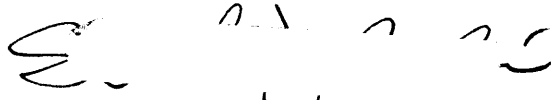# In Search of Hidden Landscapes and New Surfaces

fields and filters of architecture.

Sheila I. Colón Cajigas

Bachelor of Environmental Design,
University of Puerto Rico
Rio Piedras, P.R.
February, 1996

Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of Master of Architecture at the Massachusetts Institute of Technology, February 1999.

Signature of the Author

Sheila I. Colón Cajigas, Department of Architecture
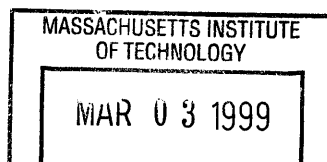January 15, 1999

Certified by

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

Accepted by

Hasan Uddin Khan, Visiting Associate Professor of Architecture
Chairman, Departmental Committee on Graduate Students

Thesis Supervisor   .

                                                                        Ann M. Pendleton- Jullian
            Associate Professor of Architecture, MIT
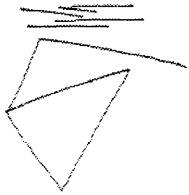

Thesis Reader

                                                                        Stanford Anderson
            Professor of History and Archtecture, MIT
            Head, Department of Architecture

In Search of Hidden Landscapes and New Surfaces

fields and filters of architecture.

Sheila I. Colón Cajigas

Abstract

Serigraphy is an art print process which consists of a stencil technique. It is assembled through a series of layers containing fields of colors, which are superimposed in a single surface to create an image. Serigraphy is the most vital expressions of contemporary art in Puerto Rico since the 1950s. It represents a vision of a place in its own artificial landscape. The thesis explores the design of a Center for the Graphic Arts in Puerto Rico.

The interest of this project lies in the idea of using the concept of serigraphy as a generator for methodologies in the formation of space and reading of landscape.

The project explores the connection between graphics and landscape to reveal the fields and filters of architecture. Notions of fields are used to generate new perceptions of the landscape. While notions of filters are used to define spaces through different strata. This permits an interaction between building surfaces allowing transparency opacity and movement.

Graphic abstractions of the site create an artificial landscape that generates new readings. In this way the elements of the site are simplified to enhance or reveal the non-obvious or imperceptible. The project explores the reciprocity between landscape and building to discover its **hidden landscapes and new surfaces.**

a mami por que gracias a ella es que estoy aquí

hidden landscapes and new surfaces

Content

Method one

Program

Process

Method two

Final Presentation

Resources

Acknowledgments

Approach

Art print process which generates new methodologies for creating space through the reading of a landscapes.

There are two major aspects of serigraphy that are relevant to the creation architecture:

Understanding the landscape through graphic abstractions of the site, the fields.
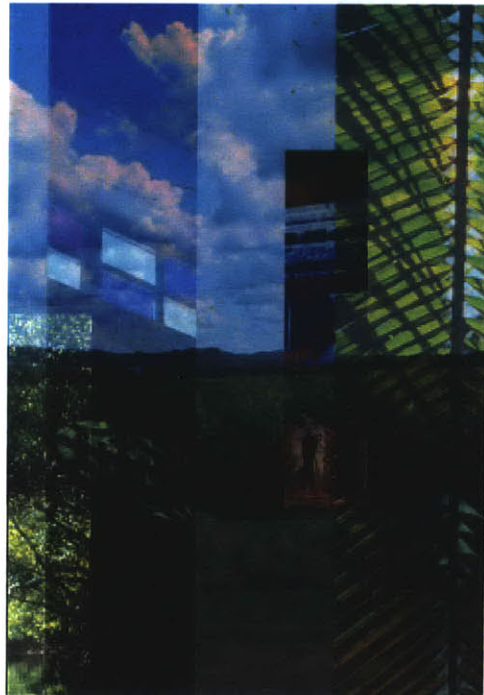
Understanding architecture through filters.

Fields

1. Collage

In serigraphy, the use of fields of color is essential to create a graphic composition. The agenda of this project is to use of graphic abstractions to redefine a place with its own "composition".


Filters

The process of serigraphy consists of a series of layers that filter information through themselves. These layers are eventually collapsed in one surface. In this project, the filters are delaminated to form spaces.
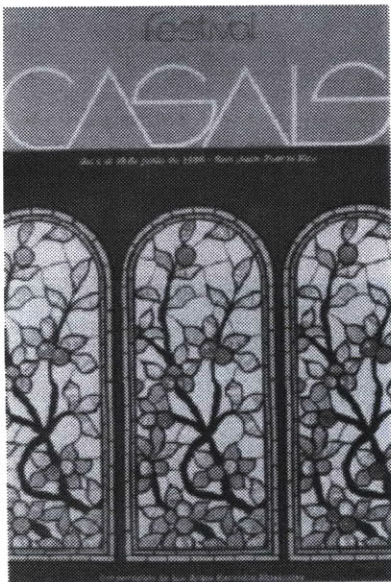
2. Festival Casals , cartel by Rafael Rivera Rosa,1988.

Background

It was very important to understand the context and development of serigraphy in Puerto Rico to` conceive this project. A generation of artists during the second half of the twentieth century have influenced my visual imagery as well as the way I see things. I hope to carry this in my work.
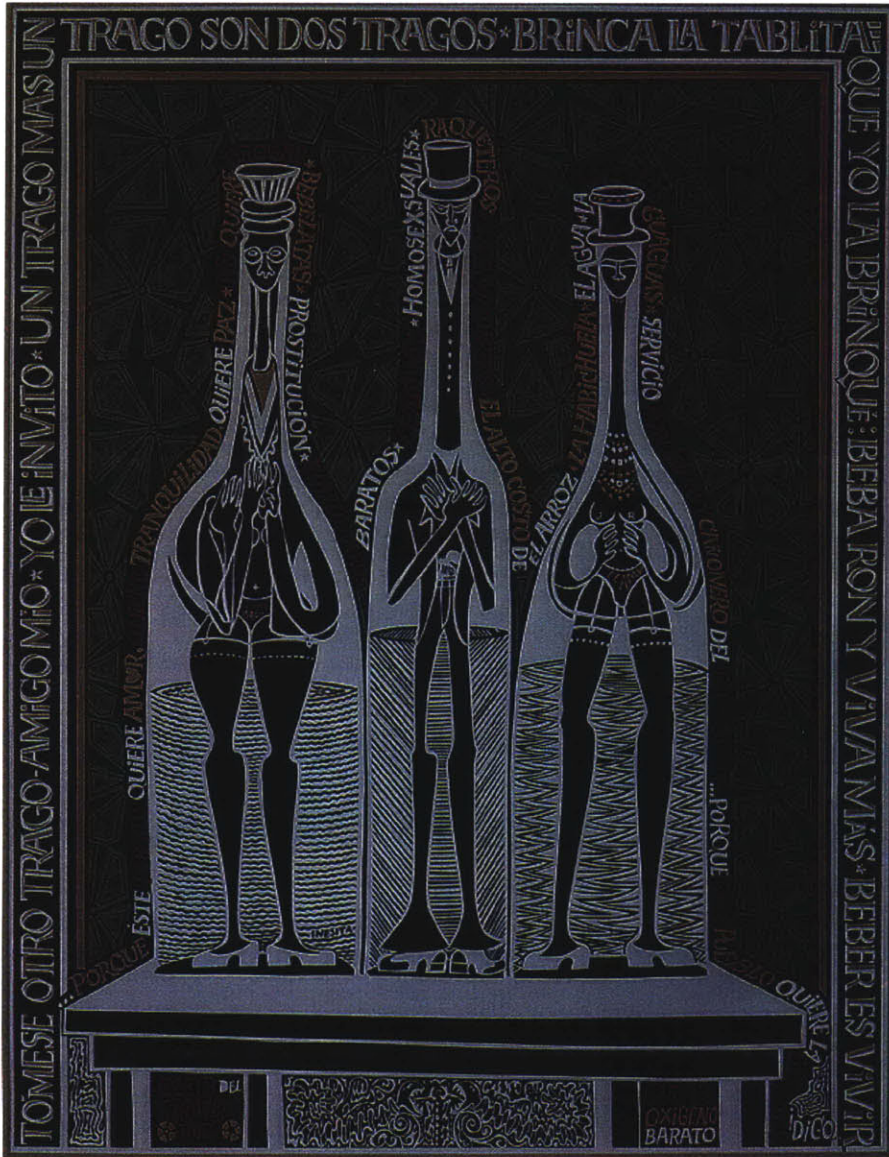
3. Tres Botellas II	, serigraphy by José Rosa,1972.

Context and development of serigraphy in Puerto Rico

Serigraphy is the most explored print making media by Puerto Rican artists. It is also the most popular among the general public. Since the 1950's Puerto Rican artists took over one of the most controversial and recent printing techniques of the modern arts and converted it in one of the most innovative and vital expressions of contemporary art in Puerto Rico.[1]

The potential of this printing technique was explore in two main categories: the poster "cartel" and the artistic print of serigraphy. The poster, of commercial nature, is one that specializes in propaganda and advertisement. The art print explores the medium of serigraphy with more freedom of technique leading to more potential and diversity.

Antecedents

In the United States, serigraphy started to be used as an art form during the 1930s. A group of artists in New York who were interested in the artistic potential of this media, created a workshop for the experimentation of the technique of serigraphy.[2] The work generated in this studio started to transform this technique in an art form. Eventually it became very popular and it was necessary to make a distinction in between the commercial work and the artwork. The term serigraphy (seri-silk / graph-drawing)[3], was created to replace the traditional commercial term of silk screen-printing.
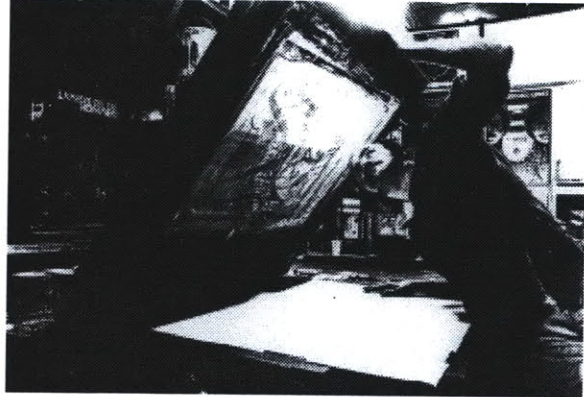
1. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p.13.

2. O' Connor, Frank. Art for the Millions. Boston: New York Graphic Society, 1973. p. 155.

3. Eichenberg, Fritz. Lithography and Silkscreen. New York: Harry N. Abrams, 1978. p.116.
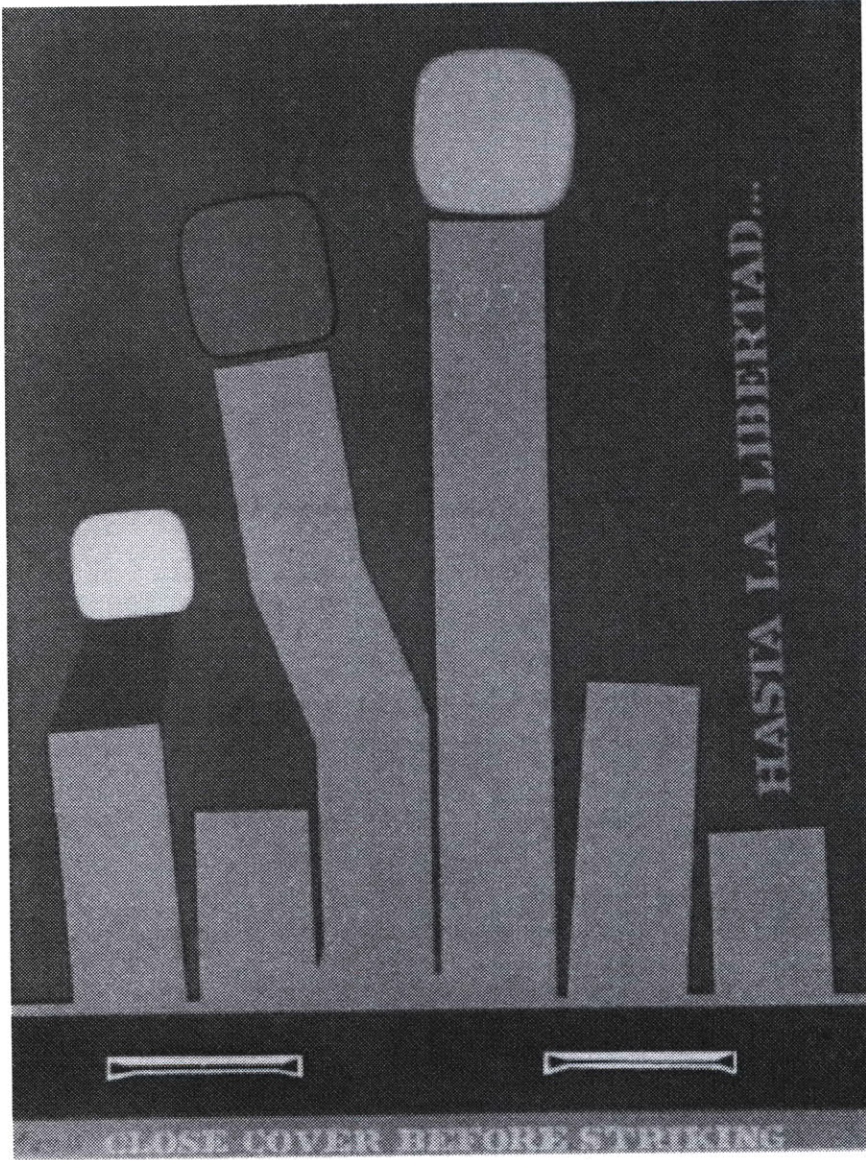
4. Hasta la Libertad, poster by Rafael Rivera Rosa, 1986.

5. Antonio Martorell in "Taller Alacrán".

1950   DIVEDCO, a Government Agency

Serigraphy was gradually introduced to Puerto Rico with small studios dealing with commercial printing. The beginnings of serigraphy as an art medium occurred with the endorsement and financial support of Government Agencies. One of the first and the most influential was the creation of " Taller de Gráfica y Cinema de la Comición de Parques y Recreo Público" in 1946 as part of the " Division de Educación de la Comunidad" or DIVEDCO.[4] They produced audiovisual material to educate the population. This organization used basic techniques of serigraphy to create images of great graphic impact to convey a specific message.

The workshop of "DIVEDCO" selected serigraphy as their graphic medium to create their posters. DIVEDCO provide a good environment for the development of graphic arts in Puerto Rico. They hired local artists and provided them a sound environment to do their work. Many painters joined the group and they gave this medium a sense of aesthetic value and high quality.

Institute of Puerto Rican Culture

In 1955, The Institute of Puerto Rican Culture (I.C.P.) was established for the promotion and reinforcement of Puerto Rican cultures.[5] One of their key projects was to establish a series of workshops and schools of different disciplines to encourage the development of the arts. The posters created in this institution where devoted to promote cultural events. This gave the artists more freedom of expression making it possible to experiment with the medium. The artists in this workshop mastered their technical skills like never before.

4. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 16.
5. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 18.

6. San Sebastián 152   , serigraphy by Rafael Trufiño, 1976.
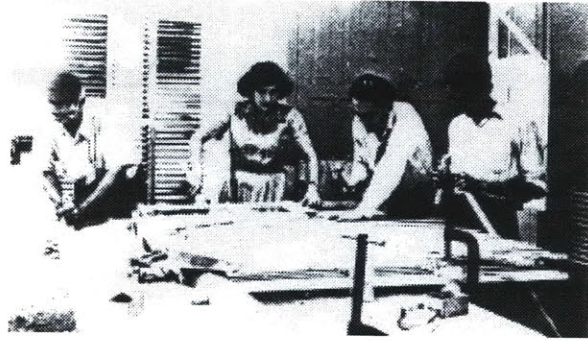
7. "Taller de Gráfica e DIVEDCO", 1949.

1960

Pop Art and Puerto Rican serigraphy

A factor that encouraged the acceptance and increased popularity of serigraphy was its revalorization at international level. Serigraphy acquired a new meaning during the 1960s because of Pop Art, an art movement generated in North America. It is said that the development of serigraphy in the United States had a different agenda than the one established by Puerto Rican artists. What interested American artist was "to explode the meaning and commercial aspects of the technique"[6]. For Puerto Rican artist their goal was to master the process and explore the creative possibilities within the medium. At that time American artist wanted to establish a clear distinction in between the print process and the design of images. For ICP's workshops, the manual making process was important because it gave an individual and autographic character of the artwork.

During the 1960s, the production of serigraphy was characterized by a freedom of design. The realization of these posters became a creative process where the work of art came out of the experimentation with the print process. Some artists worked with serigraphy and painting simultaneously. In this way, their serigraphy acquired a pictorial quality and their painting adopted a graphic quality.[7] Different technique where adopted to accomplish this pictorial quality.

Society, Politics and Prints

At the beginning of the 1960s, serigraphy was used as an instrument to communicate messages of ideological and political character. But in the second half of this decade, the election of a new government of pro statehood changed the relationship of the government with the local artists. The political situation drove some artists to create artwork charged with social criticism aimed at exposing their own take on the matter. Independent workshops were established to create artwork of social-political connotation. The work generated in these workshops was characterized for its simplicity and visual impact because they did not have the economical support of the government to make elaborate and complex work.

6. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 19.
7. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 20.
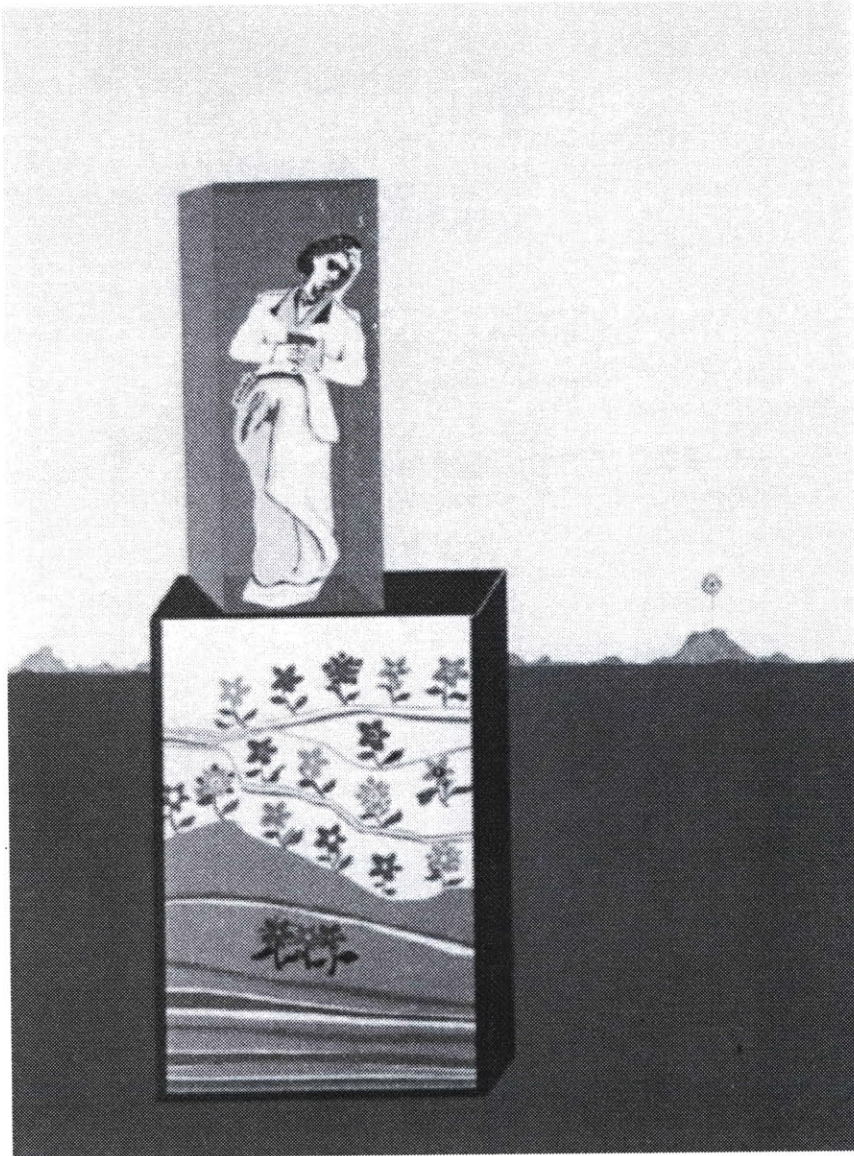
8. Mundo Nuevo, serigraphy by Rafael Rivera Rosa, 1974.
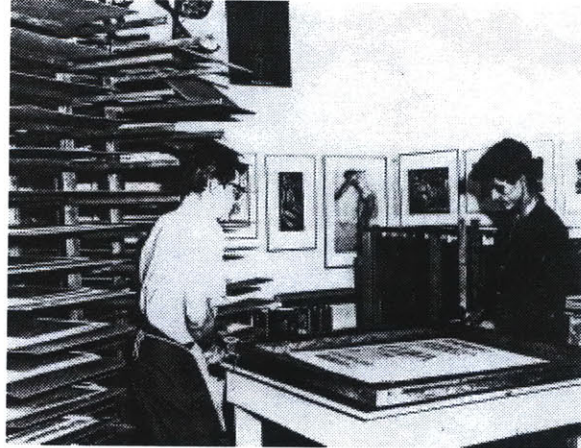
9. Lorenzo Omar and Avilio Cajigas in "Taller de Gráfica del I.C.P.".

1970   Bienal del Grabado Latinoamericano de San Juan

During the 1970s many independent workshop were created and each one had their own agenda. They were managed by graphic artists and groups of expert "printers". This helped to spread out the medium through the Island. In 1970 the "Bienal del Grabado Latinoamericano de San Juan" was created. [8] In this context, Puerto Rican graphic arts was exposed to a larger group of Latin American artists strengthening its importance internationally.

In 1966 The Institute of Puerto Rican Culture (ICP) founded the "Escuela de Artes Plásticas", [9] a school of visual arts that had a very strong connection with the workshops of the ICP. This put the younger generation in contact with the newest aesthetic criteria and ideological principles of the graphic arts, proposed in the previous decade.

"Bienal del Grabado Latinoamericano de San Juan" established a new vehicle of diffusion between Puerto Rican and Latin American artists, generating a forum of critical discussion about the local and cultural agendas. Since the first Biennial the precedent of Puerto Rican serigraphy served as an example to other Latin American artists by the mastering of the technique.

During the 1970s, serigraphy was finally accepted and valued as an independent art form. For the artist it was an art form of multiple print that could circulate in a more fluid manner among a wider variety of populations. Therefore, serigraphy was an essential way of survival for many artists. For the public, serigraphy became the way of owning an art piece at a very affordable price.

8. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 23.
9. Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad de P.R., 1987. p. 26.

