

THESIS SPRING 99 BRIAN RANDALL KEY

**DESIGNING AT THE INTERSECTION OF ART  
AND TECHNOLOGY:**

**A VISUAL EFFECTS FACILITY IN  
DALLAS, TEXAS**

**BY  
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A Thesis in Architecture  
Submitted to the Architecture Faculty  
of the College of Architecture,  
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of the Bachelor of Architecture Degree

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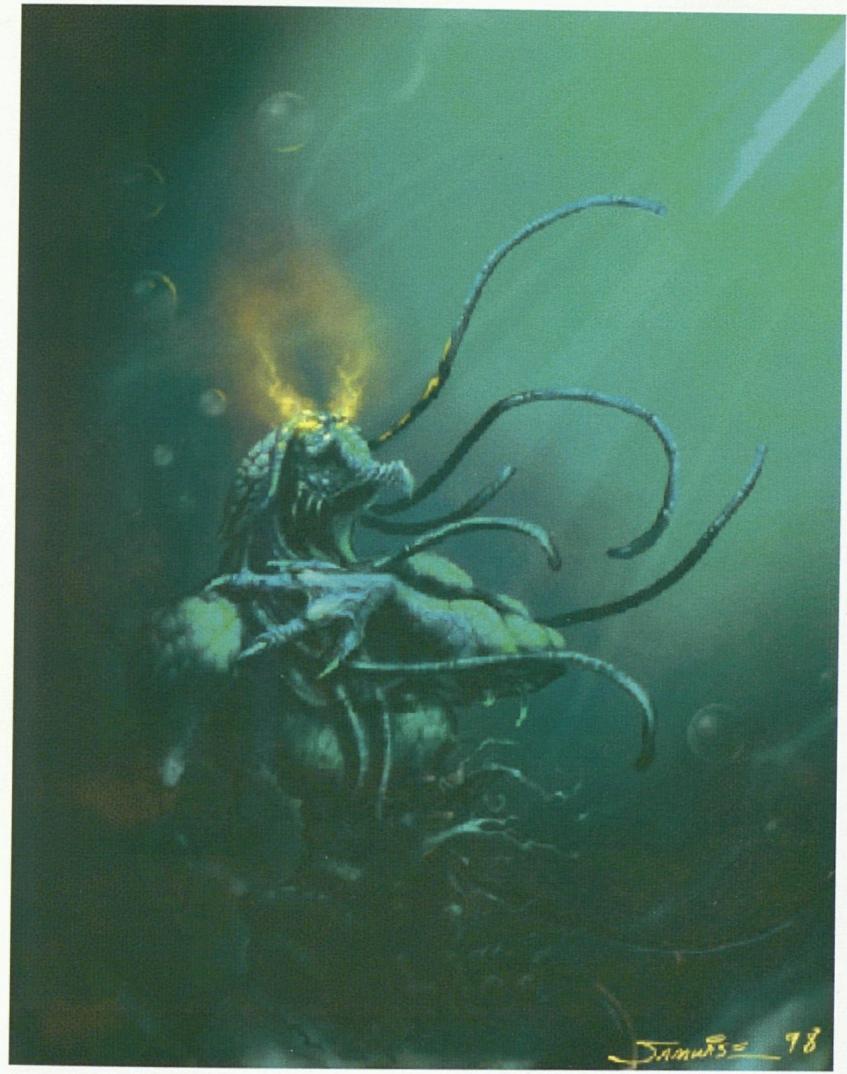
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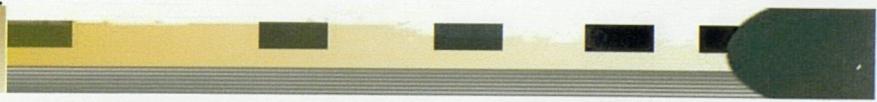


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**A fantastical experience of space for the sub-culture of digital artists is an expression of meaning for those who create realistic imagery from imagination, and that meaning can be manifested through phenomena.**

