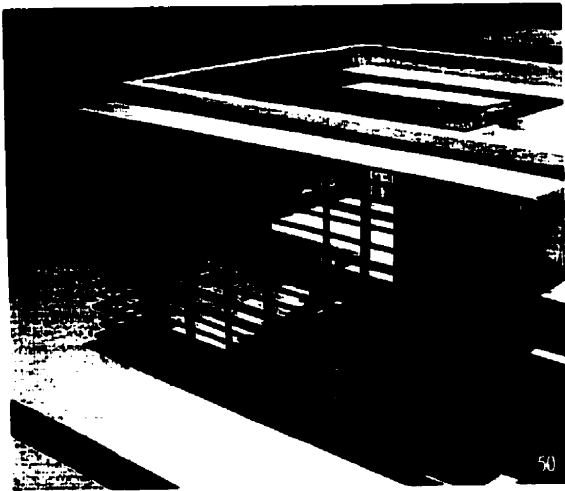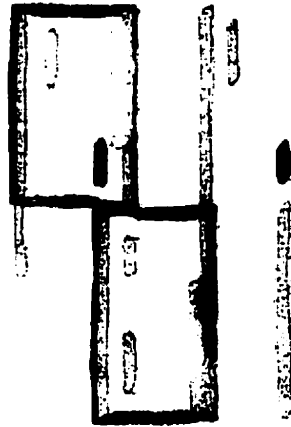
Suppression of the Part

To incorporate the part as more than a materialistic element.

The interplay between individual units reinforces the reading of the whole site, as each unit relies on those neighboring for a physical and experiential completeness. Each unit is effectively defined by the next. And, in the situation of the southern-most unit (coffee-shop) the community itself forms the completion. The south-facing transparent façade is visually accessible from the street, engaging pedestrians and people passing in their cars. As the building skin is repeated along the facades, the perception of the units as part of the whole is reinforced. The building envelope, or skin, furthers this concept of suppressing the part. The skin, composed of panels and battens, has the potential for transformation as it varies in thickness and opacity. It exists as a modulator for levels of privacy and light through varying conditions of opacity, translucency and transparency. The aesthetic nature of the battens becomes secondary to the associated spatial qualities.

49. Sketch. Diagram of the permeability of the skin.
50 and 51. Model photos. The materiality of the skin creates conditions of light and privacy.

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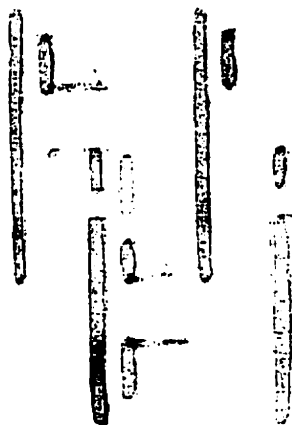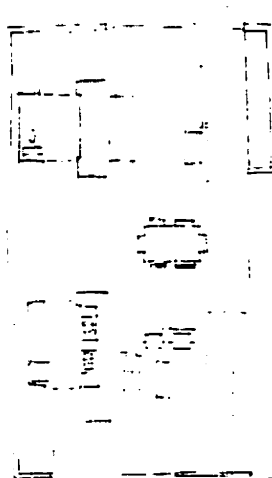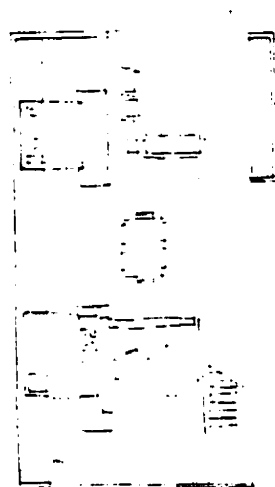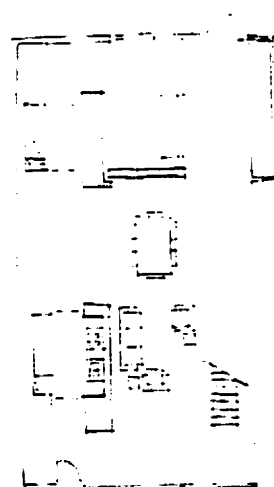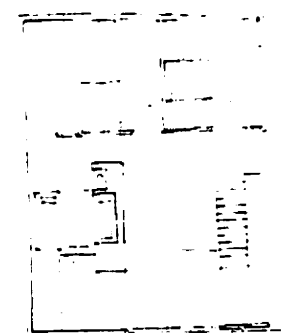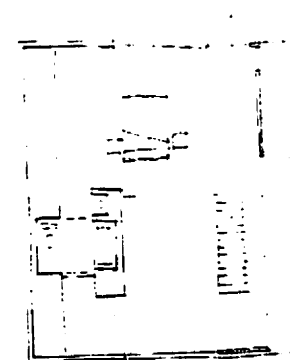
Engagement of the User

To rely on the user for completion.