10. Centenario de la Abolición de la esclavitud en Puerto Rico, poster by José Rosa, 1973.
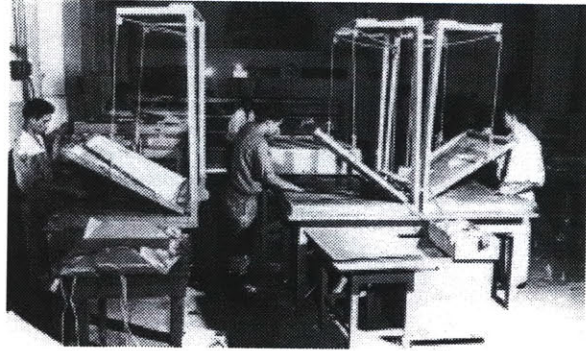
11. "Taller de Gráfica de DIVEDCO".

1980

During the 1980's the public converted serigraphy in the most popular art form in the market. The production of serigraphy during this decade had a wide variety of styles and themes with an emphasis in the individuality of the artist. Their tendency of doing the work by themselves and the use of manual process still predominate during this decade. The popularity of this medium made some young artists focus their work exclusively on serigraphy. For economical reasons, most of these artists conducted their work in a small size format with urban and rural themes familiar to the public. The flexibility and adaptability of this medium offered an option and a challenge to Puerto Rican artists. Serigraphy became an affirmative response of a group of artists that wanted to create a conscious and respect to art through graphic arts in PR.

Today

In this process, Puerto Rican artists develope one of the most contemporary and controversial printing techniques and take the art to a higher quality level than what is being recognized internationally. It is through serigraphy that Puerto Rican artists had made a contribution to the history of international arts and at the same time, it establish a link of communication in between Puerto Rican artist and the public. Making it accessible in festivals and celebrations through out the island.

Today, serigraphy remains the favorite in artwork among the public. They reflect the texture of a place with its own complexities. Serigraphy becomes the visual witness of our past and present, creating an image that relates to us.

View from the road looking west. The mountain serves as a backdrop to the site while the river operates as a boundary that separates the site from the road.

Site
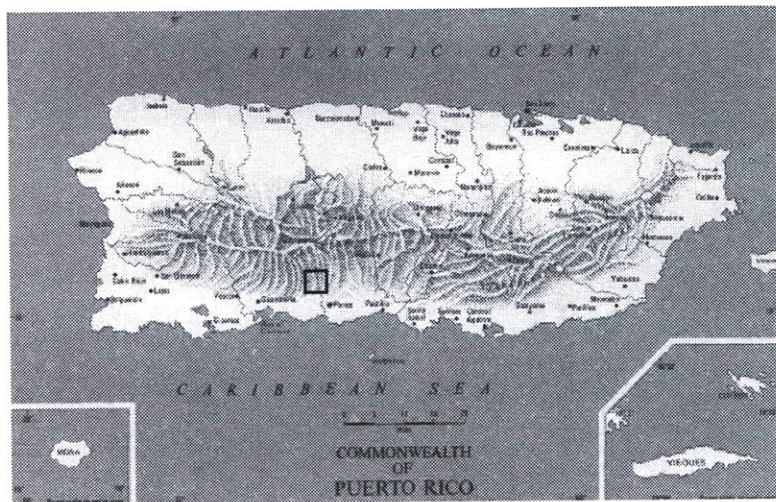
12. Map of Puerto Rico.

Valle Tallabóa, Peñuelas, P.R.

Relationship with settlement

The location of the project is in a small valley in Peñuelas, Puerto Rico A town on the south coast of the Island. The site is about 15 minutes away from Ponce, the second largest city on the Island. Ponce is known as a very strong cultural center for the arts. The project maintains a close proximity with this "cultural center" and also remains close to other smaller communities to the south of the Island. It will be a point of contact for many graphic artists who are spread out through the Island.
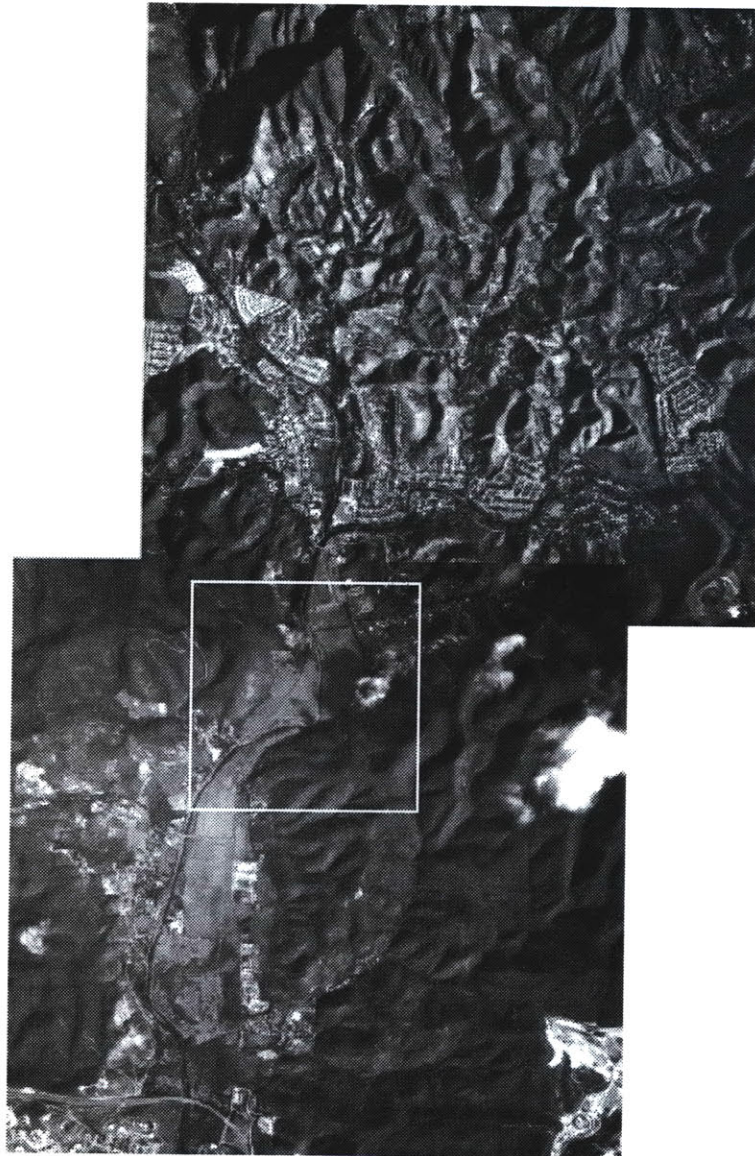
13. Aereal photograph of the town of Peñuelas.

Valle Tallabóa, Peñuelas, P.R.

Relationship with landscape

The valley is contained by mountains to the west and east, "Tallabóa Poniente" and "Tallabóa Saliente" respectively. There is a secondary road to the east side of the site. A river Tallabóa zig-zags through the site from north to south. To the north, there is a view to the Central Ridge of the Island and to the south, the sky.

View from the east side of the site where the river and the road meet.
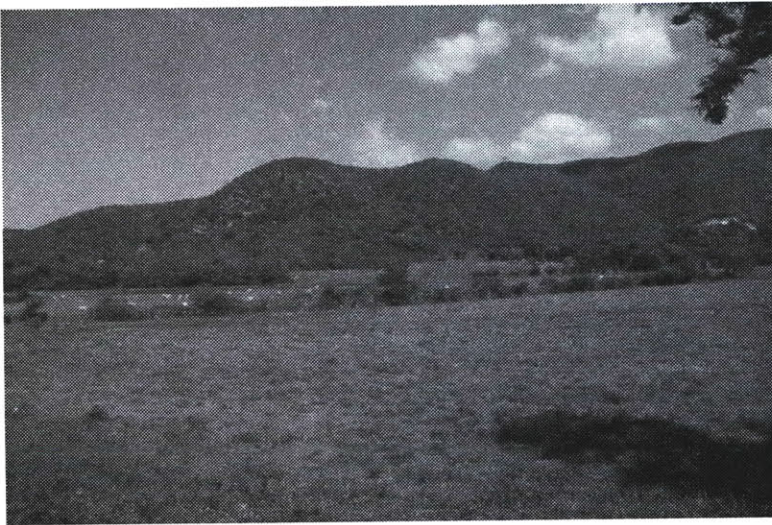
View from the north side of the road looking southwest to the river that cross the site
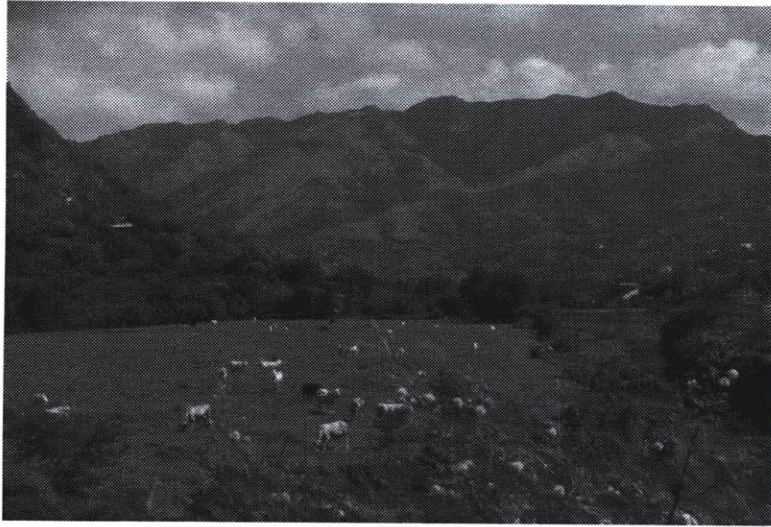
View to the north looking at the Central Ridge of the Island.

View from the "background" mountain to the east side of the site.
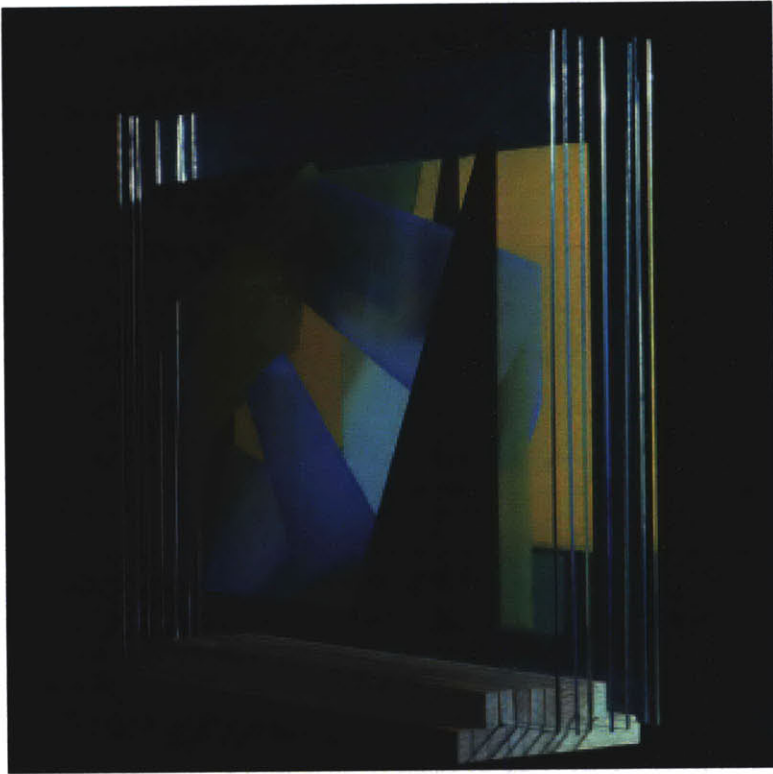
Abstractions of the Landscape

.
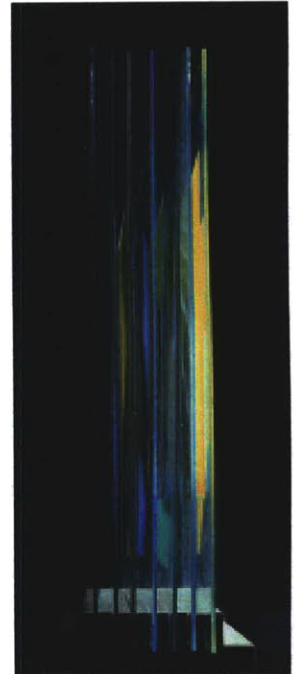
Abstractions of the landscape

Abstractions of the landscape through fields of color bring the forces of the place to a certain level that enhances the subtleties of the site and reveal new readings of the context. This offers a new vision that would have never be possible to achieve by a basic site analysis. This generates a new attitude towards the place.

I found myself with three different readings of the landscape. The first, was a more phenomenological one where I read the strongest element of the site, the mountains. The second, was a reaction to the first one in the sense that it is derived from it as an implicit force. These are the diagonals. The third one is the more rational reaction to the context where I read basic fields of space at the most abstract level.

The intention, from here on, was to generate a scheme that crates an exchange between these three different versions in order to reinterpret the landscape.

The site is bounded to the east and west edge by mountains. This is represented by the green plates that change in color, indicating a change of slope in the terrain.

These blue fields represent an abstraction of the tension forces generated from the mountains surrounding the site.

The reading of the major fields generated by the boundaries of the mountains and the river, can be perceived as an "L" shape that cuts through the site.