Art and Technology contrast and contradict one another, but at the intersection of the two lies an ideal co-existence. Architecture has always married art with technology, and within the phenomenon of that duality, perception is culturally subjective. Phenomenology is defined as a system based on the analysis of phenomena as intuitive essences of intentional character. [Webster's Dictionary]. Every single deliberate (designed) significant occurrence that is perceptible by the senses has a quality, which is understood intuitively. Space, according to phenomenology, is not abstract, but is perceived as space of lived experience. [Leach, 1997] Phenomenology, questions of perception, encourages us to experience architecture by walking through it, touching it, listening to it. [Holl, 1997] So through perception, people can enter an emotional dimension that suggests a "psychological space". [Holl, 1997] The intersection of art and technology, being intrinsically embedded in architecture, works for any group of users, but this relationship is especially important for a specific user group: the computer artists who use technology as a tool to create their craft. With this tool, they create an alternate reality that otherwise would only exist in one's imagination. They have special needs to facilitate their special skills, not the least of which is a need to dwell in an environment that reflects their state of being.

Artists in the CGI (Computer Generated Imagery) field use a combination of art and technology to do things they previously could not do with traditional means. [Cotta Vaz 1996] They have a different prerequisite and a different medium to work with, and they therefore should have a facility that reflects the dynamics of their craft. The building will be a medium-sized (100-125 users) Visual Effects Facility in Dallas, Texas. The visual effects industry thrives on the intersection of art and technology. Traditional artists and animators are drawn to a field where they are limited only by their imaginations. [Cotta Vaz 1996] The visual effects house of today deals largely in Computer Generated Imagery (CGI) to create their magical vision, thus combining the imaginative with the rational and technical from an idea's conception to its final presentation. [Sony Imageworks 1998] They create works for people; they visually craft the scenes with the goal of making an audience feel, hear, see, and touch on a psychological level. CG artists practice in phenomenology. Dallas, Texas, is a feasible and sustainable location for a visual effects facility, and even though it would not be considered the hotbed of the industry, it is a good choice for many reasons. The Metroplex has a large number of gaming companies and some film studios to support a visual effects facility in this area. There are also several animation and FX houses in the area. Dallas has a varied and rich mixture of Art and Technology. It will benefit from and breathe life into a visual effects facility.

*Only if we are capable of dwelling, only  
then can we build.*

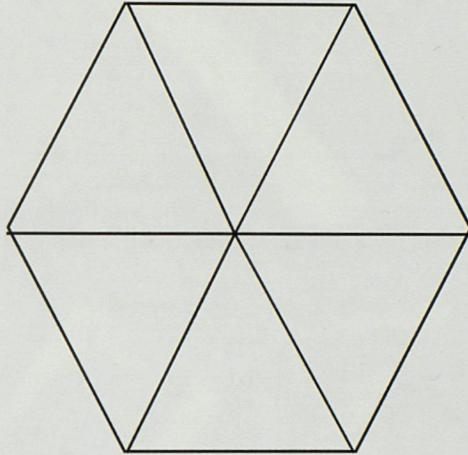
*-Heidegger*



## ARCHITECTURAL THEORY

*The artist is nothing without the gift, but  
the gift is nothing without work.*

*-Emile Zola*



This shape has a great number of possible interpretations, which are subjective but finite. There is a box, a pinwheel, and many many other figures within this "phenomenon".

## PHENOMENOLOGY

In order to create a facility for digital artists there must be an understanding: although the Visual Effects industry relies heavily on the computer and other digital equipment as tools, the building is still about people. It is about the corporeality of the body and the needs of the inhabitants of the facility. Phenomenology describes architecture to these people in a comprehensible way; phenomena are unusual events that are understandable through the senses when observed. Phenomenology is defined as a system based on the analysis of phenomena as intuitive essences of intentional character. [Webster's Dictionary]. Every single deliberate (designed) significant occurrence that is perceptible by the senses has a quality, which is understood intuitively.

Put very simply, Phenomenology is the study of how phenomena appear. [Leach, 1997] A phenomenon is an occurrence, a circumstance, or a fact that is perceptible by the senses. It is not limited to visual observation, however, but encompasses all of the senses. [Leach, 1997] Thinkers such as Lefebvre, in fact, argue that the visual reliance has destroyed the ontological dimension to the built environment by extracting the perception of space into an abstract and remote entity from the body. Linear perspective, for instance, he claims has degraded the quality of space because the purely visual emphasis has tossed meaning to the wayside in favor of geometric lines or copied forms. Phenomenology goes beyond even the sensory and includes what might be called a sixth



## ARCHITECTURAL THEORY

sense, in the form of an interpretative dimension and the potential revelation of some truth. Within this dimension of perception, Meaning can be found in “moments” which reveal the liberated capacity of potential situations, or in representations of some form of symbolic truth. [Leach, 1997] In either case, architecture is a concrete phenomenon that evokes a metaphysical experience and an existential meaning.