Finally, the design not only *allows* the user to adapt the space through small manipulations – moving the sliding screens or swinging partitions – but also *demands* this of the user. It is through this engagement that the unit becomes a home. Longer-term adaptation is also possible in the form of the addition or partial removal of the second floor to accommodate changes in the requirements for private space.

52. Sketch. The hinged partitions emerge from the bars to articulate various spatial conditions.
53. Sketch. Three bedroom configuration.
54. Sketch. Two bedroom with one open space to below.
55. Sketch. Loft configuration.

The initial hypothesis proposed that multiplicity is possible through abstraction. That through processes of simplification a richness emerges, and is ultimately completed by the user through activity and adaptation. Tested through the design of a multi-unit housing project, it appears this statement is valid and indicates a potential for the design of our communities and cities. Although applied to the design of housing in this project, these architectural sensibilities could be utilized in designing space for a variety of other programs. The only required commonality is a desire to address aspects of the user and flexibility.

The architectural sensibilities supported the design of an architecture that is inclusive, adaptive, and expressive of the individual, in response to the specific program and user. The type of use and user is relatively unrestricted, the spatial arrangements are flexible, and the spatial qualities in terms of light and privacy may be determined by the user. It is felt that this design would be appropriate for the specific needs of my brother, Jay, as well as the many other people concerned with aspects of change and flexibility. It is this ability to learn from specific situations within our culture, such as that of Jay's, and apply those concepts to a greater framework or ideology, that imbues this process with meaning and relevance beyond that of a design process.

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[1] Joel L. Swealow, "Global Culture," *National Geographic*, 196, no.2. (august 1999): 18.

[2] Joel L. Swealow, "Global Culture," *National Geographic*, 196, no.2. (august 1999): 17.

[3] Joel L. Swealow, "Global Culture," *National Geographic*, 196, no.2. (august 1999): 19.

[4] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 68.

[5] *National Geographic*, 196, no.2. (august 1999): cover.

[6] Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 95.

[7] Pallasmaa, *Alvar Aalto: Villa Mairea*, p. 107.

[8] Pallasmaa, *Alvar Aalto: Villa Mairea*, p. 107.

[9] Richard Weston, *Villa Mairea: Alvar Aalto* (London: Phaidon Press,1992), ground floor plan.

[10] Otto Kapfinger (Ed.), *Riegler Riewe* (Graz: Druckerei Seitenberg Ges, 1994), p. 39.

[11] Photo by the author.

[12] Otto Kapfinger (Ed.), *Riegler Riewe* (Graz: Druckerei Seitenberg Ges, 1994), p. 37.

[13] Peter Allison, et al, *Current Practices 1: Beyond the Minimal* (Daystar, Singapore: Saik Wah Press, 1998), p. 92.

[14] Photo by the author.

[15] Photo by the author.

[16] Photo by the author.

[17] Richard Weston, *Villa Mairea: Alvar Aalto* (London: Phaidon Press,1992).

[18] Otto Kapfinger (Ed.), *Riegler Riewe* (Graz: Druckerei Seitenberg Ges, 1994), p. 39.

[19] Kapfinger, *Riegler Riewe*, p. 37.

[20] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 154.

[21] Richard Weston, *Villa Mairea: Alvar Aalto* (London: Phaidon Press,1992) ground floor plan.

[22] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 155.

[23] Juhani Pallasmaa, *Alvar Aalto: Villa Mairea* (Helsinki: Alvar Aalto Foundation, Mairea Foundation, 1998), p. 70.

[24] Richard Weston, *Villa Mairea: Alvar Aalto* (London: Phaidon Press,1992) image 23.

[25] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 16.

[26] John J. Palen, *The Urban World*, 5ª Ed., (Toronto: McGraw-Hill, 1997), p. 204.