Site abstraction one
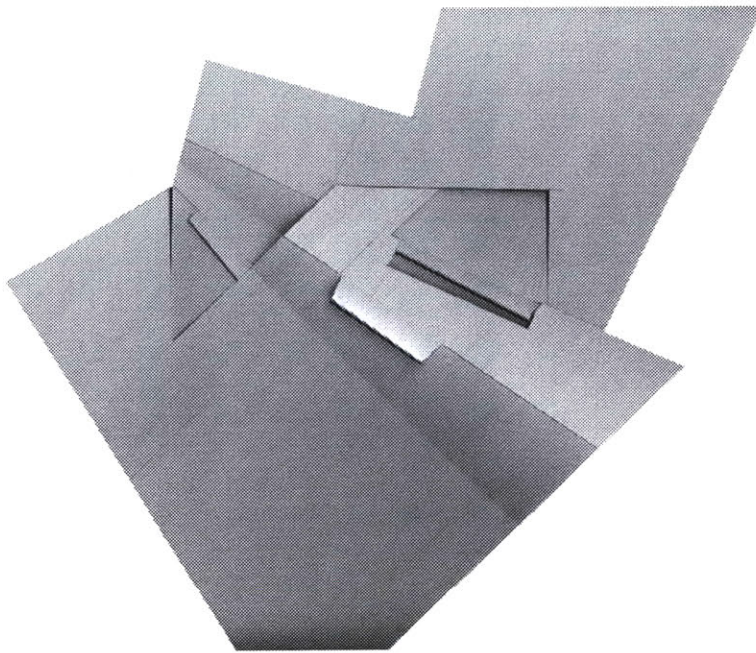
Three-dimensional reiteration of first site abstraction trying to understand
the forces of the fields.
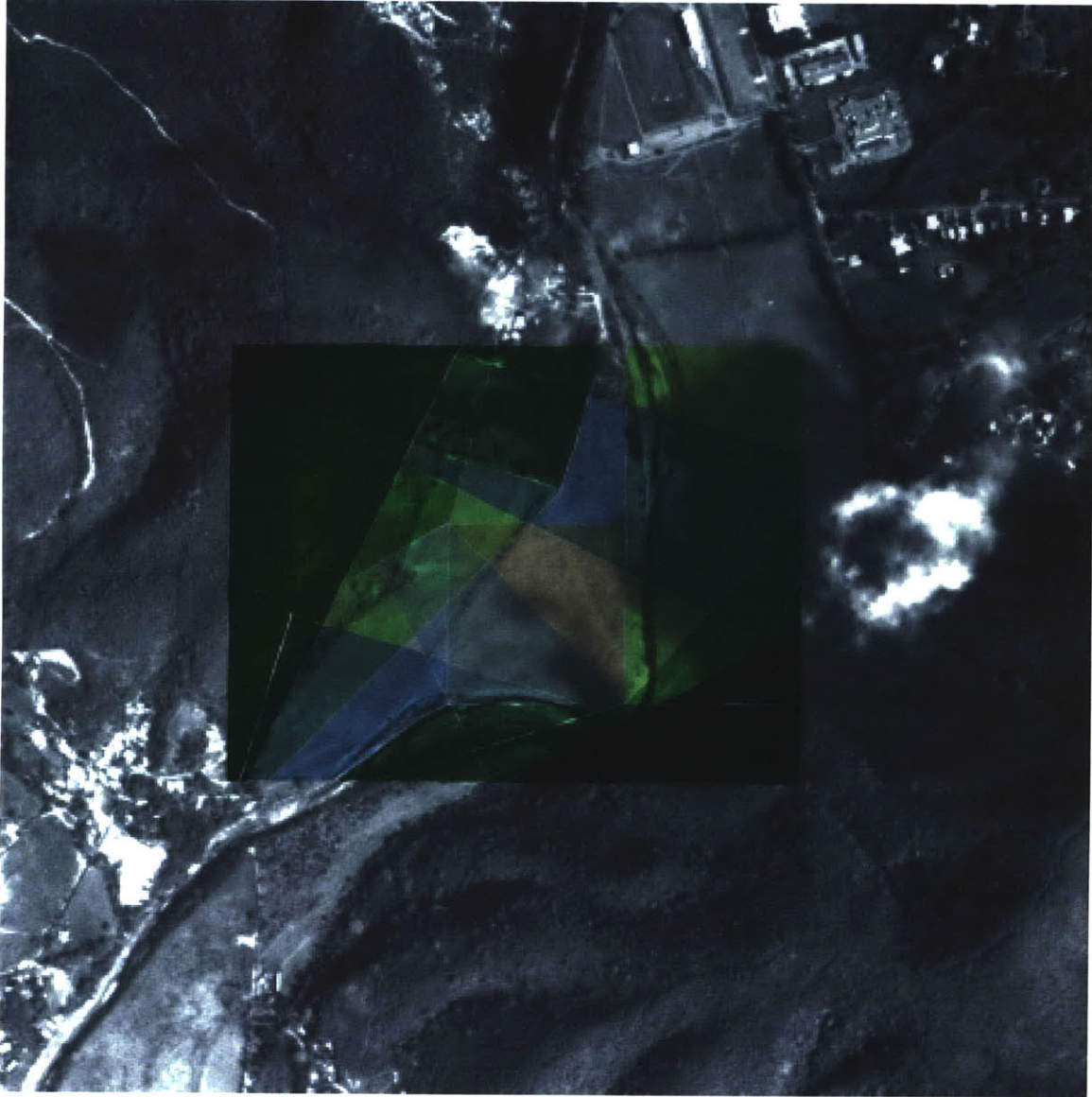
Flattened version of first site abstraction.
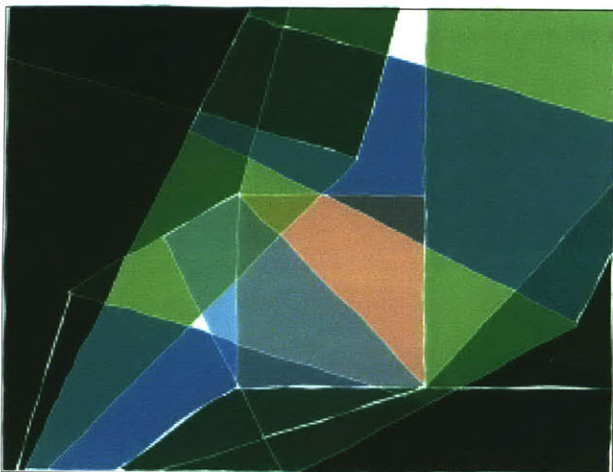
Site abstraction two
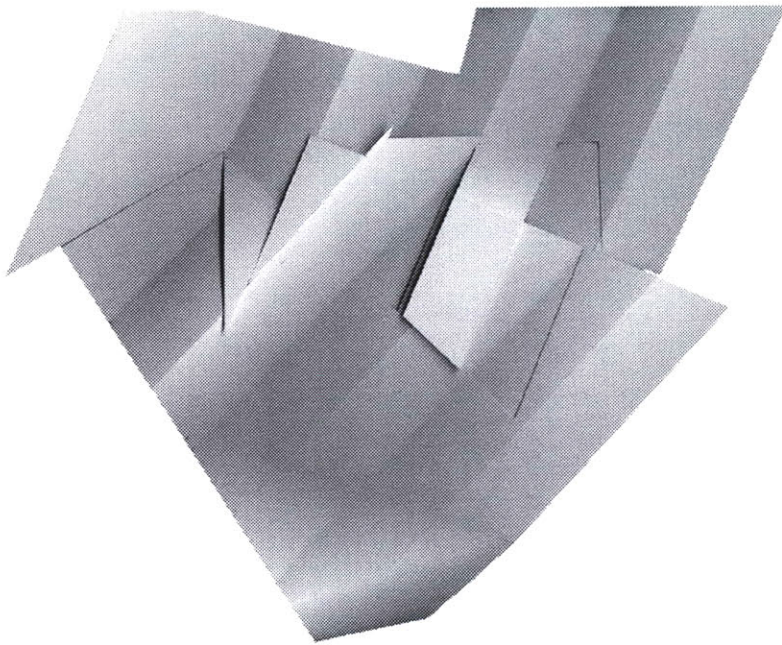
Three-dimensional reiteration of second site abstraction expressing the forces of the fields. The change in direction of the fields as it transforms from the north to south creates a hinge where the river changes direction.
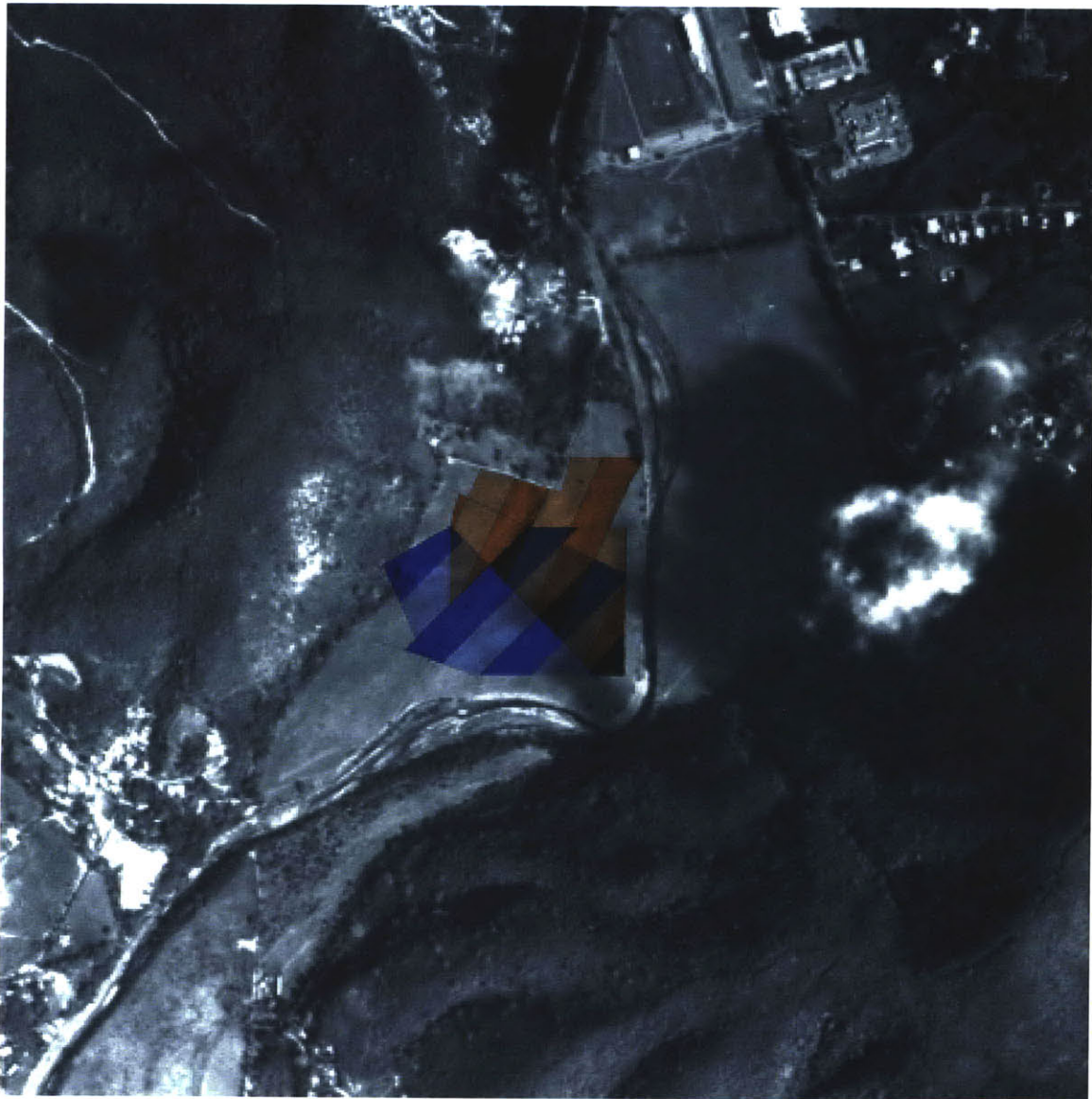
Second site abstraction zooming in on the fist reiteration.
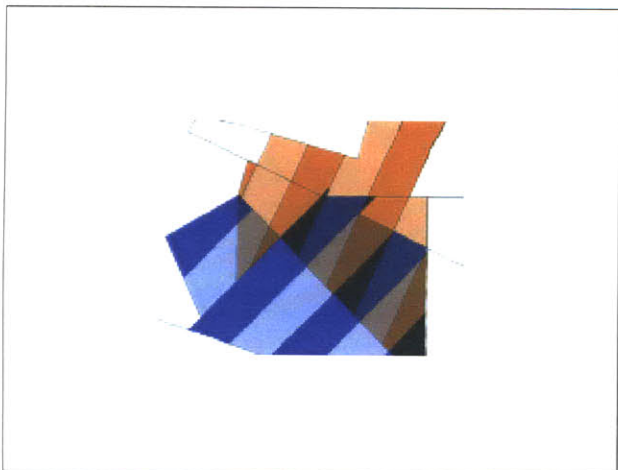
Site abstraction one + two
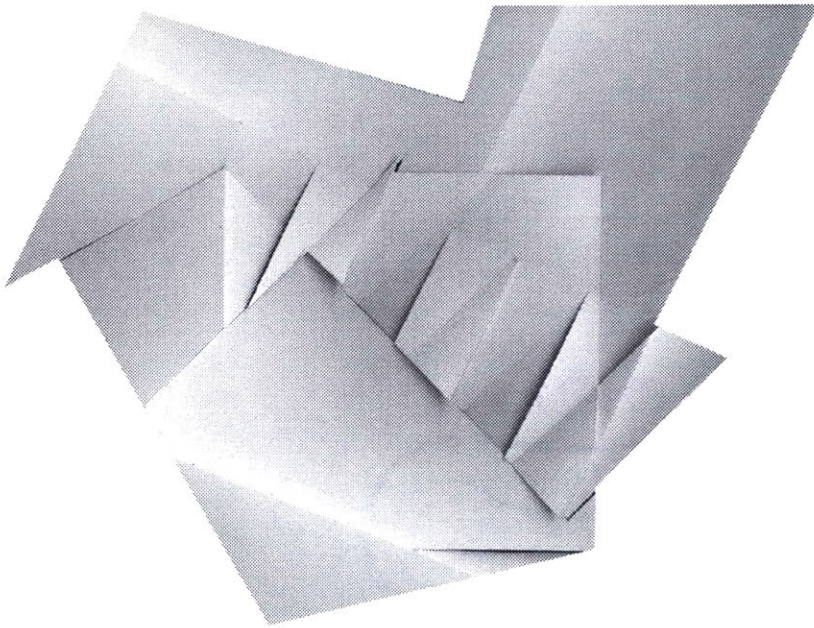
Three-dimensional reiteration of first and second site abstraction combined.
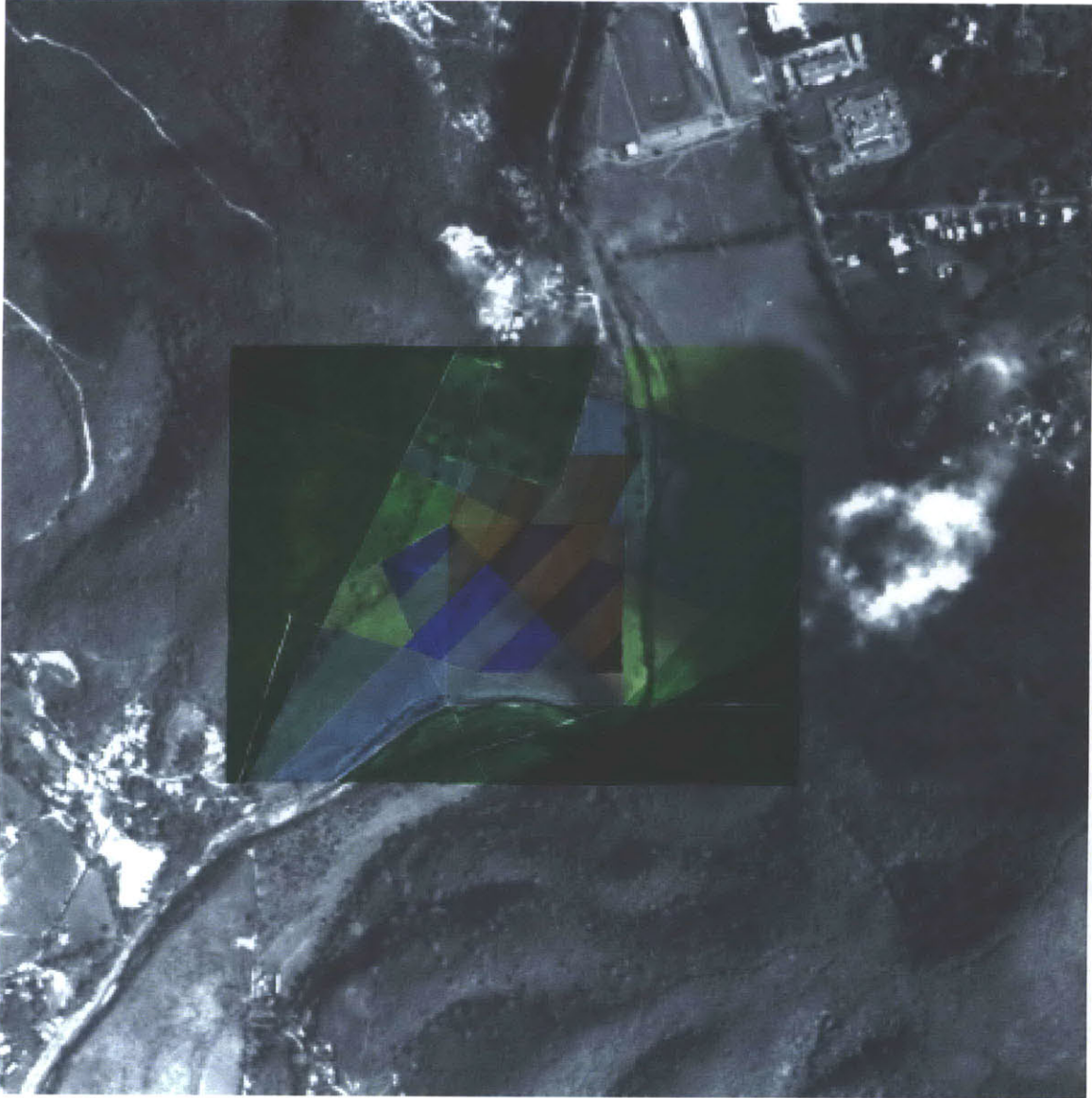
Flatten version of first and second site abstraction combined.
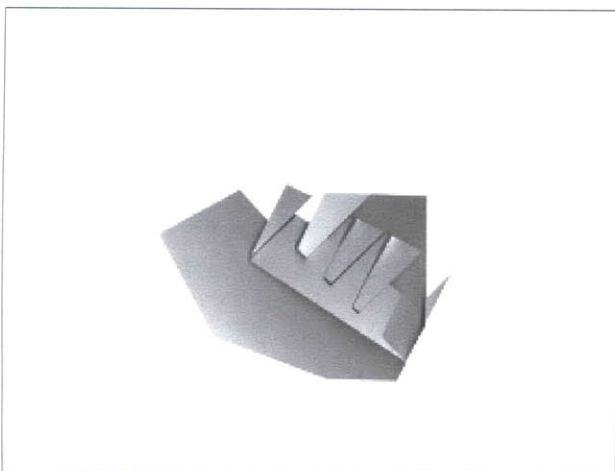
EL PATIO NO ESTARÁ COMPLETAMENTE CERRADO SINO
QUE ABRIRÁ A UN LADO, POR LO MENOS, PARA
DESPLEGARSE AL PAISAJE HACIA O DEL ADENTRO.
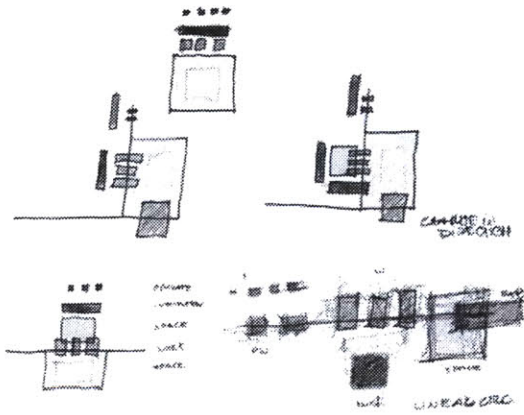
Program
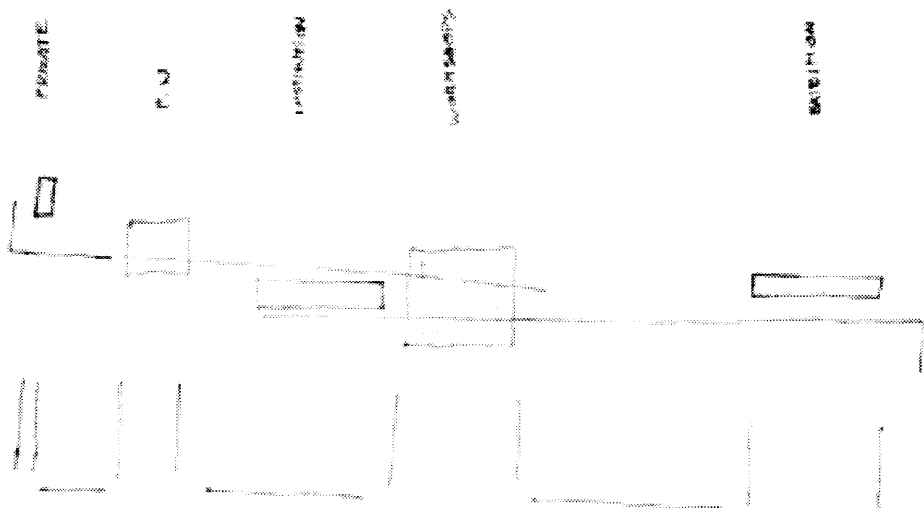
WORKSHOPS ARE AT -TRANSITION POINT IN BETWEEN THE PUBLIC/
CELEBRATION AREA AND THE INSTITUTION, LEAVING
BEHIND (BACK) THE PRIVATE SECTOR.

THE EXTENDED INSTITUTION THAT OPENS ITSELF TO THE PUBLIC/PEOPLE.
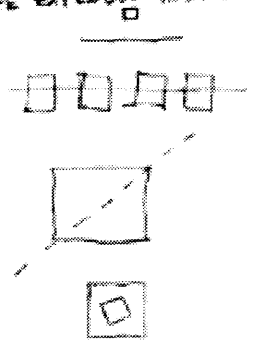
LIVING UNIT - REMOVED ITSELF FROM THE CONTEXT
AS AN ABSTRACTION / AS A DISTANCE/
MEDITATION

WORKSHOPS - SPINE AND VERTEBRA OF
THE PROJECT. HORIZONTAL / RADIATION LAYERS

FAR SPACE - CONNECTED TO THE LANDSCAPE
AS WELL AS TO THE "BUILDING"
ACTING AS A MEDIANCE IN BETWEEN
THEM.

THE "SCHOOL" - OPERATES WITHIN ITSELF/INTROVERTED
ITS RADIATION WITH NATURE IS VERTICAL
AS THE SKY/DIALOG WITH LIGHT.

42
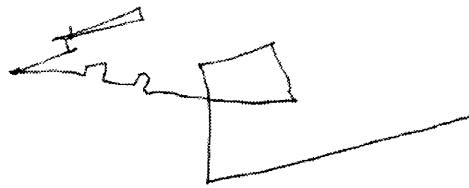
Concept diagram of program.

Center for Graphic Arts

Creating a place for learning, exploration and exchange of different graphic arts.

The purpose is to provide a place for a special voice, the cultural expression. The idea of the Center for Graphic Arts is to expose the art to the Puerto Rican community. This place will be a tribute to the tradition and history of the graphic art in Puerto Rico. It will also provide a learning opportunity for communities in remote parts of the Island.

In order to recognize the importance of graphic arts, the Institute of Puerto Rican Culture had establish an exposition called "Bienal de San Juan: del Grabado Latinoamericano y del Caribe" since 1970 . This event is held every two years as an international effort to celebrate, recognize and perpetuate contemporary graphic arts. The Center for Graphic Arts will have the duty to promote graphic arts locally.

LIVING

WORK

CELEBRATION
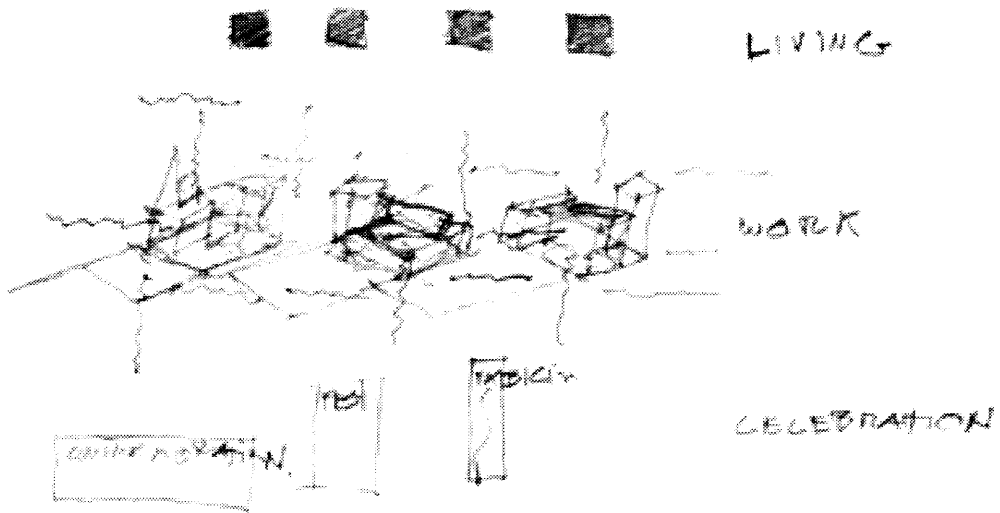
Program

The idea is to generate a program with different stratifications of function in order to work with different levels of densities and intensities. The task is to explore the spatial relationships between the different parts of the program. This is carried out through different introversion and extroversion of spaces related to the landscape. Most of the relationships are based on different levels of private and public spaces.

Total 43,530 ft.^{2}

The Living Units

$$14,400 \text{ ft.}^2$$

Individual Workshops- multipurpose – 5@ 320 ft.^{2}	1,600 ft.^{2}
Housing- apartment units- 10@ 1,280 ft.^{2}	12,800 ft.^{2}

The Institution

$$9,070 \text{ ft.}^2$$

Archives and library	2,600 ft.^{2}
Administration	870 ft.^{2}
Classrooms- 5 @ 480 ft.^{2}	2,400 ft.^{2}
Lecture Hall	2,720 ft.^{2}
Services	480 ft.^{2}

Group workshops

$$7,960 \text{ ft.}^2$$

Photoserigraphy and Photolithograph	600 ft.^{2}
Serigraphy	600 ft.^{2}
Lithography	600 ft.^{2}
Relief printing	600 ft.^{2}
Intaglio	600 ft.^{2}
Paper Making	600 ft.^{2}
Framing	600 ft.^{2}
Binding	600 ft.^{2}
Electronic media	1,200 ft.^{2}
Photography	1,200 ft.^{2}
Services	760 ft.^{2}

The Public Space

$$12,100 \text{ ft.}^2$$

Exhibition space- for permanent collection of graphic work.	10,900 ft.^{2}
Cafeteria	1,200 ft.^{2}
Outdoor exhibition space- for festivals and temporary exhibitions.	

Diagrams
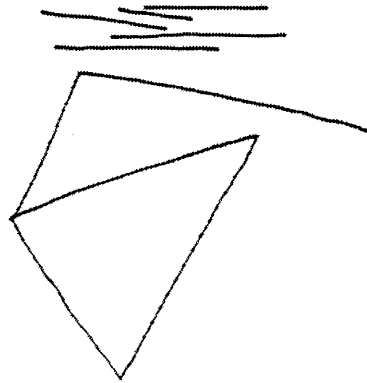
Concept diagram of the building.

In order to reach this point in the project it is important to understand the process that I went through. It was necessary to disconnect myself from the graphic abstraction so I could focus on establishing a program agenda. The parameters of the program that I set up were crucial to the development of the building. The graphic abstractions gave me an un-derstanding of the place but it was the program agenda that helped solidify the main idea. However, I would have never reach this proposal without the abstractions of the landscape.
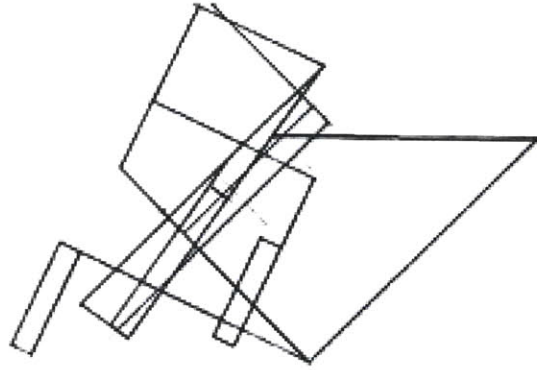
Diagram derived from thoughts on the program, generated by the forces abstracted from the site.

Program collage describing the program strata as the parts are displaced within the site.
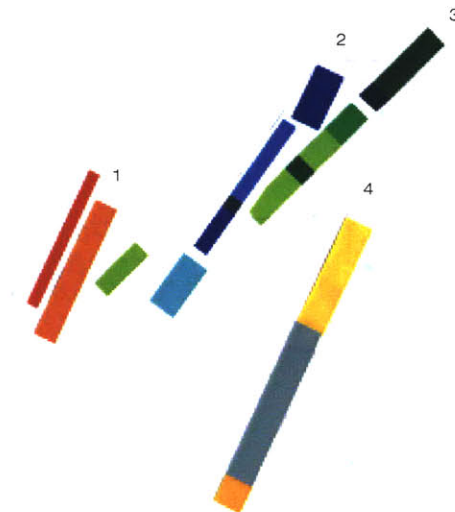
1 orange: living units, 2 blue: school, 3 green: workshops, 4 yellow: exhibition.