There is not, however, any single one truth or meaning. The experience of environment or phenomena is subjective to a finite extent, and meaning takes different manifestations based on culture that the person comes from or cultural environment that one dwells in. Phenomena will be perceived differently depending on the person’s own interpretations, and those of the person’s society and culture. The conditioning of lived experience will influence what phenomena means to a particular person. Therefore, it is the essence of an experience that phenomenology should attempt to discover. That essence can only be found through understanding of the culture being designed for, and what they perceive as truth and meaning.

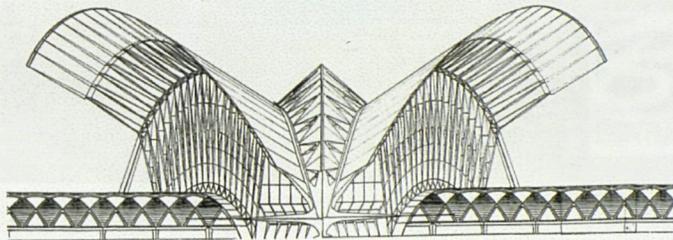
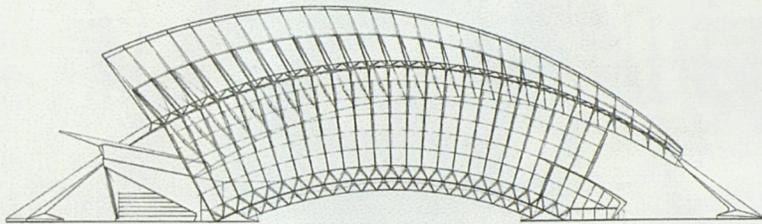
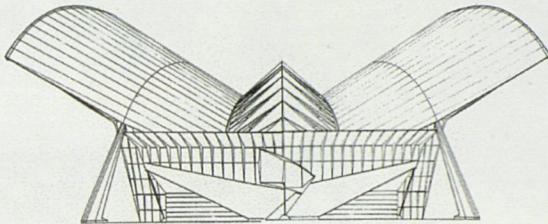
Sub-culture plays an important part in what the phenomenon of the place will mean to a person or group of people within the context of those spaces. On certain levels, meaning is different for some than others, and as much of that has to do with what they are a *part of*, as it does *who they are*. A monumental courthouse, for instance, will mean something completely different to a person in the judiciary sub-culture than it will for someone in a criminal organization, which is a sub-culture within itself. Beyond symbolism, the essence of the

## ARCHITECTURAL THEORY

place radiates communication with conscious and subconscious thought, thus sound, touch, and sight are all playing on emotion and contributing to the holistic phenomena. Just as a private place can reveal something about, and to, a person, a place can manifest meaning about, and to, a culture or a sub-culture. Everyone is at some point a part of a group that somewhat transcends the culture they derived from. Digital artists, programmers, and visual effects "wizards" have a particular world-view, and different than the larger body of society and culture.

The visual effects industry, for lack of a better term for the collective, is itself a micro-culture. Culture is defined as the totality of socially transmitted behavior patterns, arts, beliefs, institutions, and all other products of human work and thought, and these patterns, traits, and products considered with respect to a particular category, such as a field, subject, or mode of expression. [American Heritage Dictionary, 1997] For this micro-culture, then, there are holistic views and traits that are shared throughout everyone in this particular field. Because they share beliefs, traits, behavior patterns, and products of work and thought, they must also share a cultural meaning. This architecture is not designed for technology, it is designed for the people who use technology, and reflects the state of these particular people at a particular time, at a particular place.

East elevation,  
West elevation.  
北立剖面, 西立剖面。



## THEORY ISSUE

Since the visual effects realm, apart from the whole of society, shares in beliefs and meaning, then the goal is to find what is significant about this micro-culture and to create a meaningful environment for them by designing phenomena for experiences. The ideas which point to meaning can be categorized into three major sections: "Whole Brain Usage", "Anti-Corporate", and "High-Tech / High-Touch".