[27] Birthday card. Life photo.

[28] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 16.

[29] Gausa, *Housing: New Alternatives, New Systems*, p. 18.

[30] Gausa, *Housing: New Alternatives, New Systems*, p. 16.

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[31] Steven Holl, *Intertwining* (New York: Princeton Architectural Press Inc., 1996), p. 29.

[32] Holl, *Intertwining*, p. 29.

[33] Manuel Gausa, *Housing: New Alternatives, New Systems* (Boston: Birkhauser Publishers,1998), p. 26.

[34] Gausa, *Housing: New Alternatives, New Systems*, p. 156.

[35] Personal photo, owned by the author.

[36] Site photo by the author.

[37] Site photo by the author.

[38] Site photo by the author.

[39] Site photo by the author.

[40] Sketch by the author.

[41] Sketch by the author.

[42] Sketch by the author.

[43] Model photo by the author.

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[51] Model photo by the author.

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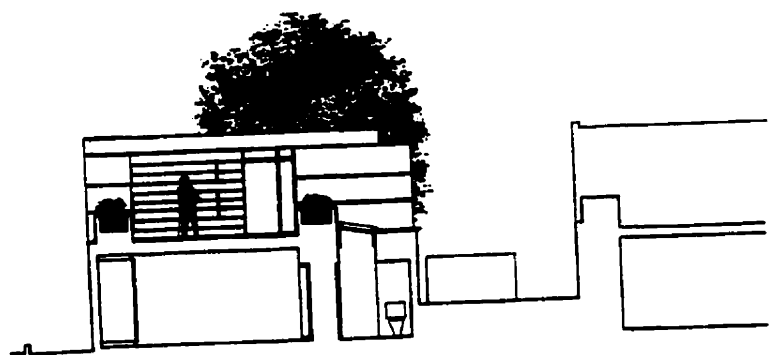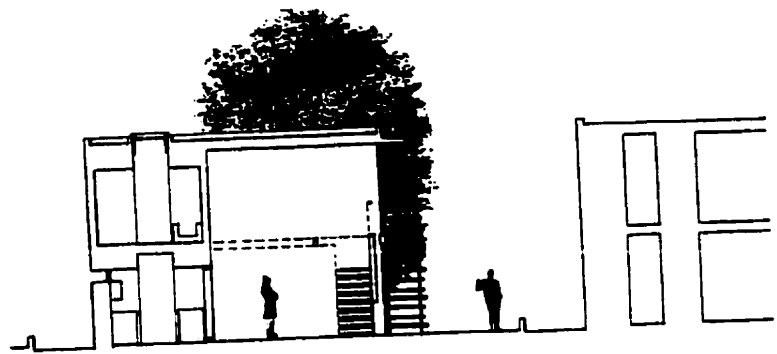Weston, Richard. *Villa Mairea: Alvar Aalto.* London: Phaidon Press, 1992.