Study models

This model serve as the precedent for the final design.
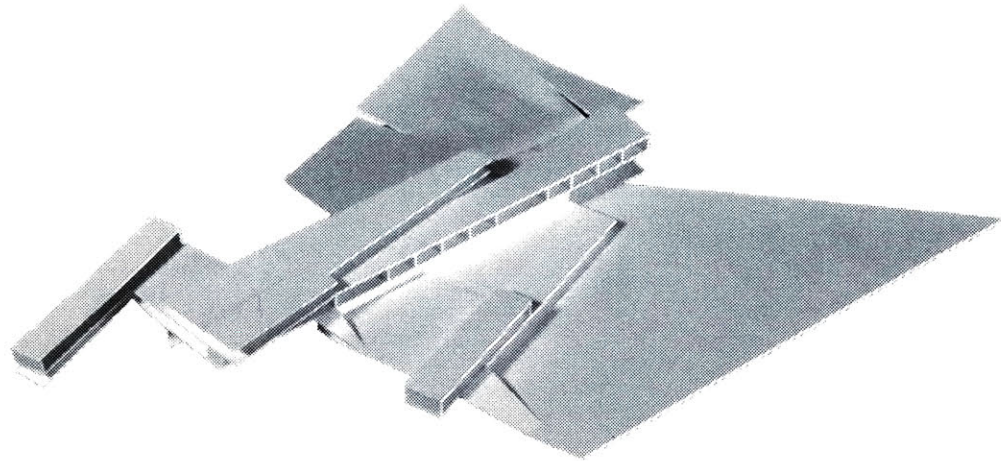
Study model three.
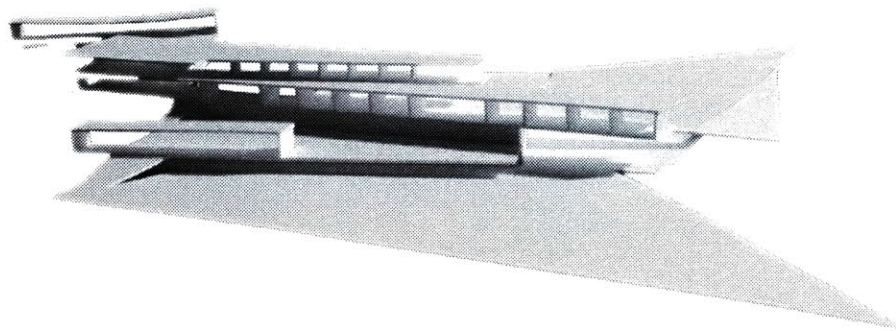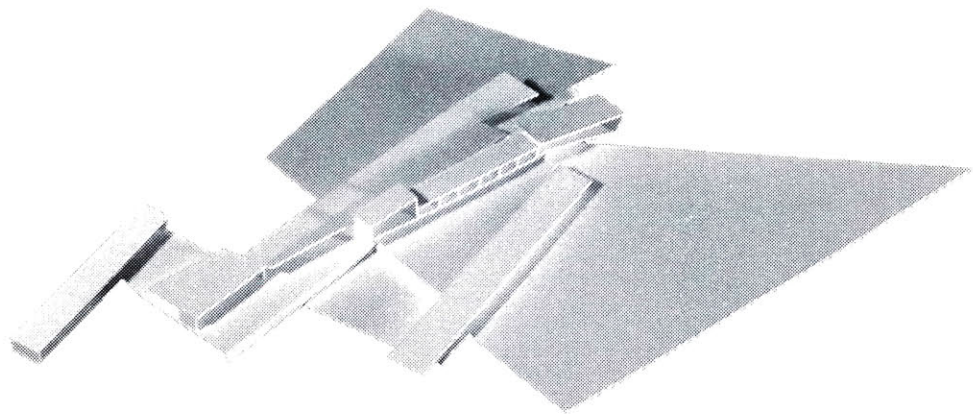
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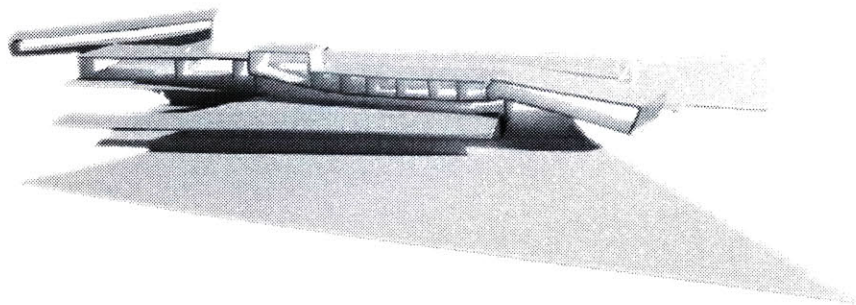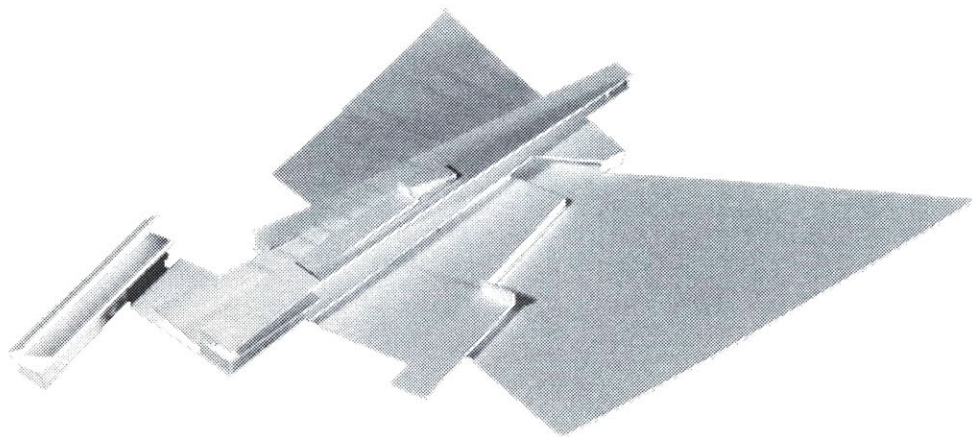
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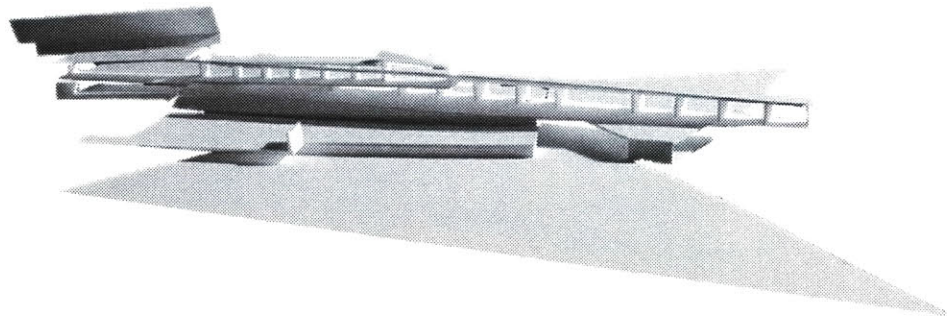
Building vs. Landscape

The project establishes a dialog between the building and landscape rather than the building becoming a landscape. The main structure operates in a one directional field, while the land slips under the building in a perpendicular manner. This mainly occurs with the platforms and terraces that tie the bar buildings together. In addition there are a series of linear fields that operate as reverberations of the building. They represent the interlace and overlapping of forces that where discovered in the first site abstractions. The linear fields are marked in the landscape by tall grass, sugar canes and water.
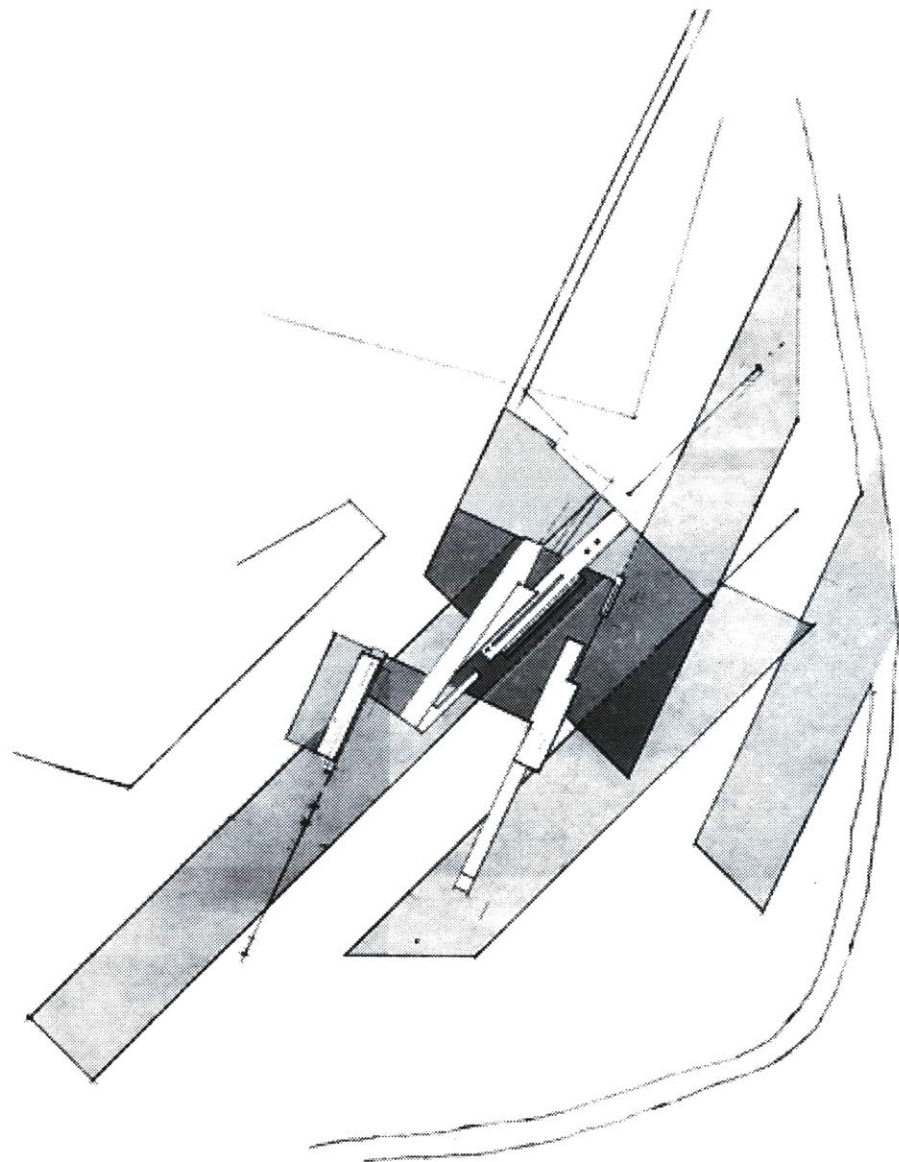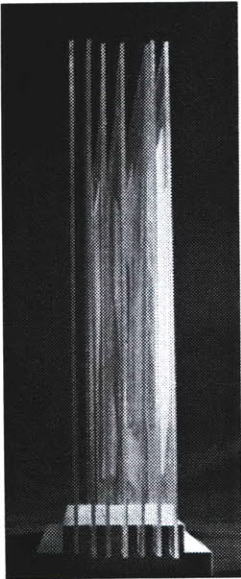
Filters of the Building

Three-dimensional filters allow the exploration of the building and its sur-
faces. The idea is to unfold the surfaces of the buildings in a response to
the specificity of the landscape and program. Some spaces require a
disconnection from the outside while others operate with a more direct
connection with the exterior.
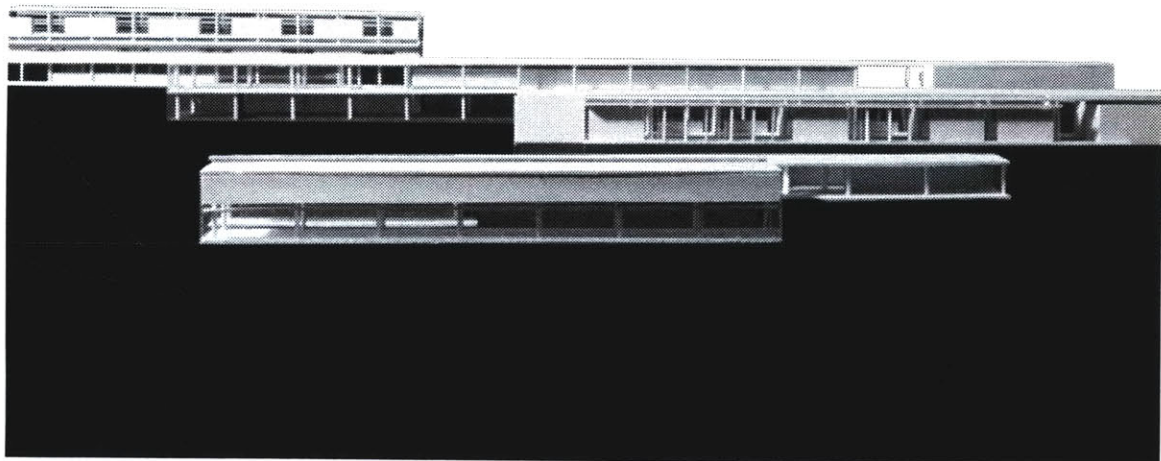
Facade studies
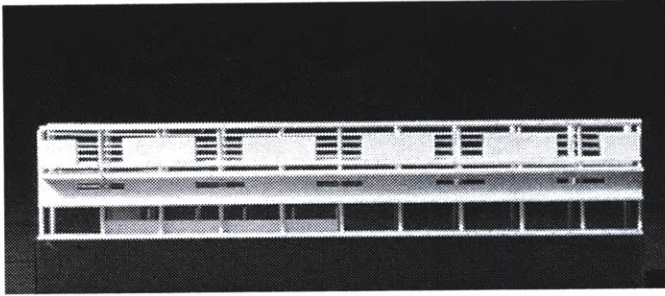
East

Living Units
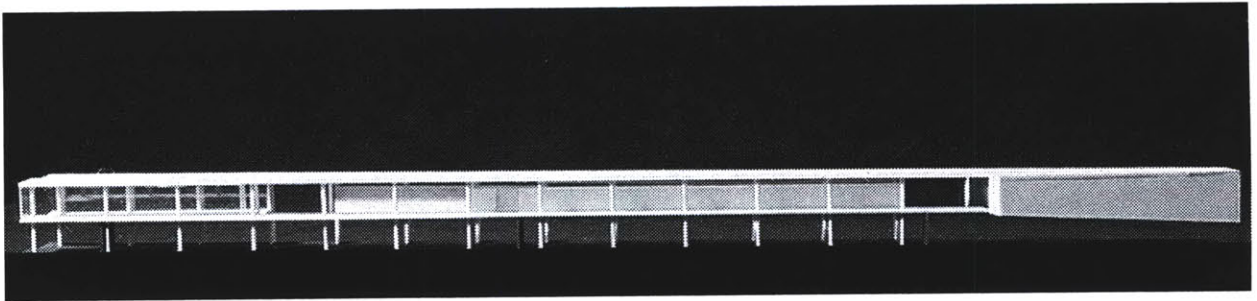
School
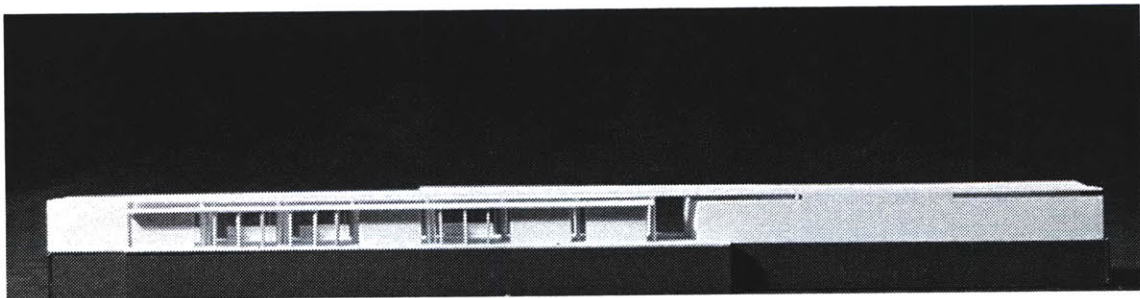
Workshops
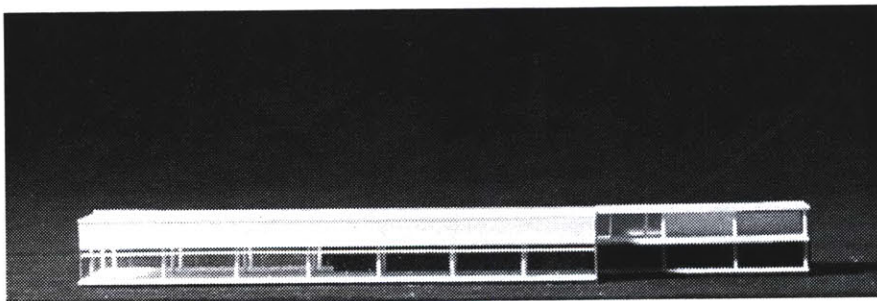
Exhibition Space
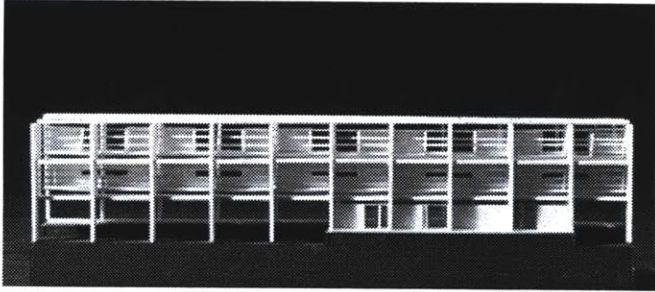
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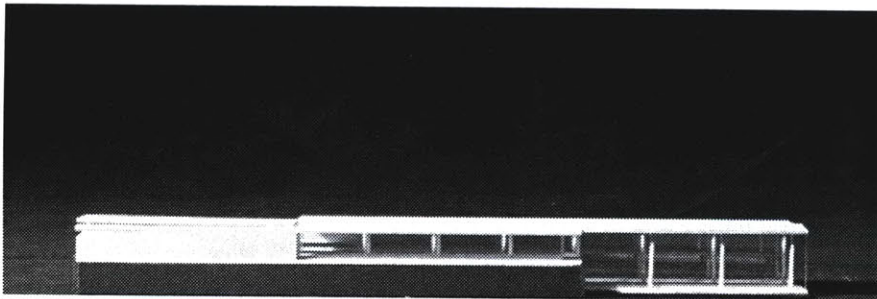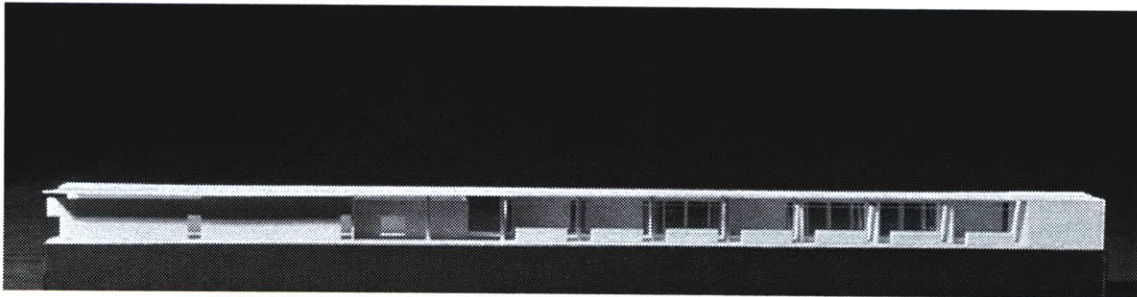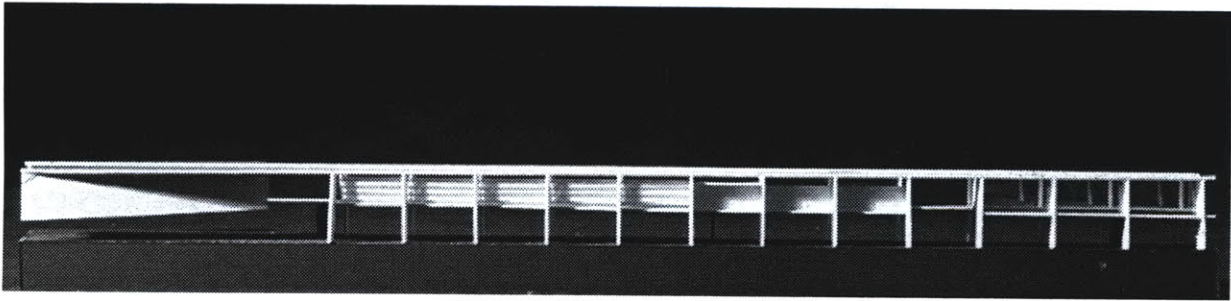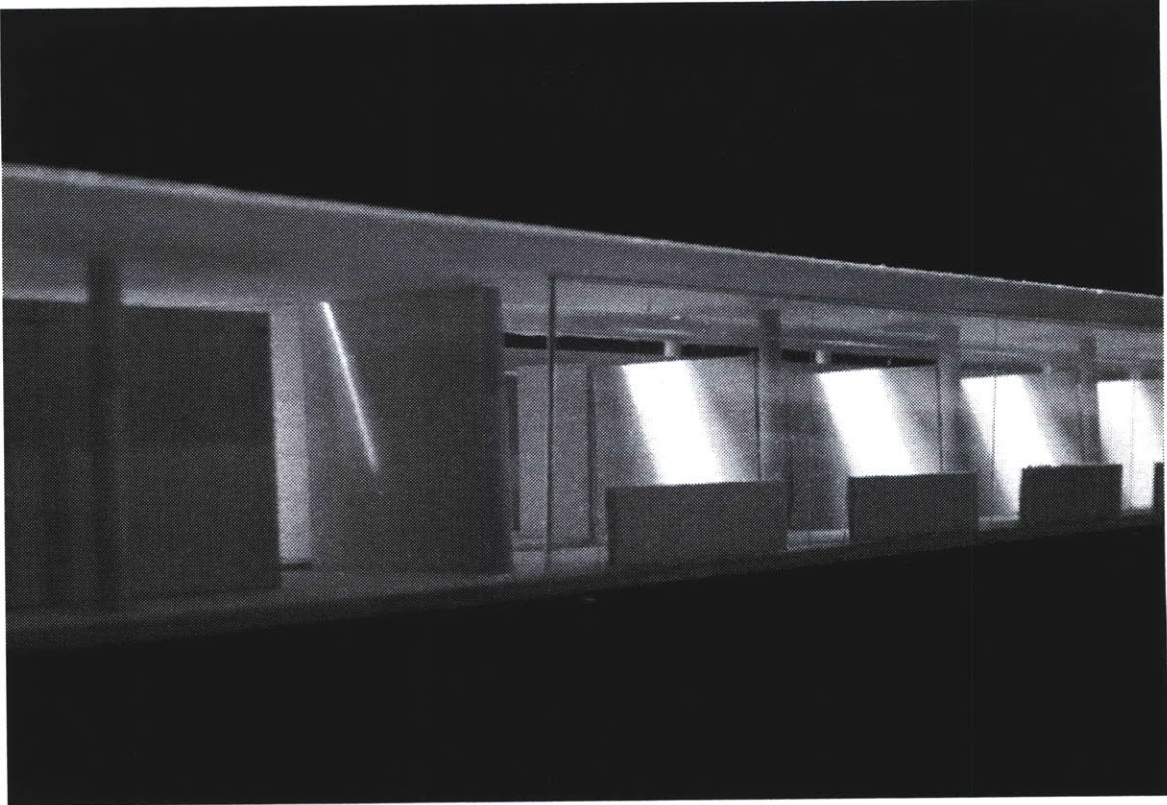
Workshops

The workshops open to an interior courtyard allowing views to this space
and reflections from the mountain at the back of the site.
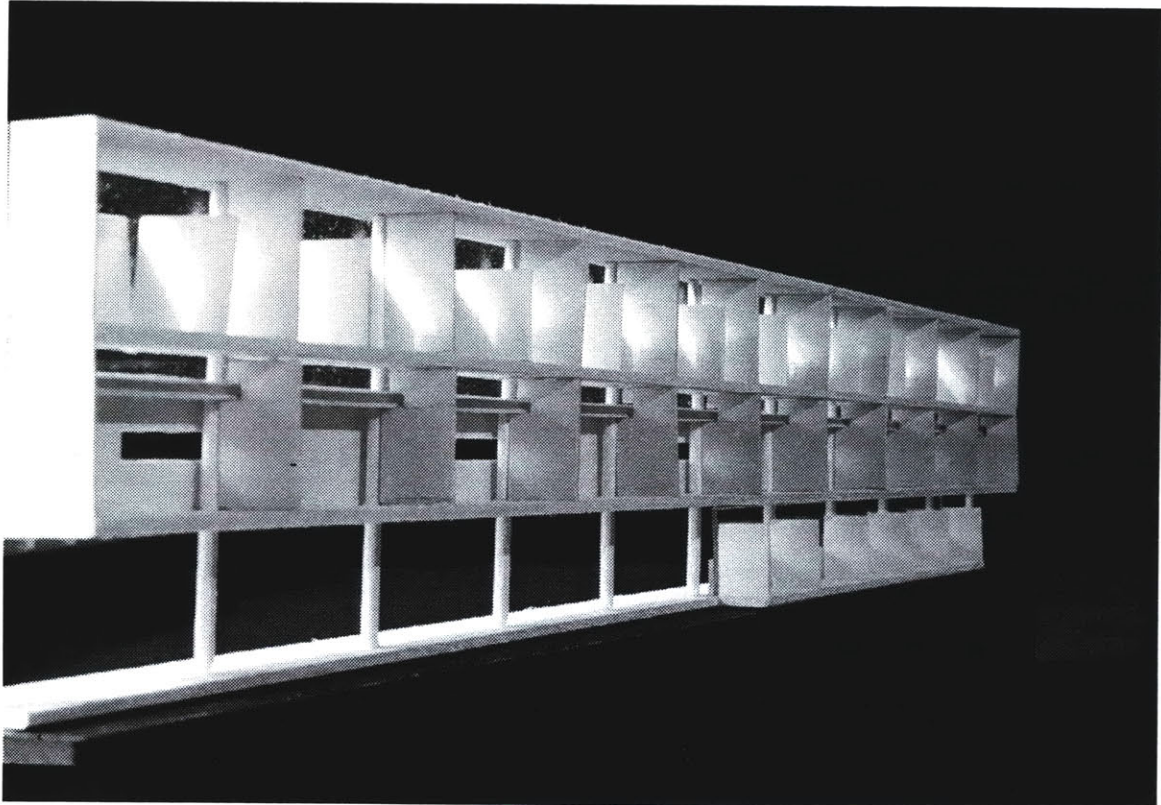
Living units