## RESPONSES

### "WHOLE BRAIN USAGE" RESPONSES

To create digital art requires the entire brain. The technological side must constantly be in an interchange with the artistic side. The flux of Art and Technology is the signature of the visual effects world, and indeed that intersection is where the digital artist resides. The facility must respond to this on several levels:

- The entire facility should work as a single entity, or a brain, of which both the Art and Technology sides will function simultaneously and reciprocally. The facility must provide exchange between the more technical departments and the more artistic departments in a very direct way. Interconnectedness should be promoted by providing well-lit corridors directly to each re-





**Creative Approaches to Multimedia Computing -**  
draw upon the whole brain



voice & text  
graphics & images  
spacial models  
animation  
video & sound

**Multimedia computing -**  
transfers a wide range of information



## ARCHITECTURAL THEORY

spective department with places to sit and converse along them. Another important feature of the corridors should be to provide surfaces along the corridors for posting concept art, storyboards, and any other works in progress.

- The facility must reflect in form and aesthetics the mixture of Art and Technology (left and right brain activities), both to the outside world and to those who inhabit the building. This should be accomplished by using both hard and soft materials together, as well as using natural and man-made materials together.
- The facility's organization should also reflect the duality, and provide a collaborative separation between the analogous "right-brain", "left-brain", and "subconscious brain". The building should be arranged with the artistic and programming portions of the facility on the top floors, separated by a very thin and permeable set of collaboration and corridor spaces. The "non-FX" portions of the facility should be on the bottom floors.

**Precedence:** Facilities from animation houses to classrooms have been providing for multiple mediums in which to design and produce with for some time now. System Administrators work with end-

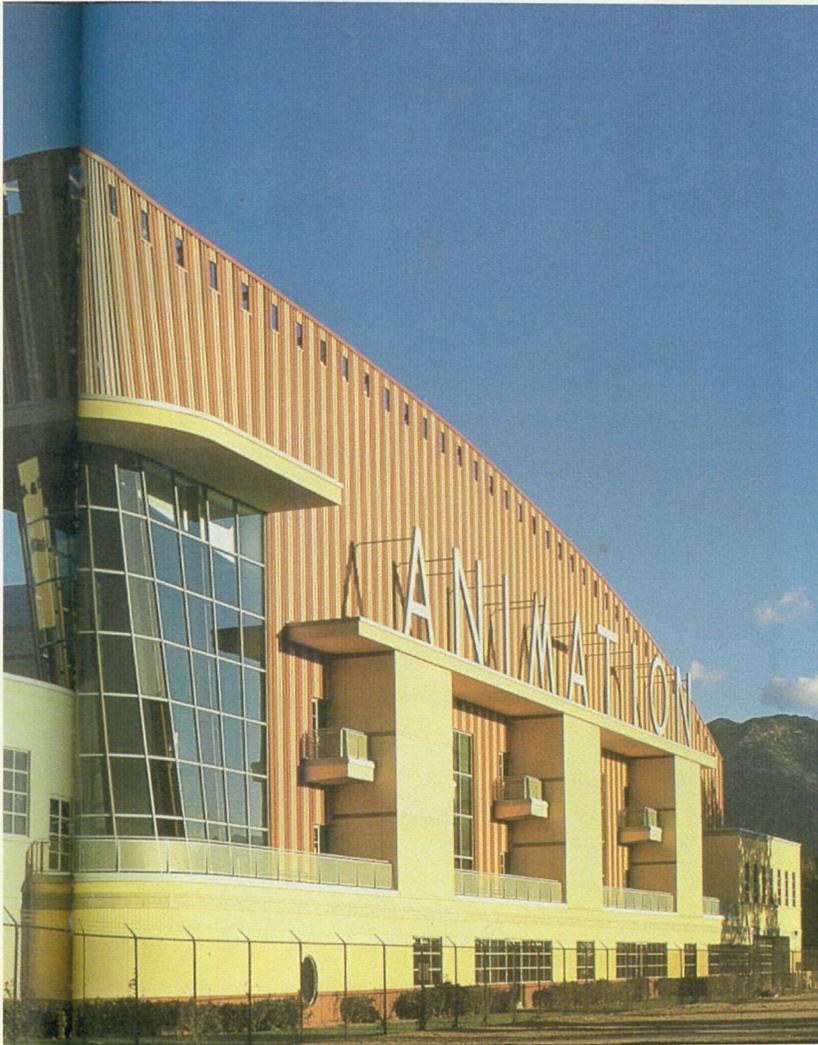
## ARCHITECTURAL THEORY

users to make a functioning whole in almost every business. People's natural reaction to other people and things is to interact.