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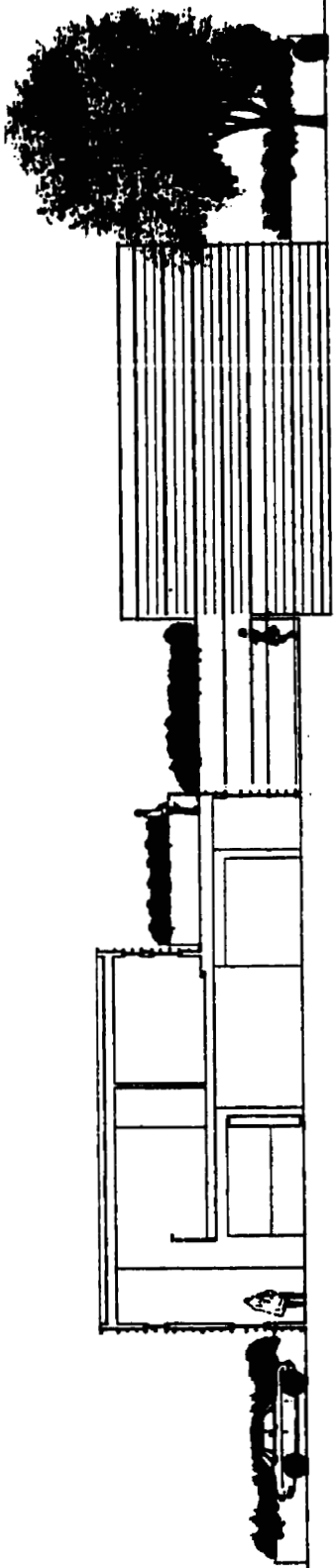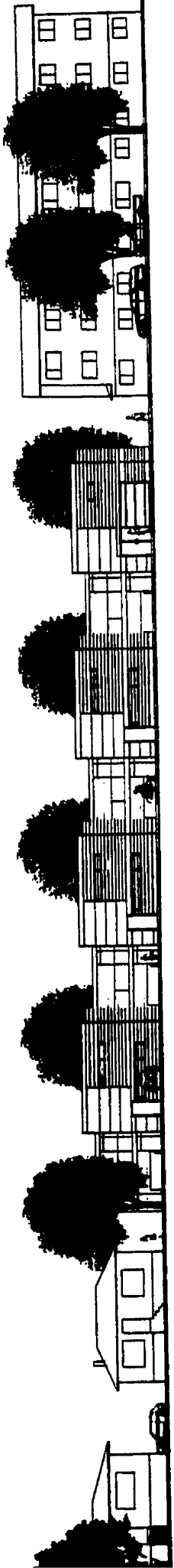
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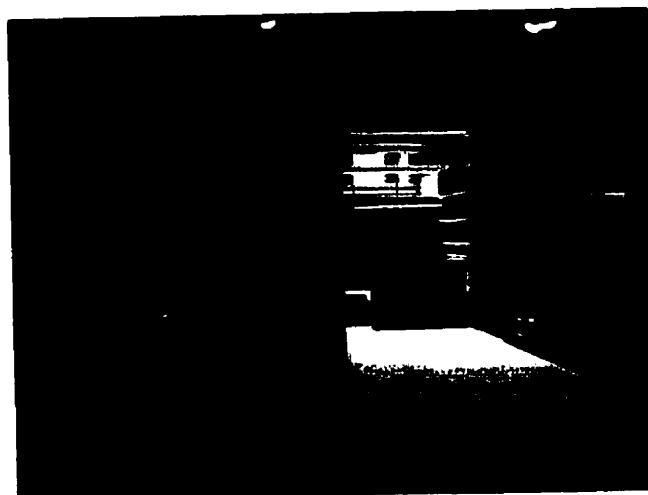