The west facade of the apartments open to the landscape to offer
expancive views and provide ventilation. At the same time the rooms
are well shaded from the afternoon sun by "quiebra soles".
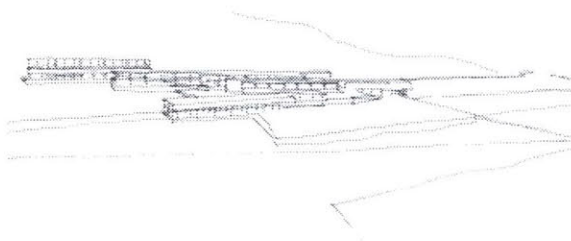
Final Presentation

Perspectives
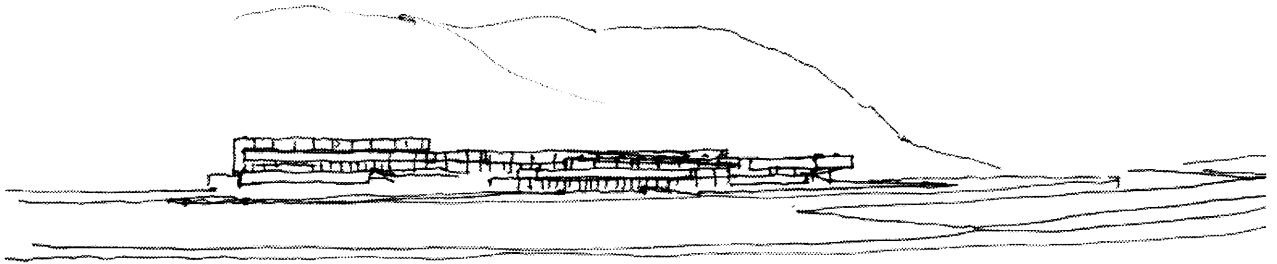
View from the road looking west. The building is perceived as a series of planes which are flattened out in the distance.
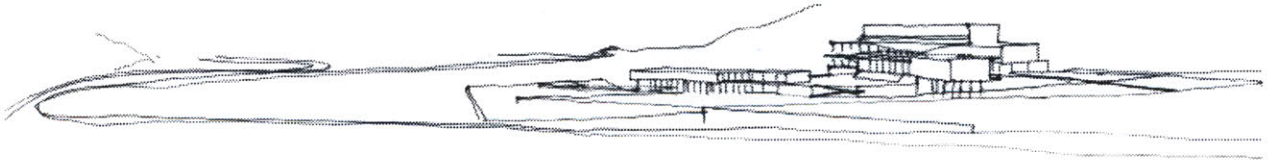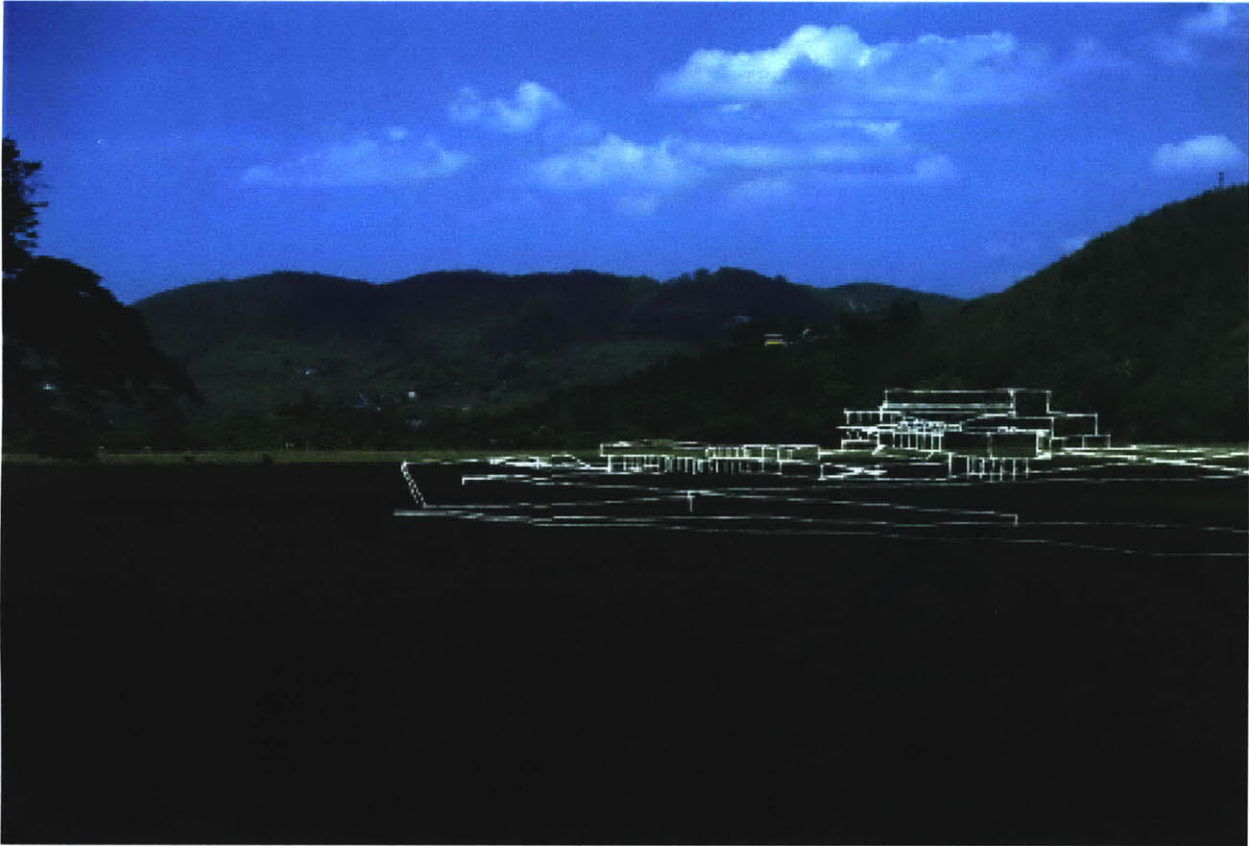
View from the road looking southwest toward the building.
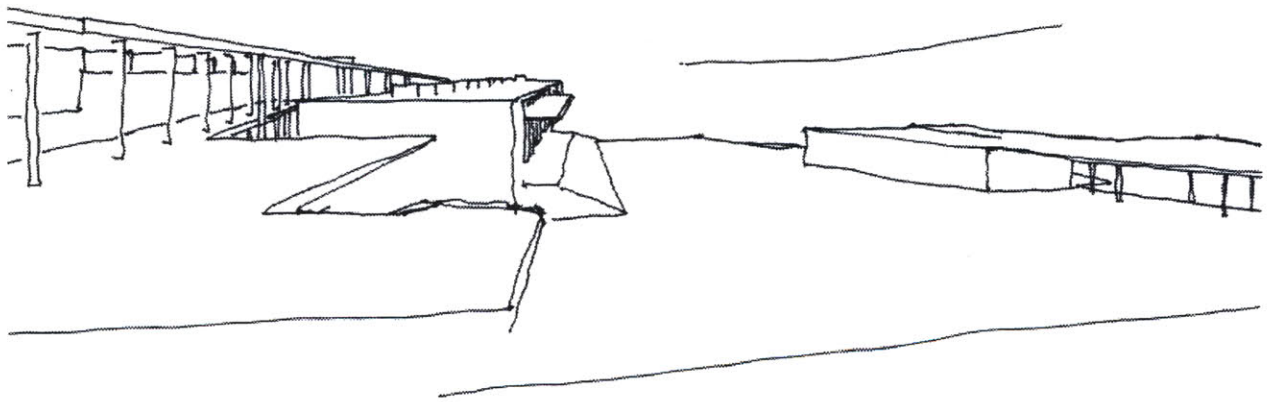
View to the north looking at the Central Ridge of the Island from the plaza.

Site Model

scale- 1: 2,000 m
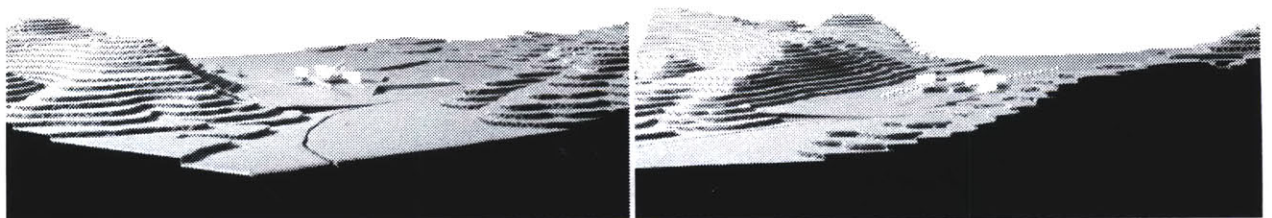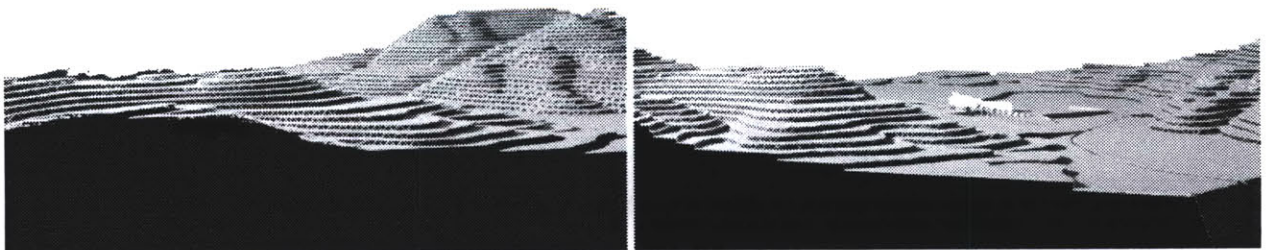
Site Plan

N
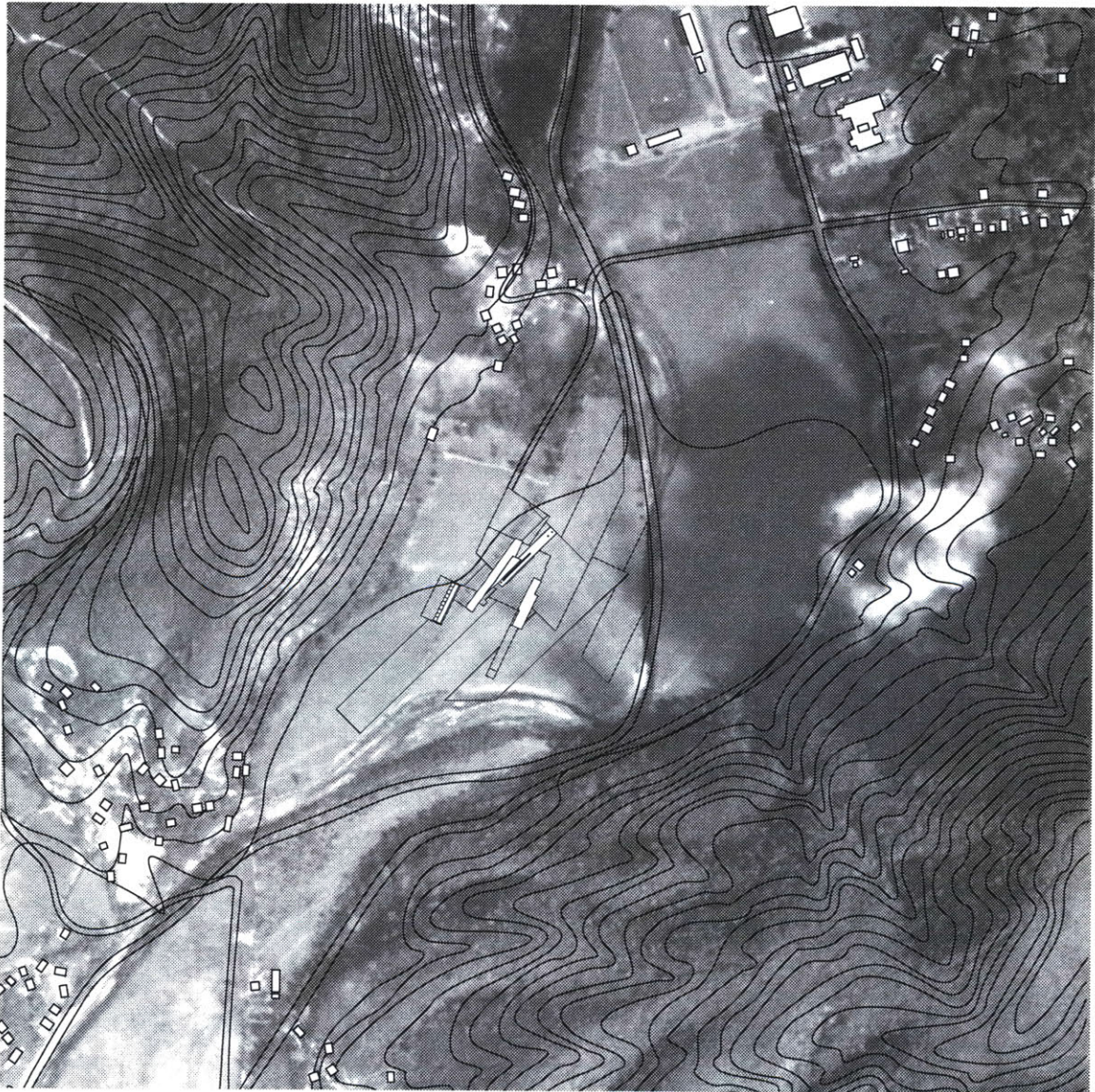
Site Model

scale- 1: 2,000 m
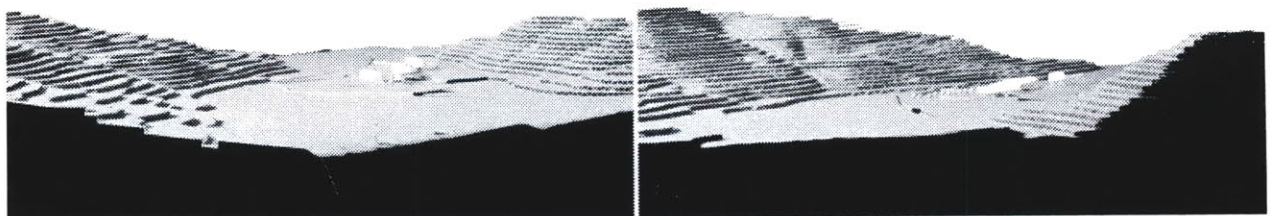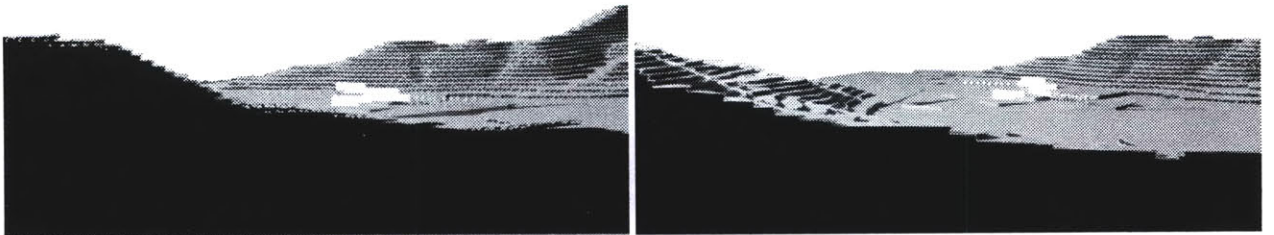
Roof Plan

N

scale- 1"=400'
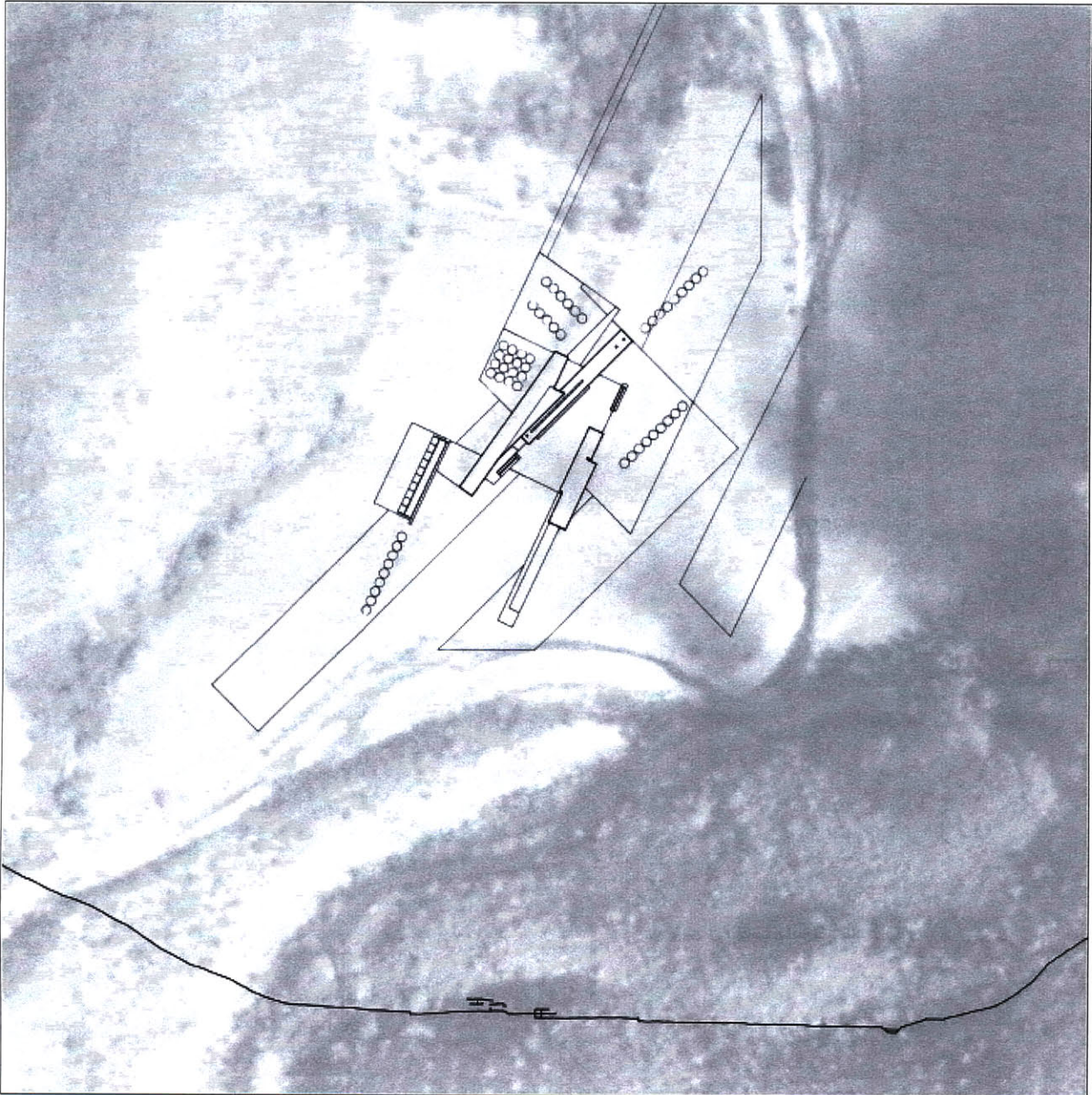
Plan One

The Living Space

The Institution

Group Workshops

The Public Space

a

b

c

d

e

f

14

12

13

18

19

20

17

1

scale- 1"=100'

N

Plan Two

The Living Space

The Institution

Group Workshops

The Public Space

a

b

c

d

6

5

e

f

4

2

3

scale- 1"=100'

N

1

2

3

4

5

6

7

8

9

Interior Perspectives

Sections

scale- 1"=100'

Section a

Section b
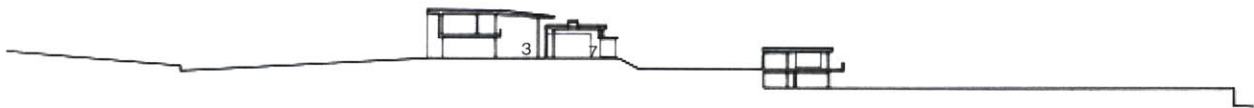
Section c
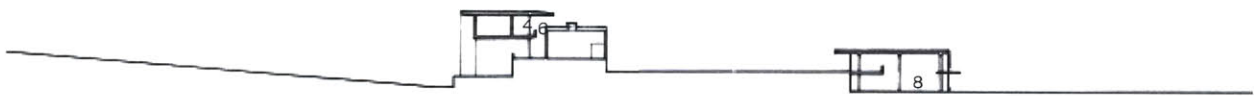
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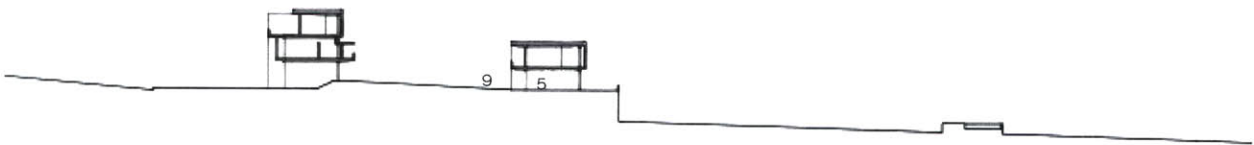
Section e

Section f

Model

scale- 1"=32'

Final comments

With this thesis I wanted to attempt a new avenue of integration with a discipline I admire very much, that being serigraphy. Letting the discipline of serigraphy influence my process, gave me a way of discovering a new way to look at my work.

The first issue was to figure out why serigraphy? What relationship does it have with architecture? Most of all, how would this help me understand space?