### “ANTI-CORPORATE” RESPONSES

The people who work in this field generally love the work to the extent of there being no division between work and play. Long hours and weeks at the office are compensated by doing what they love to do, rewarding results of their labor, and adoration by fans and colleagues. They consider themselves renegades, “rock stars” [Kuwabara, 1998], artists, and Techno-Geeks all in one package. Even the programmers of the field consider themselves to be artists in their own right.

- The facility must take into account the very long periods of time the employees will stay in the building. There should be lockers, showers, and personal storage for each of the employees. Personal spaces within the “studio” layout will have individual lighting and temperature control. Partitions should have some sort of privacy control as well, perhaps in the form of transparent glass that becomes opaque with a control.
- The facility should be a dynamic representation of how the digital artists view themselves and the world around them. The architecture should be “anti-corporate”. The





## ARCHITECTURAL THEORY

look and arrangement of the individual spaces will be the marks of the workers, rather than where in the building they are located. Instead of corner offices, the most envied space will be the one most customized. Each artist and programmer should be given an almost identical space in which to begin the individualization, and spaces on the partitions for hanging work, drawings, pictures, etc.

- An important part of the facility is the conference room. Rather than having what is traditionally considered a room for conferences, this conference room should have a retractable wall screen and ceiling mounted projector, and a surround-sound system. Daily progress on any piece is reviewed and critiqued, and the conference spaces are ideal spaces to be equipped for this function.

**Precedence** Companies such as ION Storm and Cinesite Hollywood are very much creative entities, which provide “creative perks” to employees. They provide a “home away from home” for those individuals who make very little distinction between work and play, who either have no desire to go home in the evening, or are not exactly able to because of the duration of pro

## ARCHITECTURAL THEORY

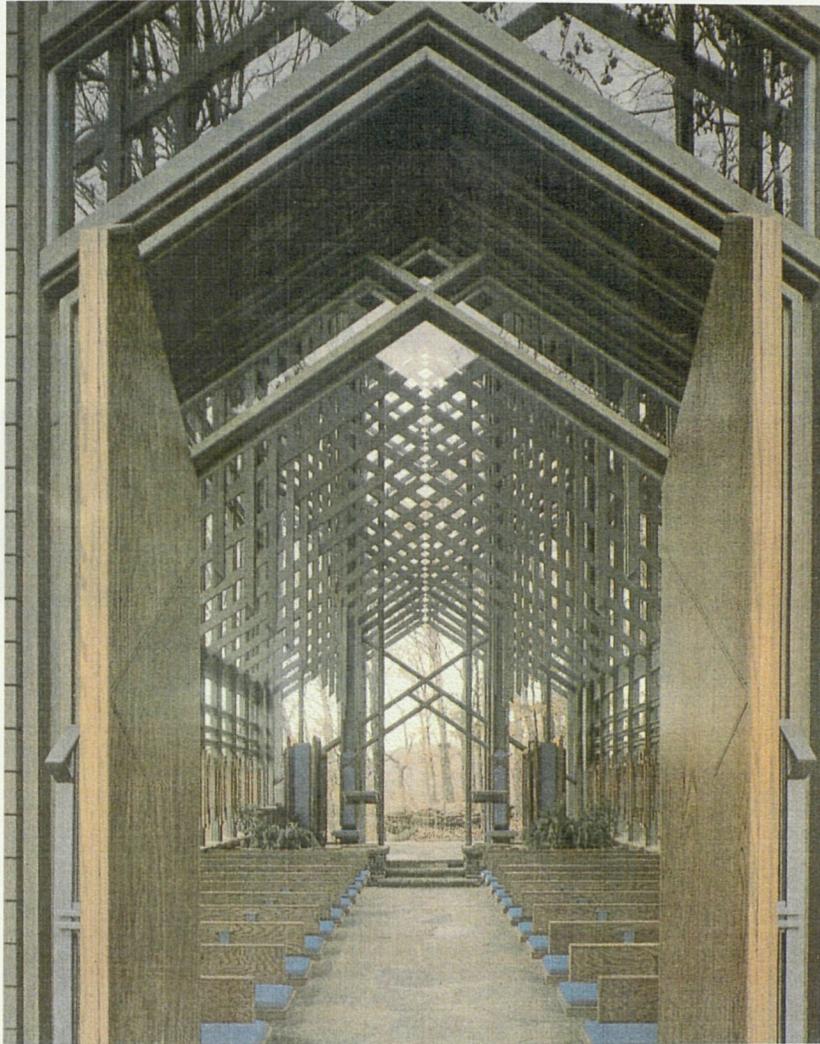
jects. ION Storm has leather couches everywhere for employees to sleep on, and employees are allowed to use the screening room for watching movies.