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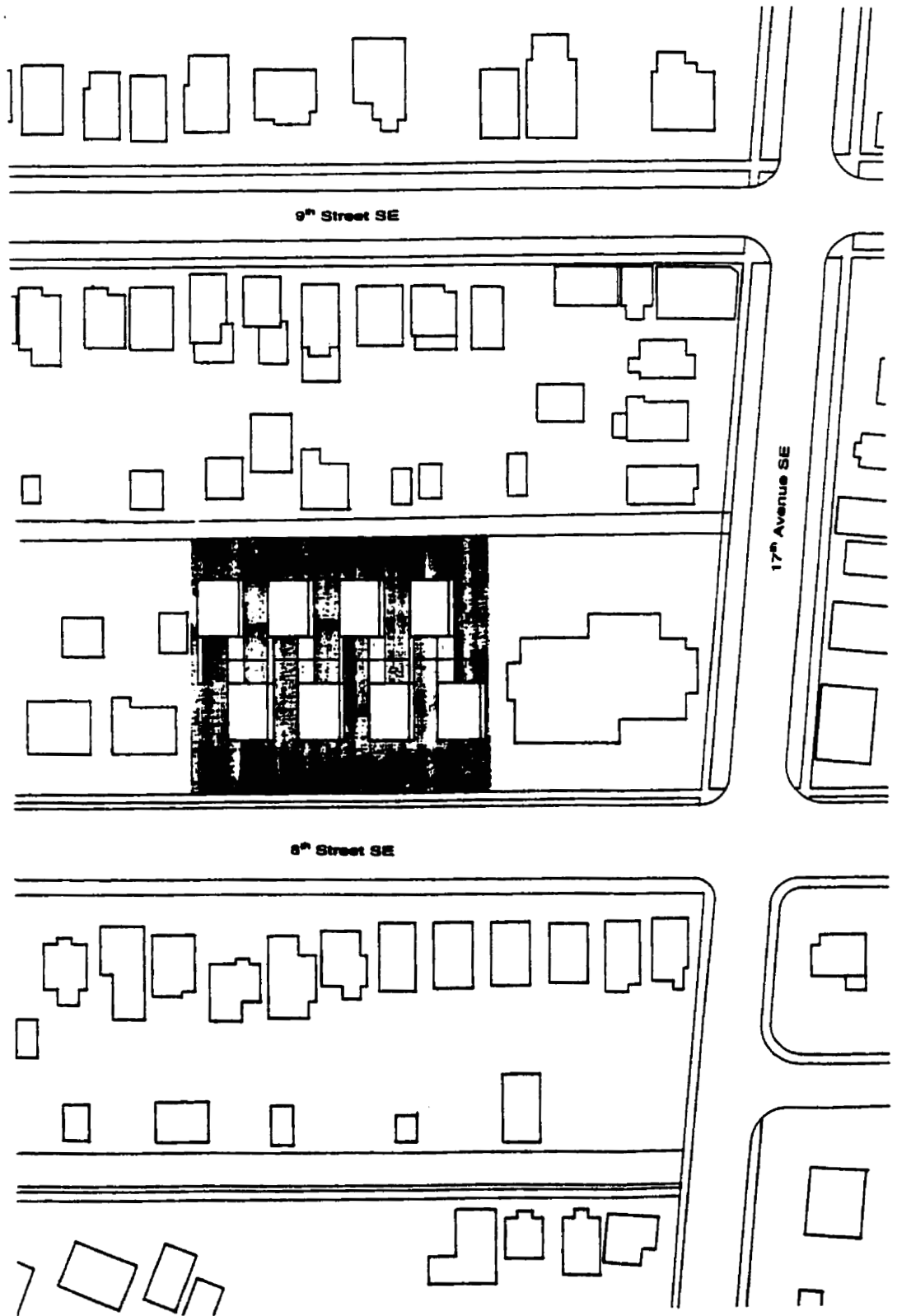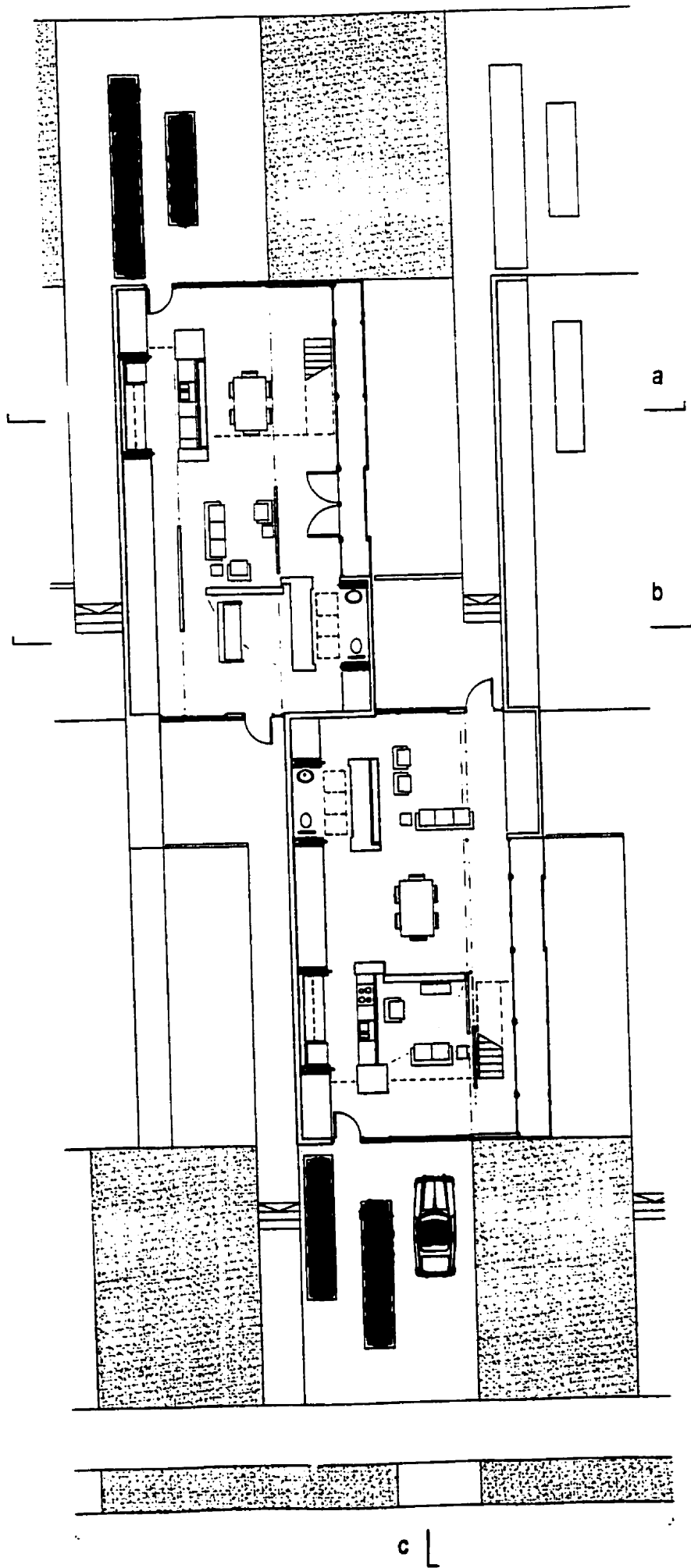
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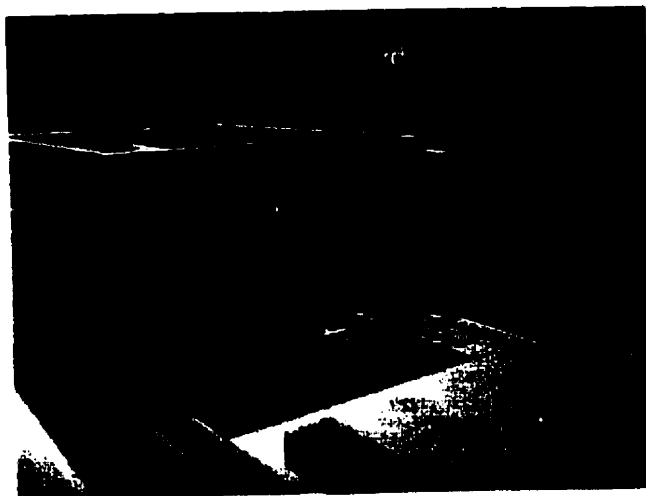