During the process, many questions where asked about the validity of the abstractions of the landscape. Back then, I could not answer those questions because at that point in time the abs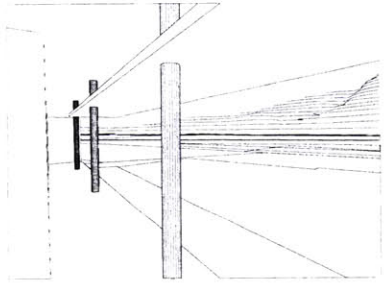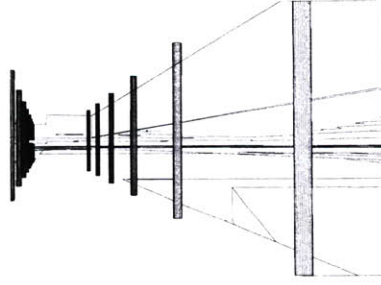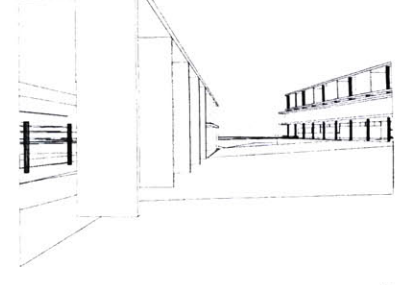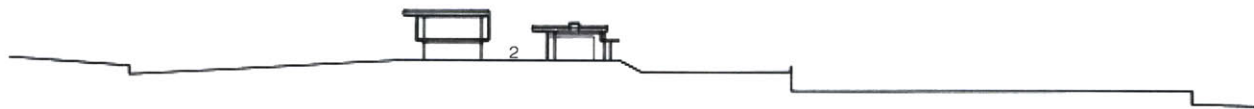tractions had not led to an architectural design. What it provided was an understanding of the landscape which I could not have reached in any other way. I believe that analysis entails more than just a basic collection of data. It entails a reading that becomes personal.

The notions of filters that I started to explore in the project did not reach the level of resolution that the abstractions did. The idea was to explore the surfaces of the buildings and their relation with the landscape in terms of views and reflections. This direction would make the project evolve into a completely new one. The process of investigating the landscape abstractions has given me a starting point or an attitude for this second phase of the project...

I am still discovering things about this whole process, good and bad. I hope I keep discovering for a while....