### “HIGH-TECH / HIGH-TOUCH” RESPONSES

John Naisbitt describes society's response to technology as High Tech/High Touch. That is, whenever new technology is introduced into society, then there must be a counterbalancing human response. The more technology is introduced, the more there is the counterbalance. What he describes is a trend that all society displays, which is a rejection of technology, and does not exactly describe the micro-culture of the digital artist. For programmers, the human component of technology *is* technology. The greater trend does give insight, however. High Tech/High Touch can still be descriptive of a group that does not reject technology, but has a great need for ergonomics and attention to the corporeality of the body. The need for human communication, for instance, cannot be ignored or necessarily replaced. There is also a correlation between the ideas of the intersection of Art and Technology and High Tech/High Touch. The sum of the two is greater than the whole of either.

- High Tech elements should be paired with High Touch elements. This will display the integration and provide comfort for the people. The facility should have within it a rich palette of technological and natural ele-





## ARCHITECTURAL THEORY

ments. Steel and wood, natural and man made light, plastics and natural fabrics, these things should be used together to emphasize the union which occurs at the intersection of Art and Technology.

**Precedence:** Japanese architecture in particular is a very good example of a mixture of High Tech and High Touch components. Global architecture and the new trends, especially for software companies, have extensive usage of this principle within the interiors.

## SUMMARY

Phenomenology is a theory that is more descriptive than prescriptive, in that the theory is a way of describing and designing phenomena. Phenomena can have meaning to certain cultures and sub-cultures, and the imparted meaning is finitely subjective, so that it can be designed with an essence in mind that applies to the specific culture receiving the design. Other ideas which the theory applies are more prescriptive, such as the ideas of "Anti-Corporate", "whole-brain usage", and "High-Tech/High-Touch". All of the ideas are specific to the micro-culture of CG artists and programmers, and with the use of phenomenology, a fantastical place can be designed for them.

*I think there is a world market for maybe  
five computers.*

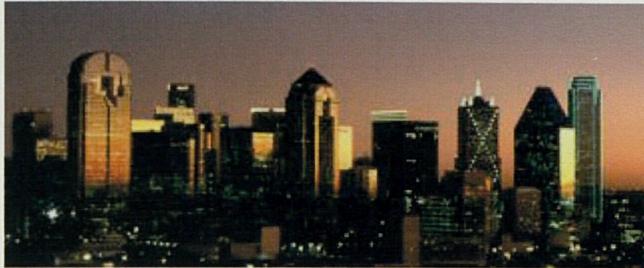
*-Thomas Watson, Chairman of IBM,  
1943*



## CONTEXT

*Every artist dips his brush in his own  
soul, and paints his own nature into his  
pictures.*

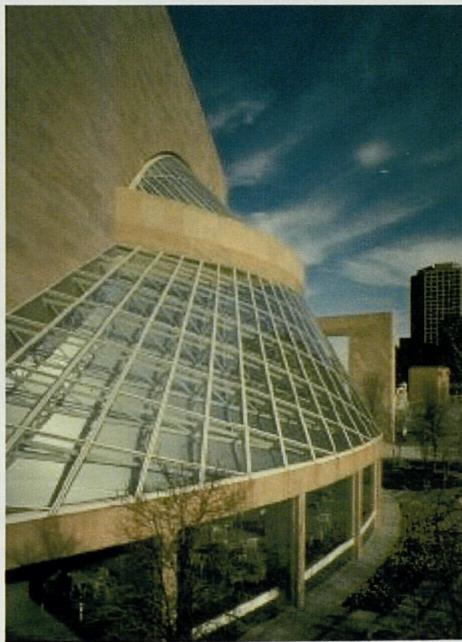
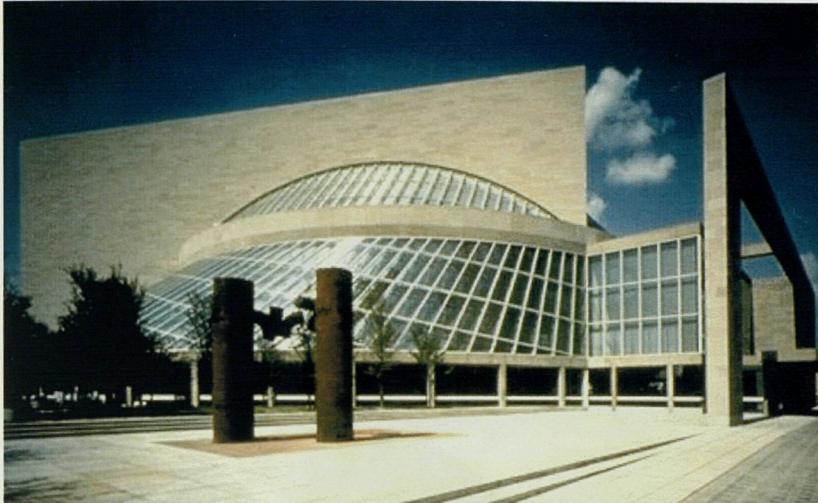
*-Henry Ward Beecher*