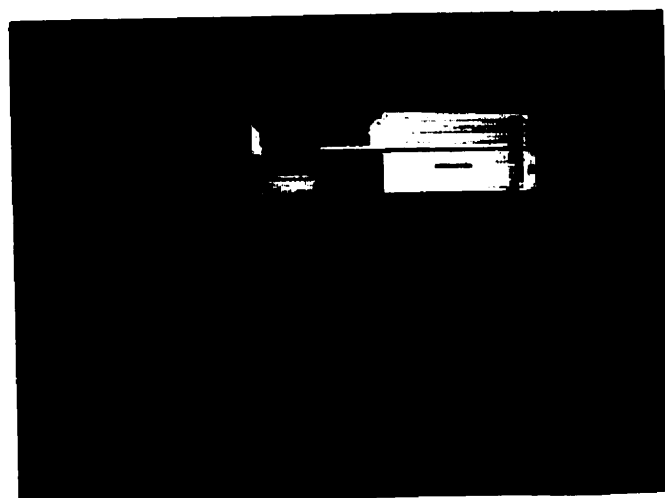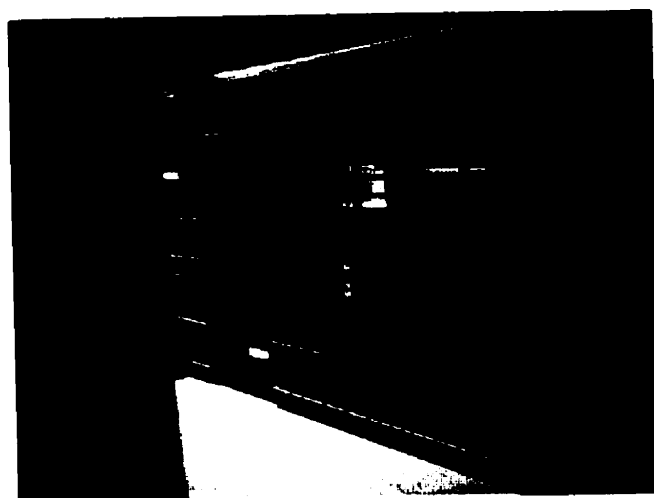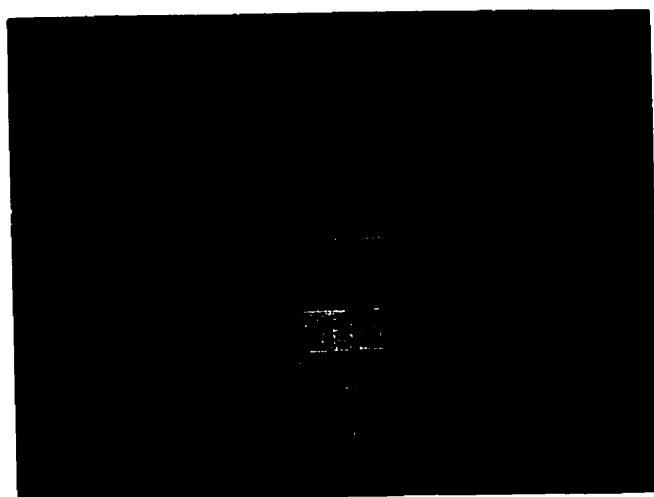1:200
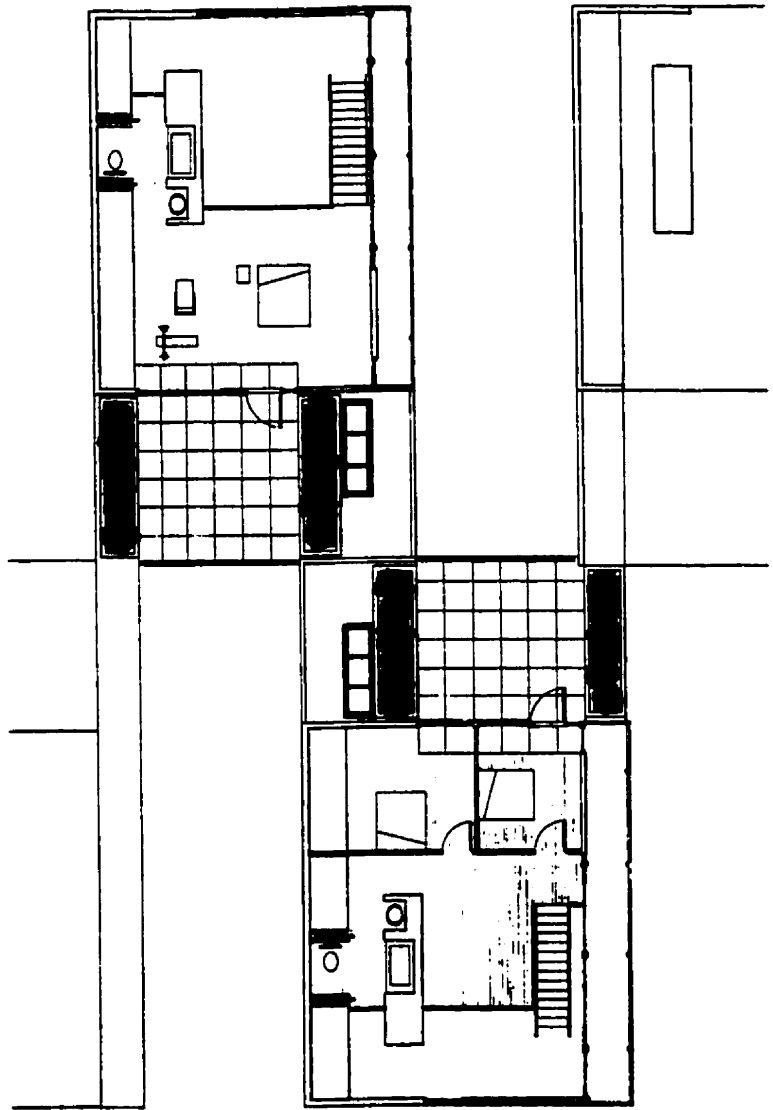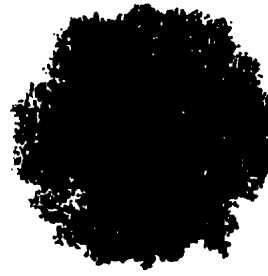
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section b
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section c
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site elevation
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model photos

model photos