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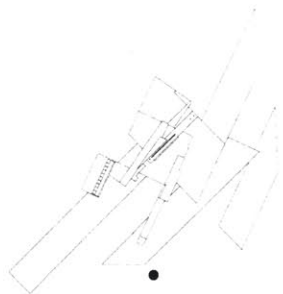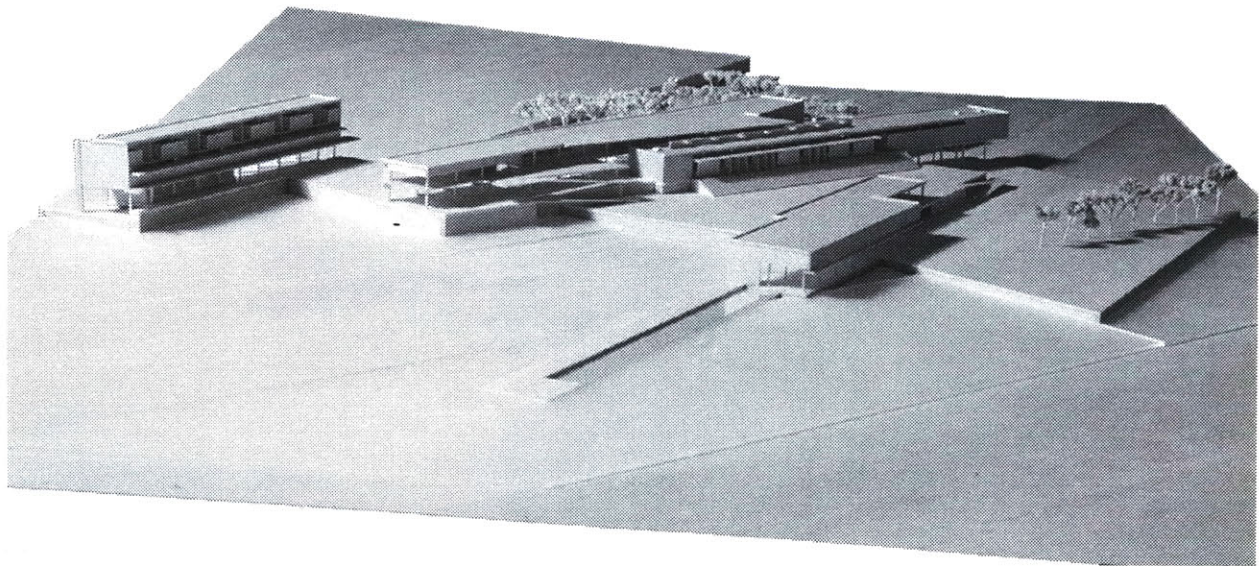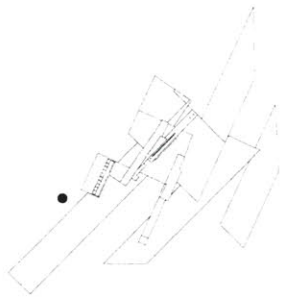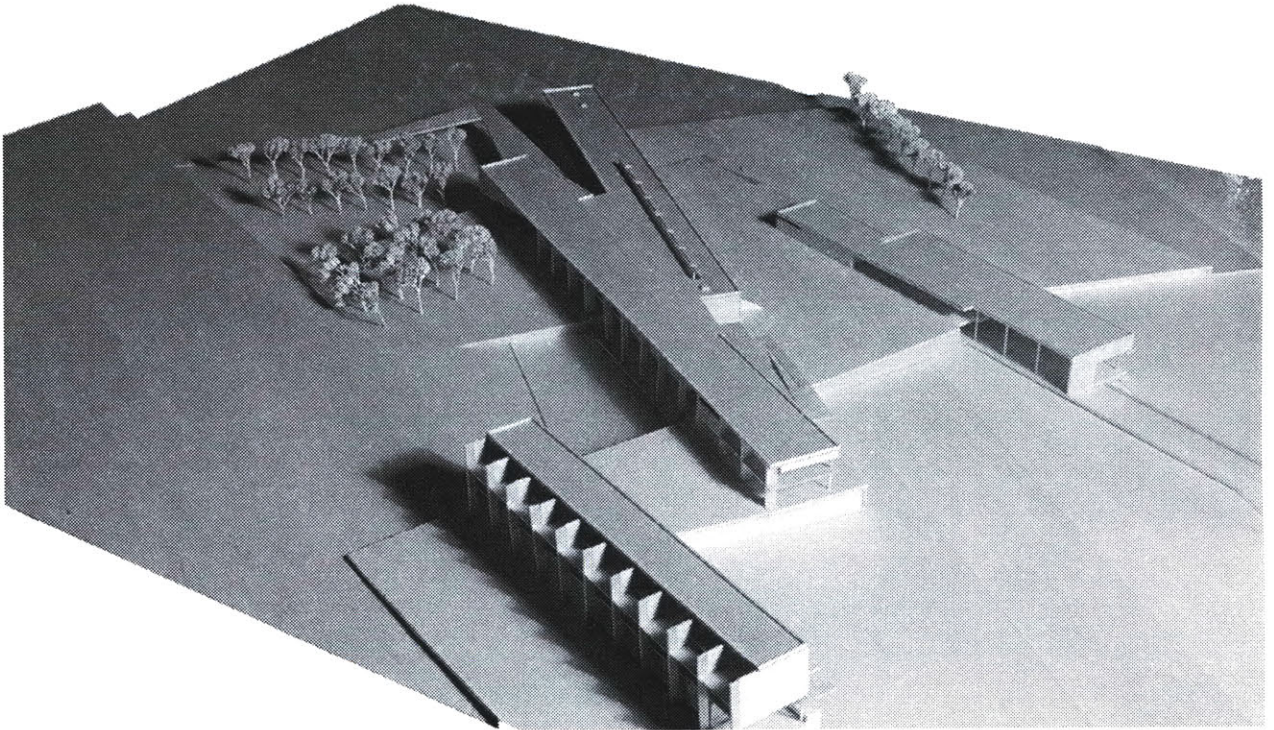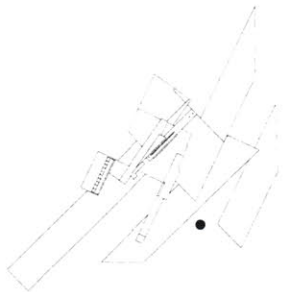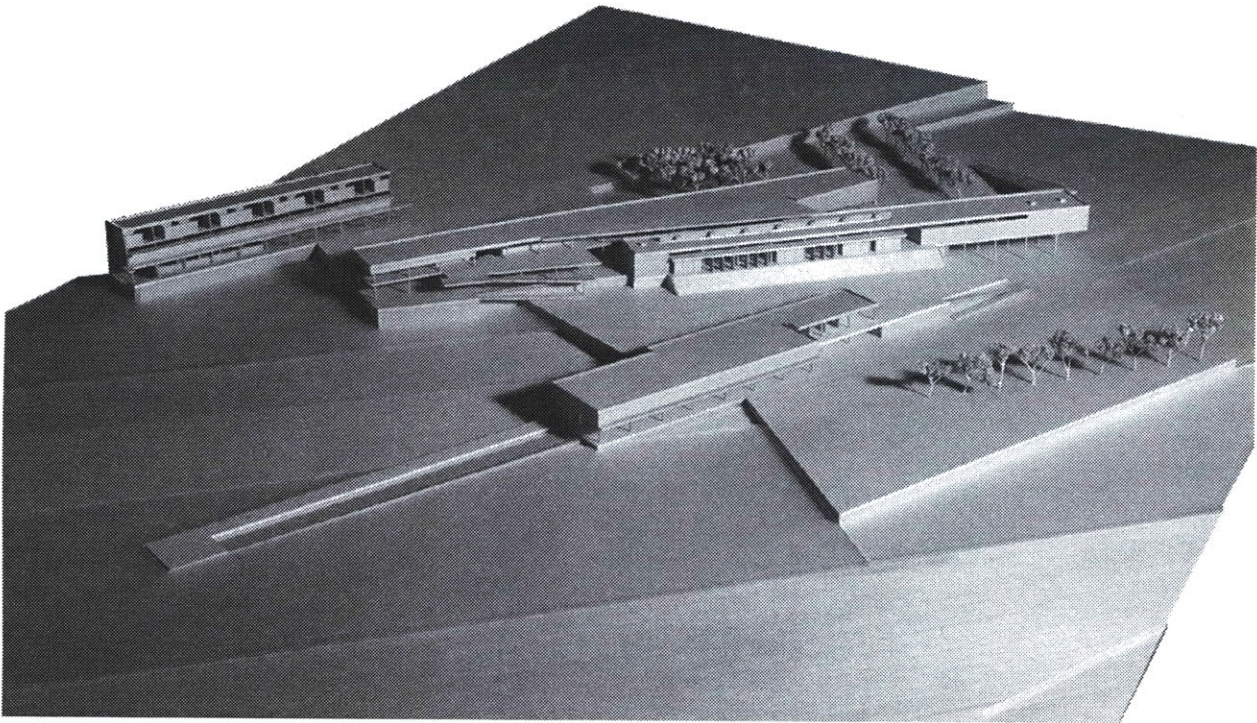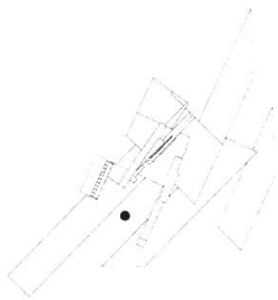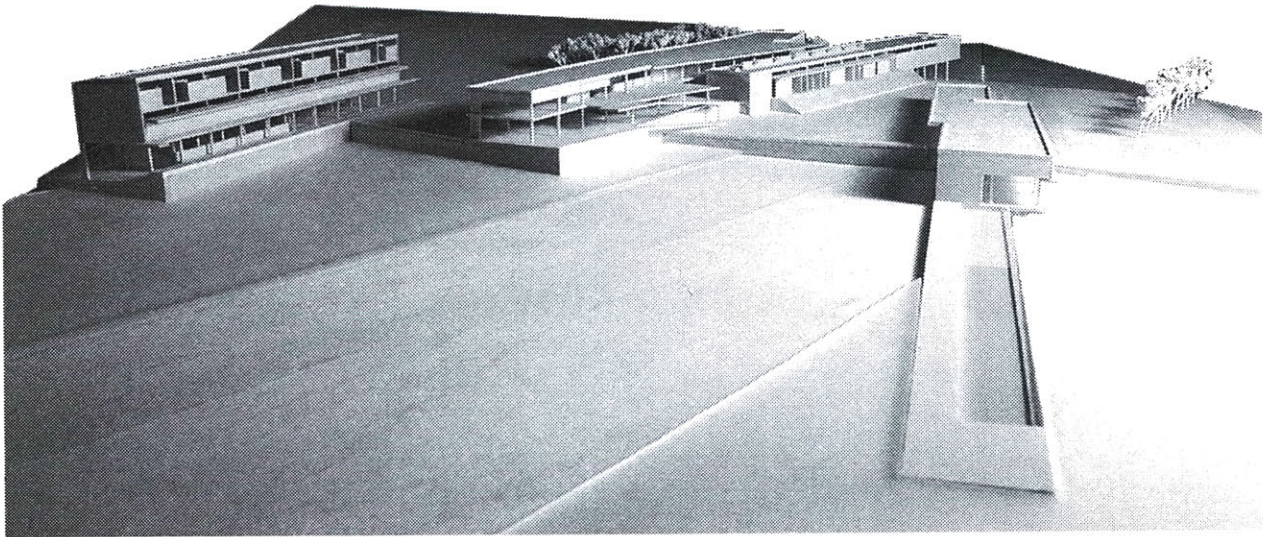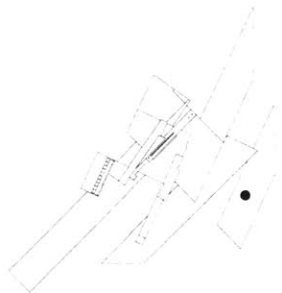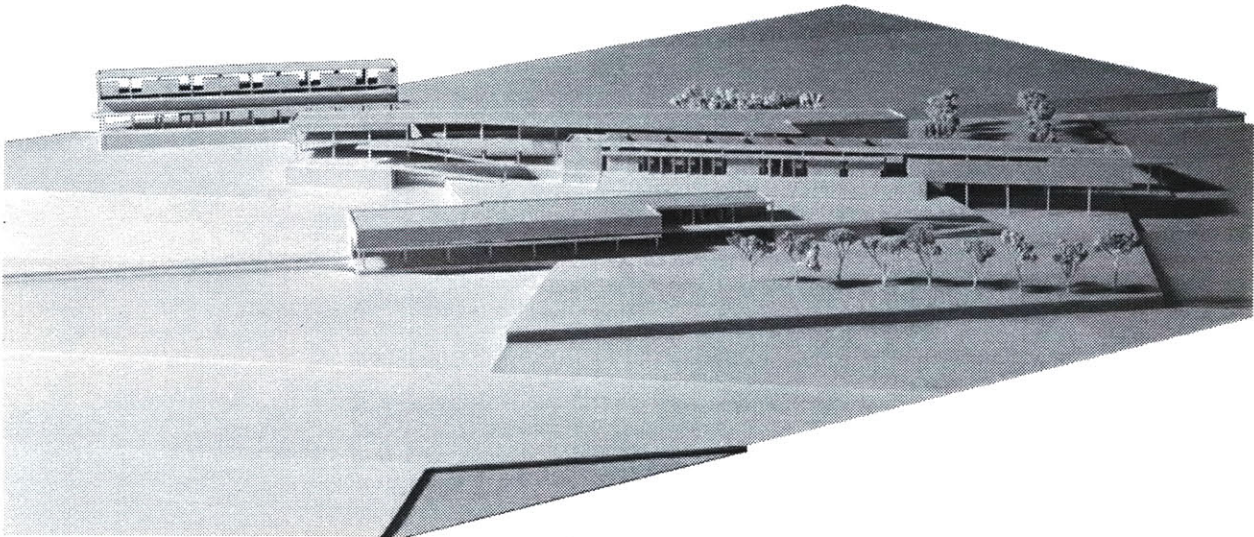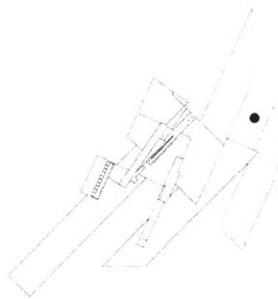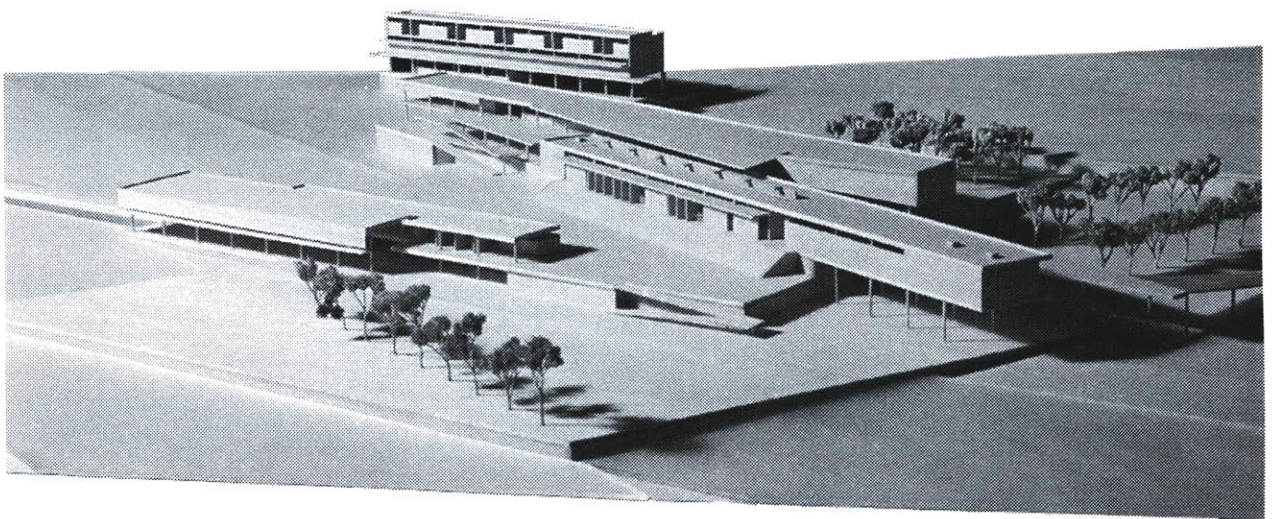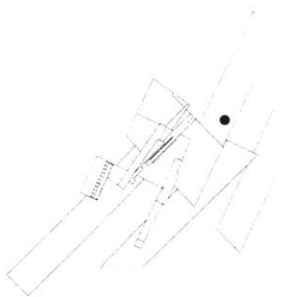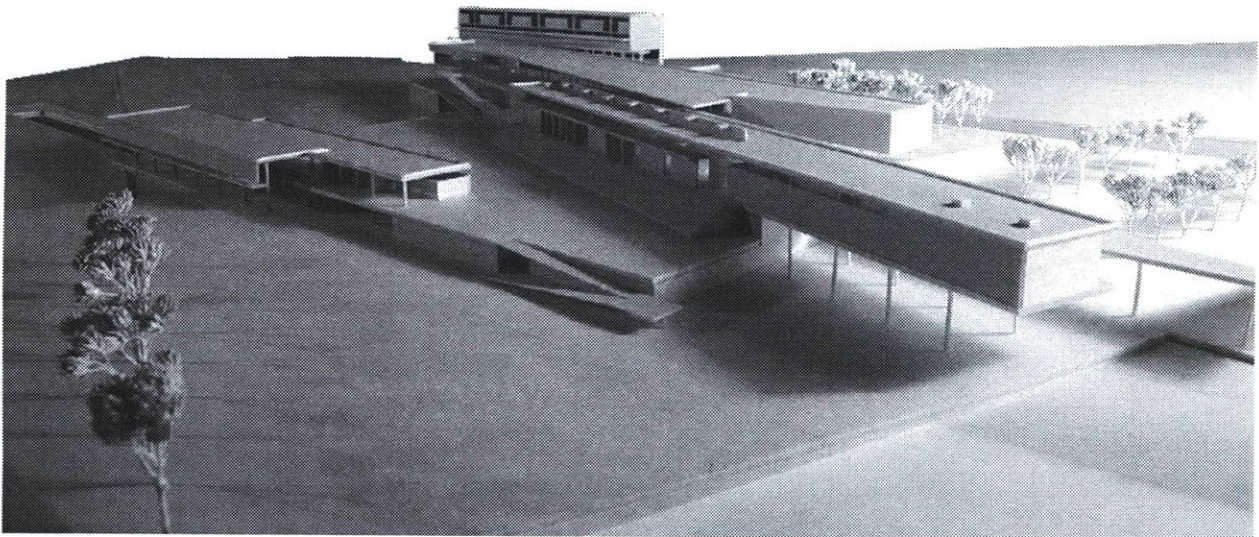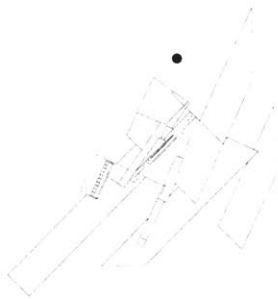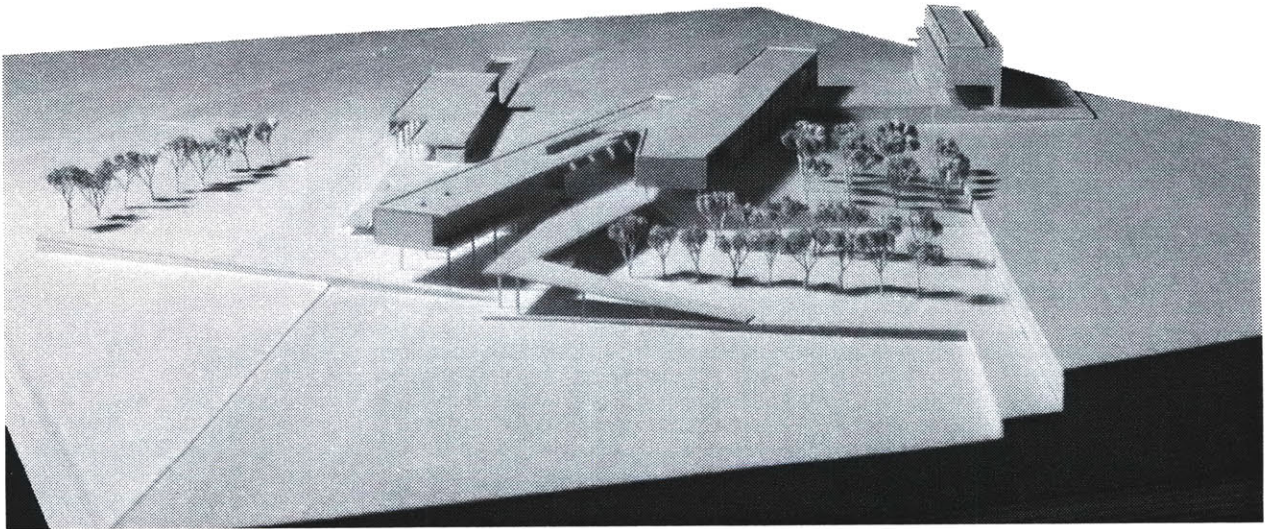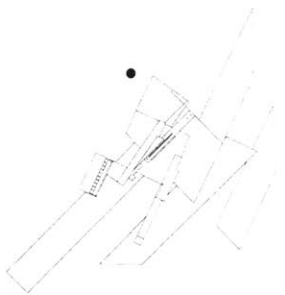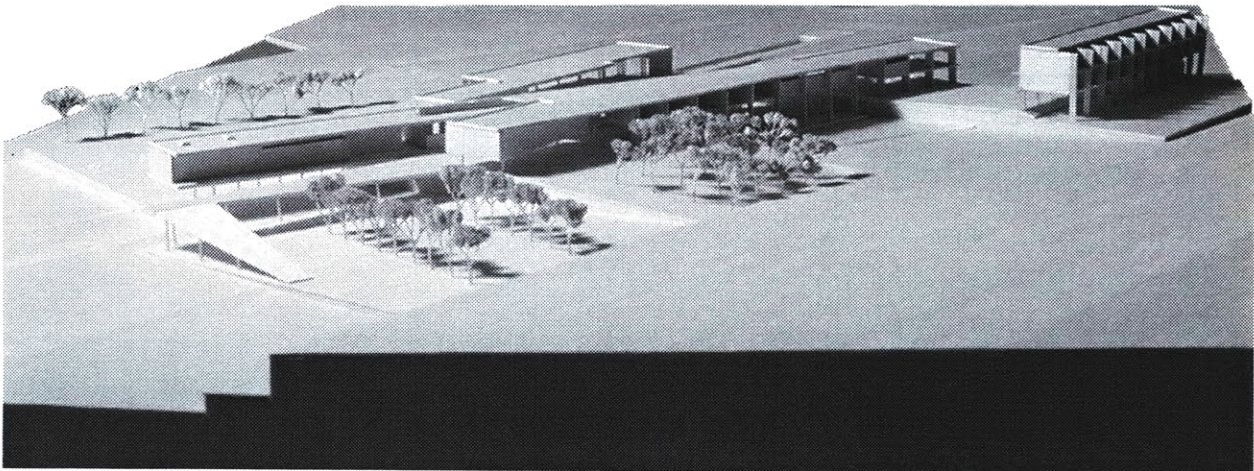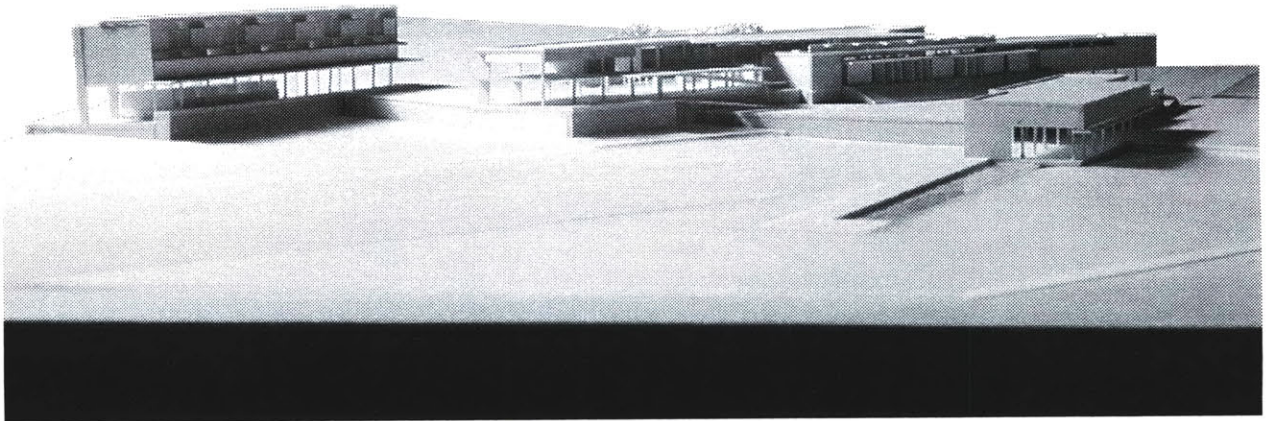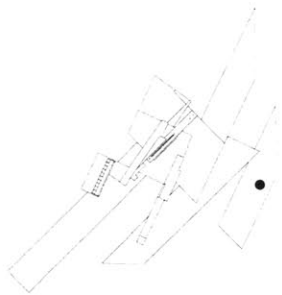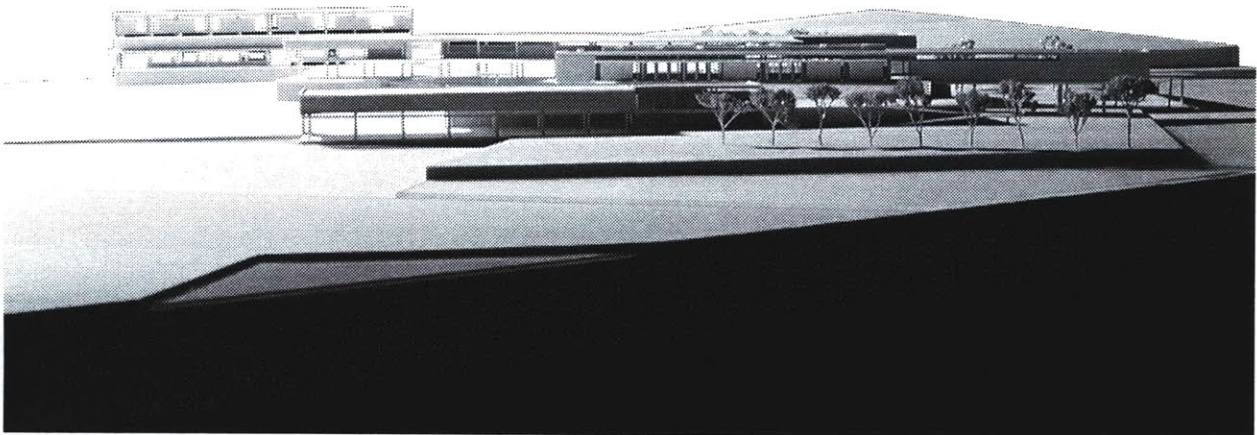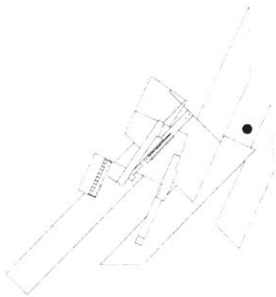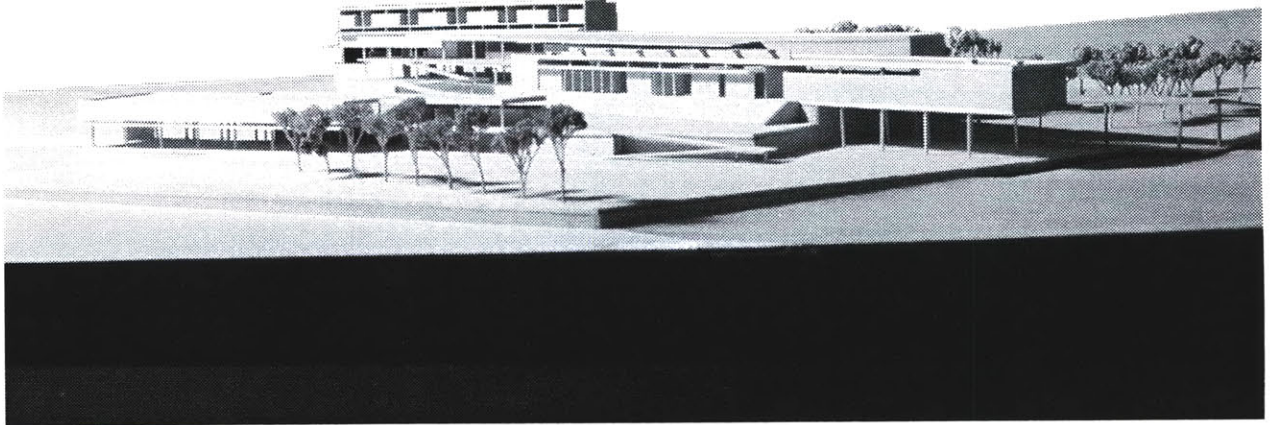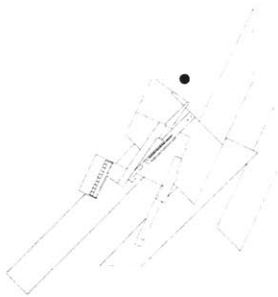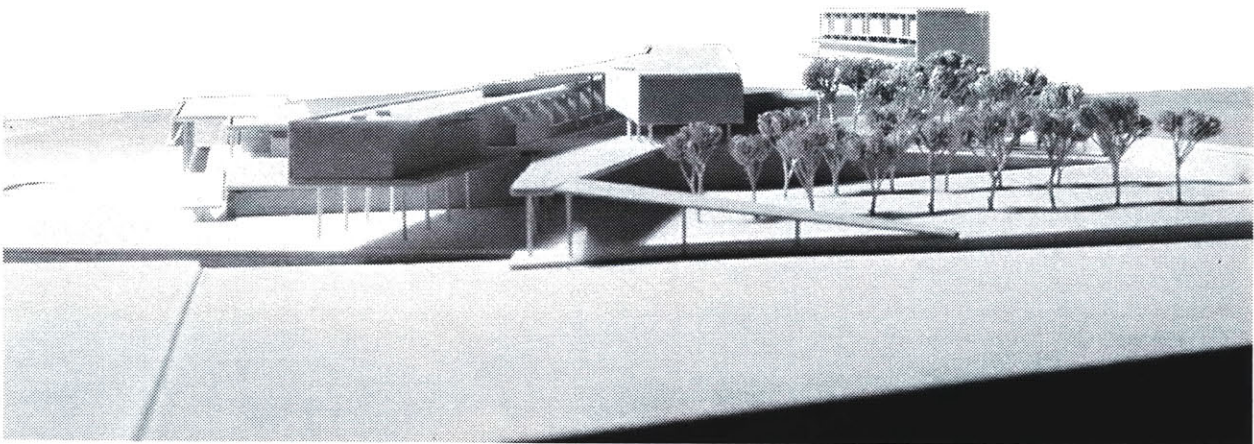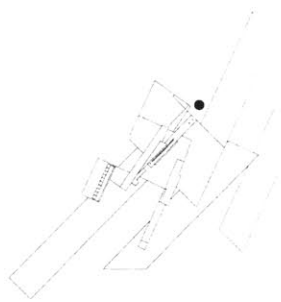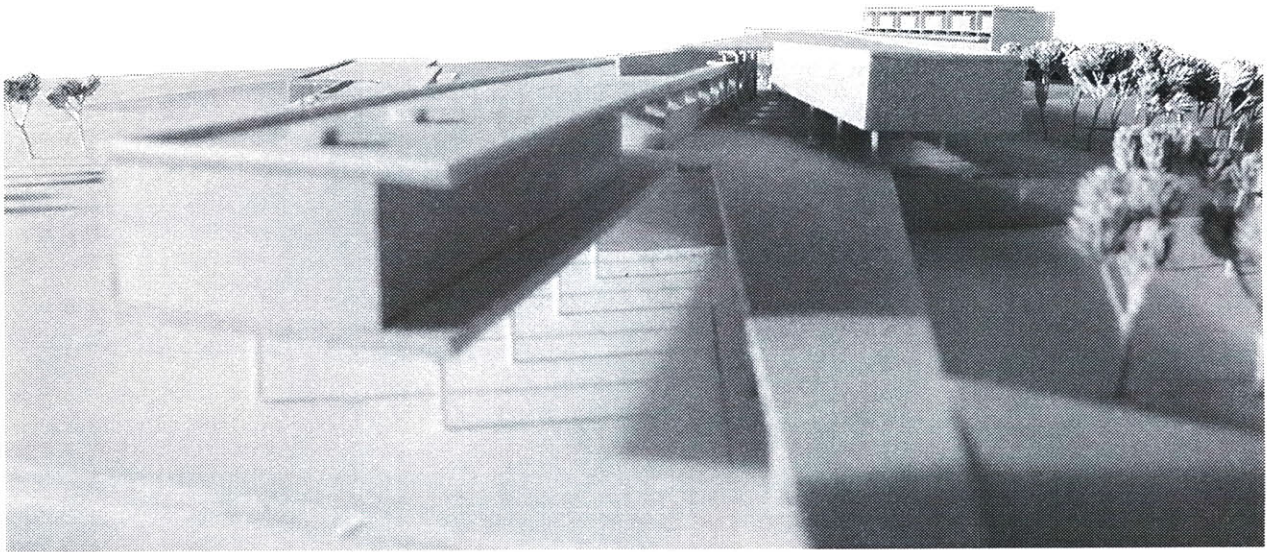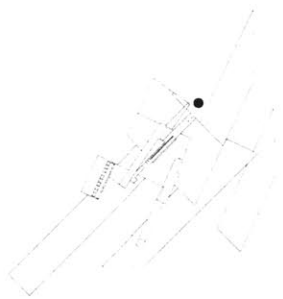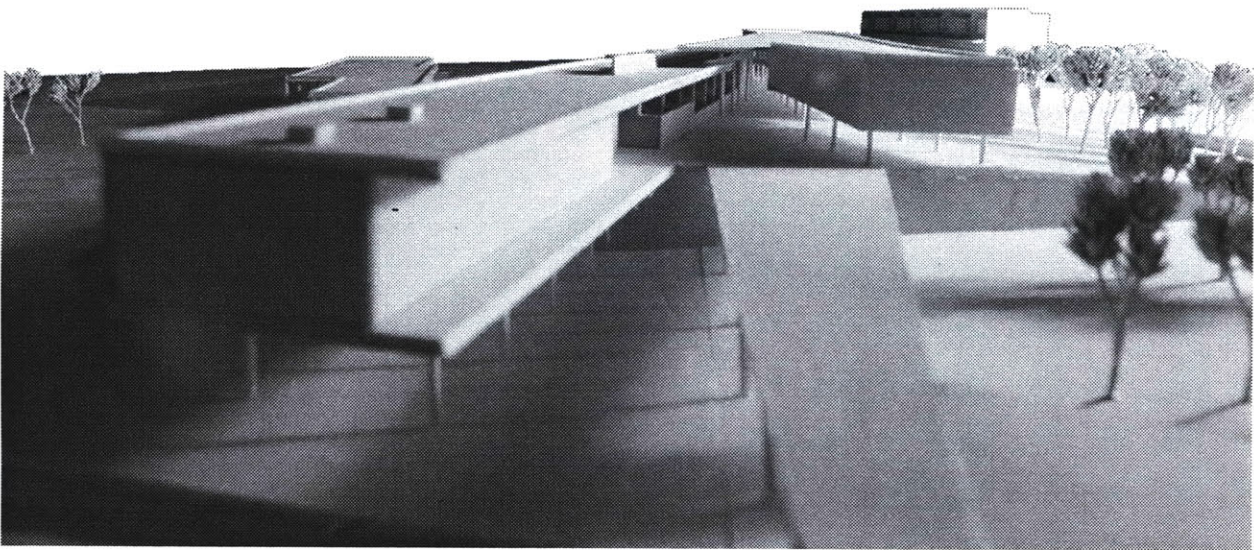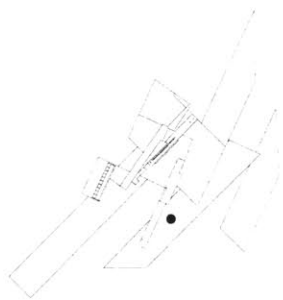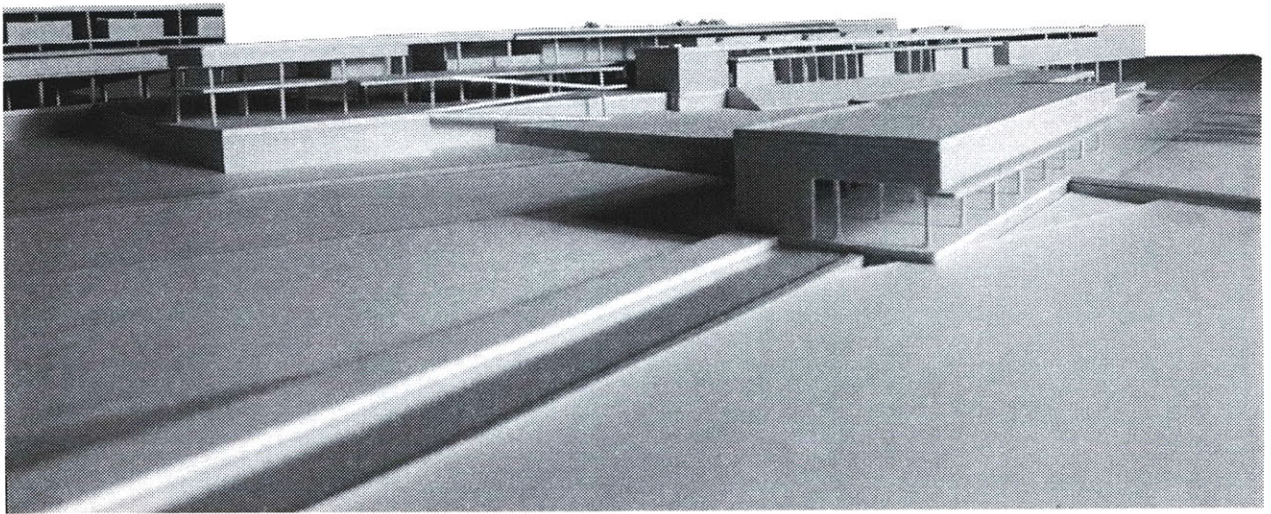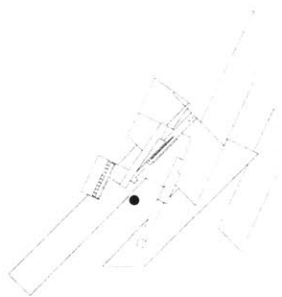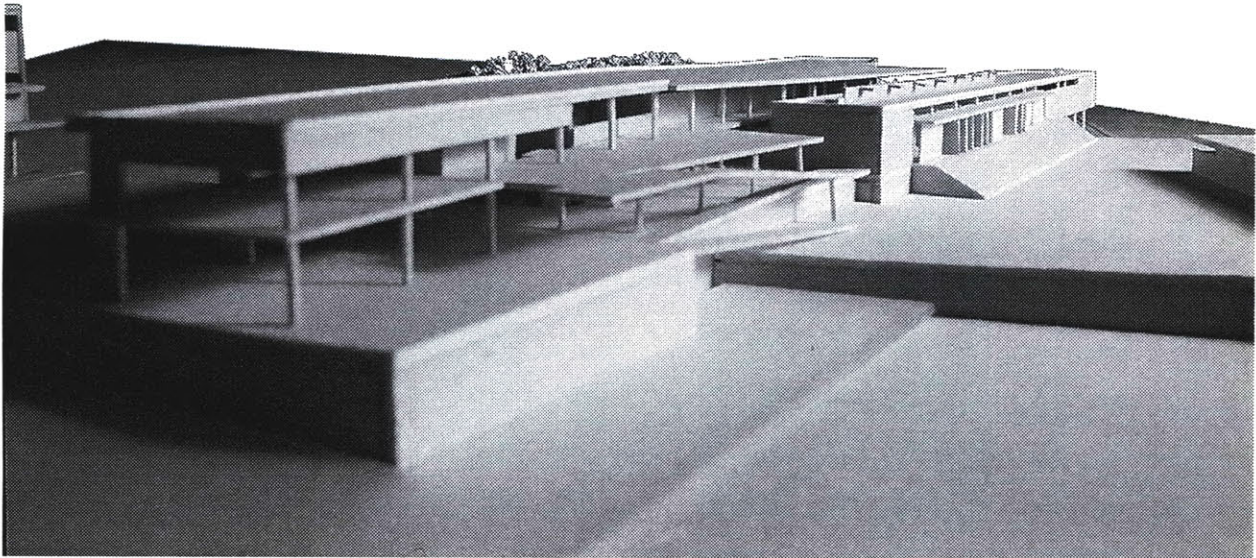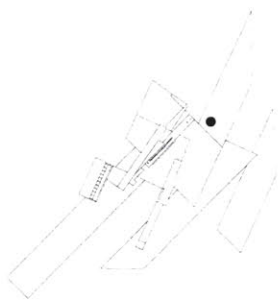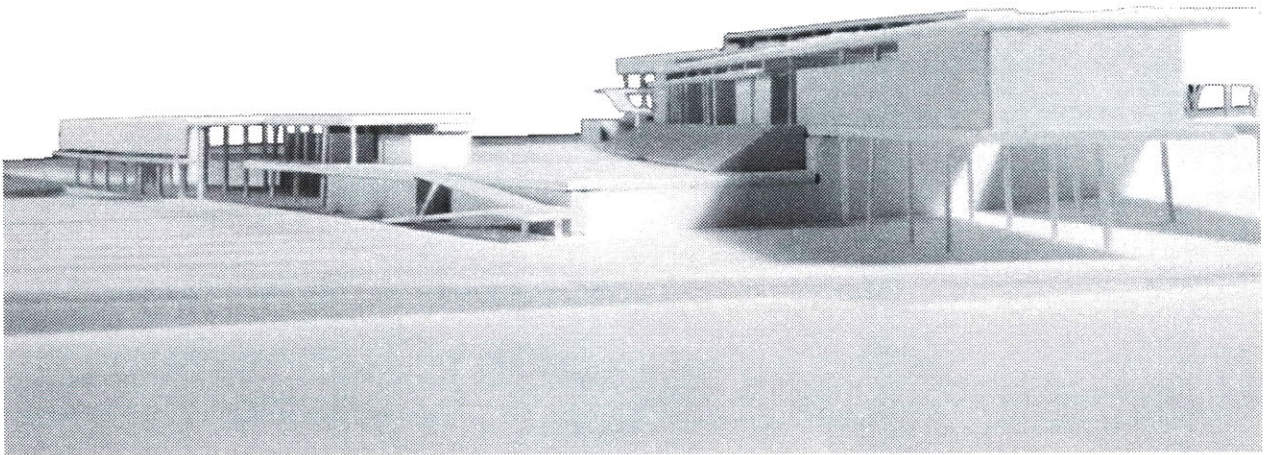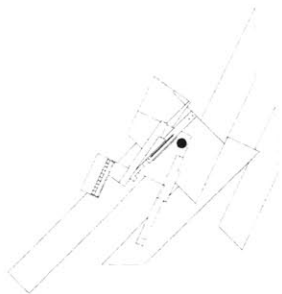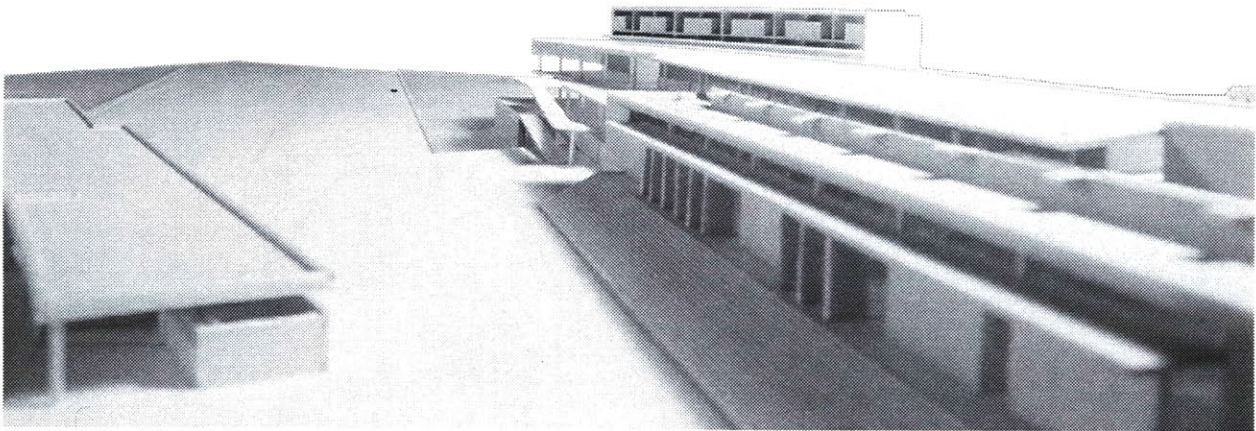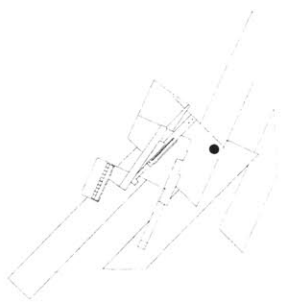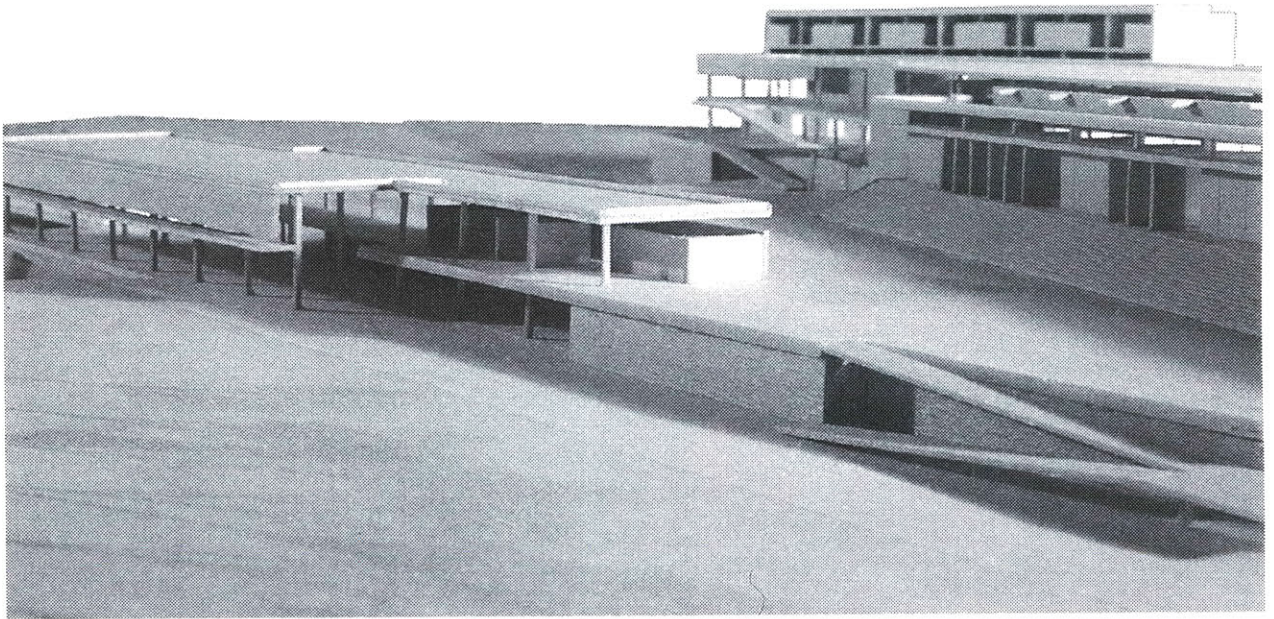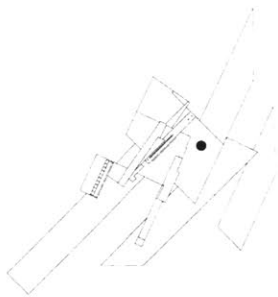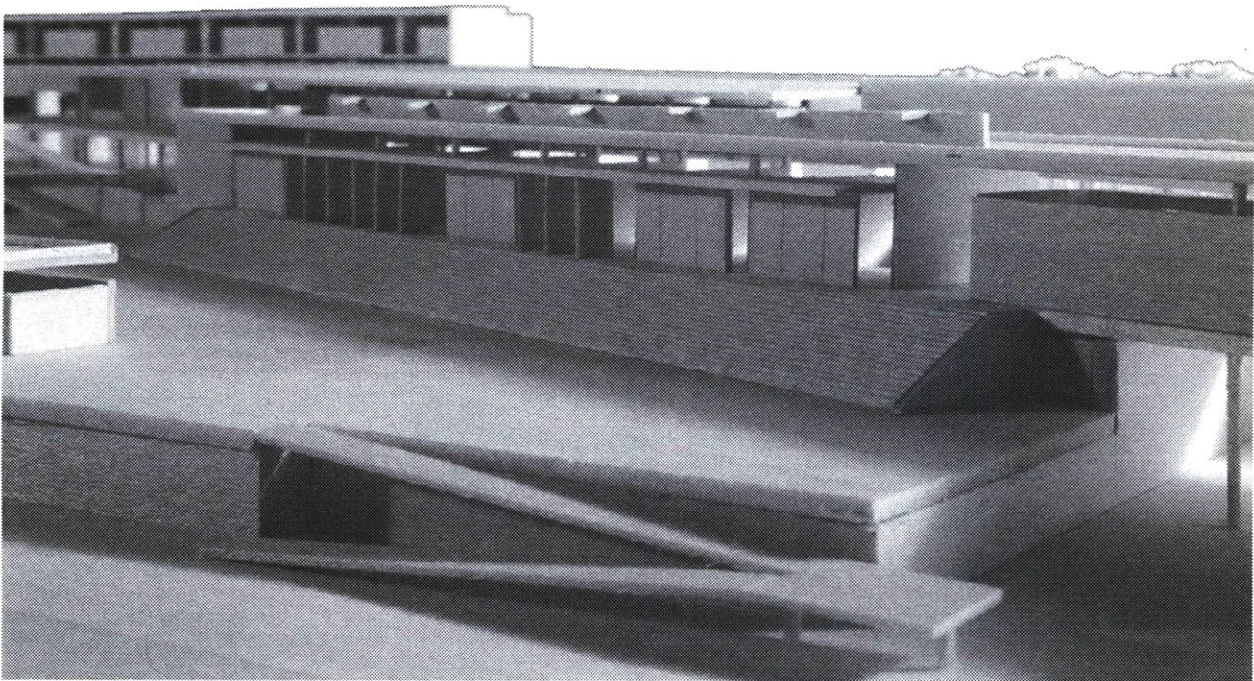
Appendix I