## CONTEXT

### CONTEXT: DALLAS, TEXAS

Dallas, Texas is a feasible and sustainable location for a visual effects facility, and even though it would not be considered the hotbed of the industry, it is a good choice for many reasons. The Metroplex has a large number of gaming companies and some film studios to support a visual effects facility in this area. There are several animation and FX houses in the area. Dallas is among the largest employment centers in the U.S. for high technology. It is ranked 3rd among the top five centers for job growth in computers, telecommunications and instruments, and is the 4th largest center of technology development in the U.S. The Metroplex represents the fourth largest concentration of producers and users of advanced technologies. Not only does Dallas have widespread support for technology, but for art as well. The Deep Ellum Art Festival is an annual event that consists of a mosaic of visual art and artists, continuous music on four stages, and other creative endeavors. Deep Ellum has a reputation as a place steeped in the history and heritage of the blues, and is a present-day Mecca for cutting edge music of all types. The Kimball Art Museum is not far away and is in itself a work of art. Dallas has a mixture of Art and Technology, and will benefit from a visual effects facility.

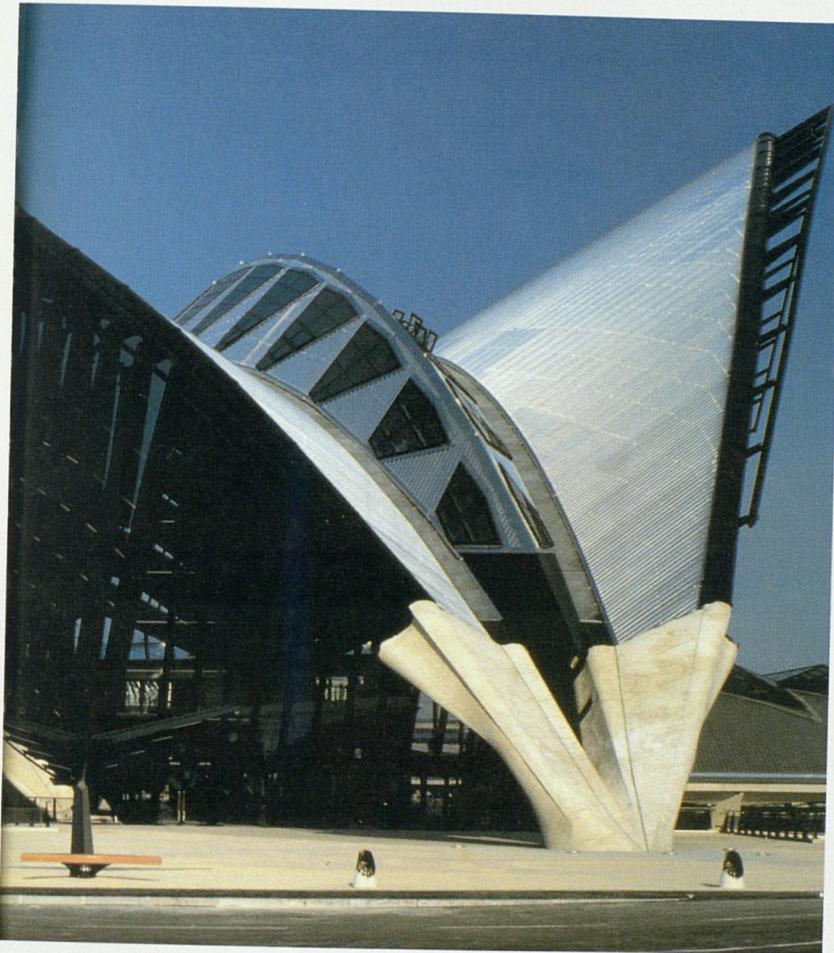


## BUILT CONTEXT

The built context is varied and rich in history, but is progressive in many ways. Many architectural works are in and around the Metroplex, including the Meyerson Symphony Center and Dallas Municipal Administration Building by I.M. Pei, and the Kimball Art Museum by Louis Kahn. Skyscrapers are a prominent feature of the downtown landscape, and shorter, yet sprawling buildings surround the area. The downtown skyline is significant and alluring. The built context is not limited to surrounding buildings, however, but includes other animation, production, FX, and gaming houses, whether in Dallas or elsewhere in the world. The variety of the built context paired with the special needs of the CG artists and programmers make it imperative that the facility not attempt to copy or blend into its surroundings, but rather make its own statement.