Technical Glossary

Print An artistic print is the result of the reproduction of an image on a flat matrix made of varying materials and generally transfered to a paper surface. Other sources can also be used as surface or support, such as fabric or cloth -as in silkscreened t-shirts. Printmaking arrives to the Western civilization in the mid XVI century, to be applied in the multiple reproduction of cards, religious images and book illustrations, even though it had been performed upon other forms of production in the past without any commercial or artistic purpose. Printmaking can be used to represent nature, objects, the human face and body, animals, scenes from school and daily life, dreams and even the fantasies of the subconscious mind.

Printmaking Techniques In printmaking, as in any other means of plastic expression -such as drawing, painting or sculpture- an artist requires the knowledge and skills of its techniques to obtain an effective outcome. Printmakng's four major technical procedures are: relief printing (xilograph or wood engraving, woodcut, linocut), intaglio (etching, engraving, chalcography, mezzotint), silkscreening and planographic printing (lithography).

Relief Printing A technique performed on wood blocks (xilograph print or woodcut, wood engraving), or on linoleum blocks (linocut), on cardboard or any material that can be carved upon to then ink and print its surface in relief.

**Xilograph or Woodcut Printing and Wood Engraving** "Xilo" refers to wood. The relief printing processes are those where the artist carves or cuts a given design, in reverse disposition, on a wooden block. Reversion or inversion of the designed forms is neccesary because the paper support on which they will be printed is placed face down on top of the inked block resulting in an inverted image once printed. The wooden matrix or block can be carved or cut with burins (for engraving). The wooden block used for this burin technique has been cut opposite the direction of the tree´s veins or grain, and the resulting print will bear finer, more delicate lines. A xilograph or woodcut print is done with the use of knives or gouges, which the artist uses to carve or cut the design -again in a reverted way- on a wooden block which was cut in the natural disposition of the tree´s veins or grain. The resulting lines in the print will be rougher than in an engraved print using burins, and the artist often takes advantage of this quality for the expression of his work. In any case, after the design has been cut or engraved, the surface of the block is then inked with a roller, and a piece of

paper is placed on top of it. A certain amount of pressure is needed to print the inked design on the support, and this can be achieved with the help of burnishers, a printing press or even the back of a spoon. After this step is accomplished, the piece of paper is removed from the surface of the woodblock, carefully lifted from one edge all the way to the end, so as not to spoil the printed image with any fresh ink left on the wooden surface.

Linocut For this kind of print, the same process as in woodcut is performed, although a piece of linoleum is used instead of wood. Linoleum is a plastic, synthetic material, more malleable and softer to cut than wood. Gouges and burins are also used to carve its surface. The design or forms are cut in reverse, the linoleum block inked with a roller and then printed on a given support with the help of a burnisher, the back of a spoon or a press.

Silkscreening This procedure is frequently used these days. Its technique is accomplished by the use of templates or stencils that are hand cut and then adhered to a silk screen stretched around a wooden frame. The open areas of the trams on the screen are filled with paint, which the artist spreads onto the paper or cloth support laying underneath, with the help of a rubber scraper. A special film can be acquired in the market for the making of the stencil or template, which is adhered to the silk with an adhering solution. The screen can also be blocked with liquid silkscreen lacquer, liquified wax, or other materials.

Lithography This process is attained by drawing a design on the surface of a porous, calcareous stone or zinc or aluminium plates and is based on the chemical principle of water-oil repulsion. In Germany in 1798 a porous stone with a capacity of absorbency for both water and oil was discovered. The designs drawn on this stone with a greasy crayon or tusche, only absorb water where no oil is found. The design is thus fixed on the surface of the stone by means of acidulous water and gum arabic. The artist then rinses the dried surface and erases the design with turpentine, but only apparently, for it will reappear on the surface of the stone or plate once it is inked with an extremely greasy ink. The design on the stone or plate retains the ink wherever it finds oil. After the surface is inked, a piece of paper is placed on top of it and they both go under the pressure of a lithography press. Finally, the printed paper is carefully removed from the stone matrix, which must immediately be covered with water to be inked again. This printing process is repeated for as many exemplars as the artist wishes to obtain.

A large edition of the same design can be obtained through this process.

Intaglio This is the process opposite to relief printing. Through the use of many different techniques, some of them described below, the artist carves or engraves a design on a surface and then prints, not the inked surface but the incisions or grooves in it.

Etching Etching is an indirect process of engraving a metal plate, because the plate is covered with a varnish coating resistant to acid and submerged into an acid bath which "bites" into the open, uncoated drawn lines. The depth of the lines will depend on the time of inmersion of the plate in the acid bath. After the acid has corroded the uncoated design into the metal, the plate is washed with turpentine to remove the varnish coating. It is then inked and a dampened piece of paper is placed on top of it. Moisture is needed to facilitate the paper's absorption of the ink inside the metal incisions when it undergoes through the pressure exercised by the press.

Aquatint Another intaglio technique used by the artist to create an array of tones. A resin is dusted on the surface of the plate and adhered to it by heat. The resin resists the corrosion of the acid bath and produces a granulated tram or woof, resulting in different tones as the artist submerges the plate with different timings. The artist then coats the accomplished tones with an acid-resistant varnish and submerges the plate again, so that the acid will corrode the trams in varying levels of depth, thus producing the desired number of tones.

Sugar Lift Consists on drawing a positive image with a sugary medium that never dries completely. When it is almost dry, a resistant varnish is coated onto the surface of the plate and the plate is soaked into a bath of hot water. Sugar trapped inside the lines of the design forces the varnish to lift and exposes the lines for a regular aquatint.

Drypoint This technique is a direct one, in that the artist draws the design directly on the surface of the zinc or copper plate, carving the lines with a sharp point which makes incisions into the metal. No acid is required. The lines are printed into a dampened paper, and the image will bear a velvetlike texture, product of the burred seams left on the sides of the lines as they are drawn directly into the metal.

Collography This technique gets its name from the French "coller" (paste) and "papier collé", a kind of collage structured with layers of paper pasted onto a support, usually cardboard or

masonite. The support can be scratched, cut, or covered with layers of different materials such as threads, sand, pieces of wire, cardboard, etc. The support, along with its added materials, is fixed with lacquer or acrylic gesso, a clear acrylic coating and then hand-inked with any number of colors. Dampened paper is placed on top of it and it all goes through a press.

Mixography (Mixed Media) Mixed Media is the combination of any number of traditional printing processes, like silkscreen and relief, to name a few, or takes place when the artist makes use of new, modern technology like xerography (from the Xerox machine) or digital printing (through the use of a computer) to obtain a print.

Photoengraving In this process, the relief image on a printing plate or cylinder is photographically or electronically printed by an offset reticle duplicator. In other words, it is a photomecanical process, where a photosensible film is used to produce an image.

Electrography (Transfers) A positive-reproduction method applied to engraving, it is a generical term which encompasses an array of printmaking techniques using electrostatic printing. Xerography, or xerox transfer, is one of such techniques and derives its name from the popular brand of photocopying machines. Through xerography, a photocopy is transfered onto a paper or cloth support by the artist, who uses a solvent to fix it in a permanent way. The photocopy can also be transfered to a metal plate to produce a photoengraving in a combined method with the etching technique.

Laser Printing This process, recently experimented with by artists, has the objective of reproducing images on a metal surface through the modulation of light generated by a laser ray.

Digital Printing Graphic images in digital printing are done through the use of computer software. Innovative effects can be achieved by the overlapping of images or by tonal contrasts.

Faxography This method consists of using a fax machine as a technological source to generate graphic images. The machine's capacity of resolution can either limit or enhance the final quality of the printed images.

Heliography Refers to the printing of images by means of the equipment used in the reproduction of architectonic designs. The artist's imagination is crucial for the creative employment of this medium.

Source:

Ballester, Diógenes. XII Bienal de San Juan del Grabado Latinoamericano y del Caribe. San

Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

Appendix II

Images sources

1. Photoshop collage by myself. Sources:

- "Taller de Gráfica e DIVEDCO", 1949.
Courtesy of the Museum of University of Puerto Rico Archives.
- "Cañaveral", photograph
Ríos Ávila, Rubén. Puerto Rico desde el Cielo. San Juan: Banco Santander, 1995.
- "Salinas de Cabo Rojo", photograph
Ríos Ávila, Rubén. Puerto Rico desde el Cielo. San Juan: Banco Santander, 1995.

2. **Festival Casals**, cartel by Rafael Rivera Rosa,1988.
Pérez Ruiz, José Antonio. Rafael Rivera Rosa, obra gráfica (1960-1997). San Juan, P.R.:
Instituto de Cultura Puertorriqueña, 1998.

3. **Tres Botellas II**, serigraphy by José Rosa,1972.
Fernández Zalava, Margarita. José Rosa, obra grafica (1963-1996). San Juan, P.R.: Instituto
de Cultura Puertorriqueña, 1998.

4. **Hasta la Libertad**, poster by Rafael Rivera Rosa, 1986.
Pérez Ruiz, José Antonio. <u>Rafael Rivera Rosa, obra gráfica (1960-1997)</u>. San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

5. Antonio Martorell in "Taller Alacrán".
Courtesy of the Museum of University of Puerto Rico Archives.

6. **San Sebastián 152**, serigraphy by Rafael Trufiño, 1976.
Tió, Teresa. <u>La Hoja Liberada: El Portafolios en la Gráica Puertorriqueña</u>. San Juan: Instituto de Cultura Puertorriqueña, 1996.

7. "Taller de Gráfica e DIVEDCO", 1949.
Courtesy of the Museum of University of Puerto Rico Archives.

8. **Mundo Nuevo**, serigraphy by Rafael Rivera Rosa, 1974.
Pérez Ruiz, José Antonio. <u>Rafael Rivera Rosa, obra gráfica (1960-1997)</u>. San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

9. Lorenzo Omar and Avilio Cajigas in "Taller de Gráfica del I.C.P.".
Courtesy of the Museum of University of Puerto Rico Archives.

10. **Centenario de la Abolición de la esclavitud en Puerto Rico**, poster by José Rosa.
Fernández Zalava, Margarita. <u>José Rosa, obra grafica (1963-1996)</u>. San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

11. "Taller de Gráfica de DIVEDCO".
Courtesy of the Museum of University of Puerto Rico Archives.

12. Map of Puerto Rico.
Morales Carrión, Arturo. <u>Puerto Rico: a Political and Cultural History</u>. New York: W. W. Norton & Company, Inc., 1983.

13. Aereal photograph of the town of Peñuelas
Autoridad de Carreteras y Transportación. Oficina de Fotogrametría. Goverment of Puerto Rico.

Note: All other illustrations are by the author unless noted.

Appendix III

Books and Catalogs

Ballester, Diógenes. XII Bienal de San Juan del Grabado Latinoamericano y del Caribe. San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

Bregelesern. Silk Screen Printing Production. New York: Dover Pub., 1963.

Corner, James M.. Taking Measures : Across the American Landscape. New Heaven: Yale University Press, 1996.

Dane, William J.. A unique Visual expression, the poster and print art of Puerto Rico. Newark, N.J.: Newark Public Library, 1990.

Dawson, John. The Complete Guide to Prints and Printmaking: history, materials and techniques from woodcuts to lithography. London: Quill Publishing Ltd., 1981.

de la Torre, Mario. Artes Plasticas Panamericanas. México D.F.: Cartón de Colombia, S.A.; Cartón de México, D.F.; Cartón de Venezuela, S.A., 1979.

Eichenberg, Fritz. Lithography and Silkscreen. New York: Harry N. Abrams, 1978.

El Cartel en Puerto Rico, 1946-1985: Museo de la Universidad de Puerto Rico Recinto de Rio Piedras, 22 de noviembre de 1985 al 30 de enero de 1986. Rio Piedras, P.R.: Editorial Universiad de P.R., 1985.

Fernández Zalava, Margarita. José Rosa, obra grafica (1963-1996). San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

Figueróa Castrejon, Anibal. El arte de ver con inocencia: plásticas con Luis Barragán. Unidad Azcapotzalco: Universidad Metropolitana, 1989.

G. B. Nalbantoglu, C. T. Wong. Postcolonial Space(s). New York: Princeton Architectural Press, 1997.

Haskell, Barbara. Donald Judd. New York: Whitney Museum of American Art in association with Norton, 1988.

Martin, Judy. The Encyclopedia of Printmaking Techniques. London: Quarto Publishing plc, 1993.

Morales Carrión, Arturo. Puerto Rico: a Political and Cultural History. New York: W. W. Norton & Company, Inc., 1983.

O' Connor, Frank. Art for the Millions. Boston: New York Graphic Society, 1973.

Pérez Ruiz, José Antonio. Rafael Rivera Rosa, obra gráfica (1960-1997). San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1998.

Tió, Teresa. Carteles Puertorriqueños. San Juan, P.R.: SK&F Co., 1984.

Tió, Teresa. El Cartel de Puerto Rico. San Juan, P.R.: Instituto de Cultura Puertorriqueña, 1987.

Tió, Teresa. La Hoja Liberada: El Portafolios en la Gráica Puertorriqueña. San Juan: Instituto de Cultura Puertorriqueña, 1996.

Turner, Salvia. About Prints: a guide for artist printmakers. London: Camberwell Press, 1993.

Rajchman, John. Constructions. Cambridge, Mass.: The MIT Press, 1997.

Ríos Ávila, Rubén. Puerto Rico esde el Cielo. San Juan: Banco Santaner, 1995.

Rosso Tridas, Norma. La Estampa Serigráica en Puerto Rico: cuatro décadas. Rio Piedras: Editorial de la Universidad e P.R., 1987.

Rivera Nieves, Irma and Gil, Carlos. Polifanía Salvaje: ensayos de cultura y politica en la postmodernidad. San Juan, P.R.: Editorial Postdata, 1995.

Landrove, Susana. New Landscapes, New Territories. Barcelona: Museu D'Art Contemporani, 1996.

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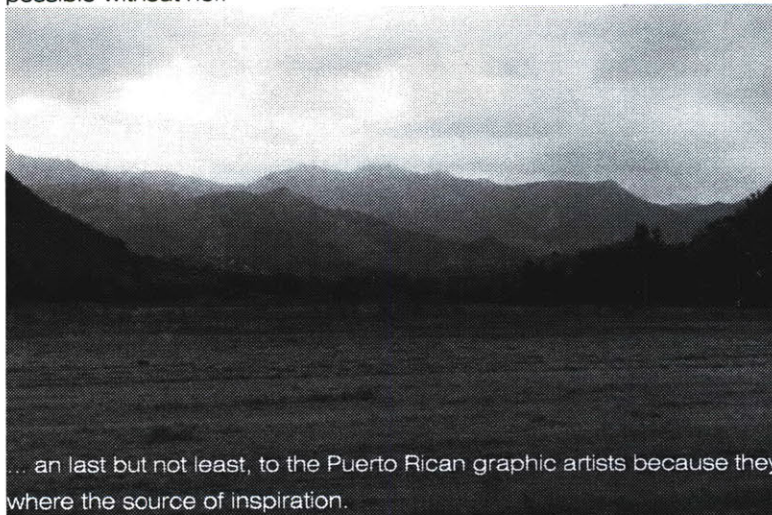
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