## RESPONSES

- The building should emphasize the intersection of Art and Technology to make a presence that is not dependent upon its surroundings. The facility should be a monument to the realm of digital artistry; an artistic sculptural form built with high technology. Structure and form should be one and the same, expressing structure and sculpting the form from it. Exposed structure, sculptural form, and extensive land-



Lyon Station by Santiago Calatrava

## NATURAL CONTEXT

scaping should be what deviates the building from its neighbors. One way of doing this is to make a skeletal space-frame, another may be to create parabolic forms with concrete.

**Precedence** Lyon Airport Railway Station is an excellent example of structure defining form and making it an eventful phenomenon.

## NATURAL CONTEXT

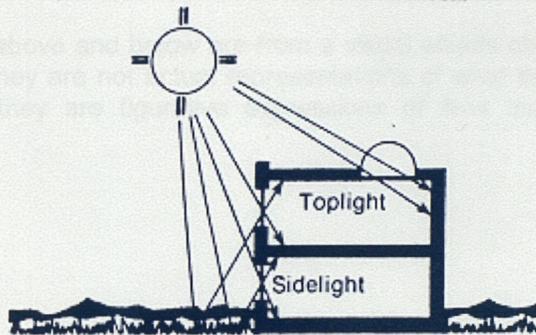
The natural context is primarily flat, with occasional hills, plenty of trees, and several lakes. The Dallas-Fort Worth Metroplex is located in north central Texas, approximately 250 miles north of the Gulf of Mexico. It is near the headwaters of the Trinity River, which lie in the upper margins of the Coastal Plain. The rolling hills in the area range from 500 to 800 feet in elevation.

The Dallas-Fort Worth climate is humid subtropical with hot summers. It is also continental, characterized by a wide annual temperature range. Winters are mild, but "blue northers" occur about three times each month, and often are accompanied by sudden drops in temperature. Periods of extreme cold that occasionally occur are short-lived, so that even in January mild weather occurs frequently. Characteristically, hot spells in summer are broken into three-to-five day

## NATURAL CONTEXT

periods by thunderstorm activity. There are only a few nights each summer when the low temperature exceeds 80 ° F. Summer daytime temperatures frequently exceed 100 ° F.

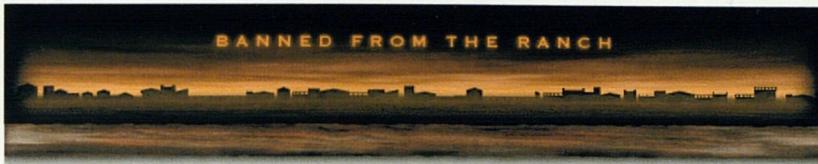
Average high and low temperatures range from 37 ° F in January to 98 ° F in August. Usually, periods of rainy weather last for only a day or two, and are followed by several days with fair skies. A large part of the annual precipitation results from thunderstorm activity, with occasional heavy rainfall over brief periods of time. Windstorms occurring during thunderstorm activity are sometimes destructive. Snowfall is rare. The average length of the warm seasons (freeze-free period) is about 249 days, or about 6 months.



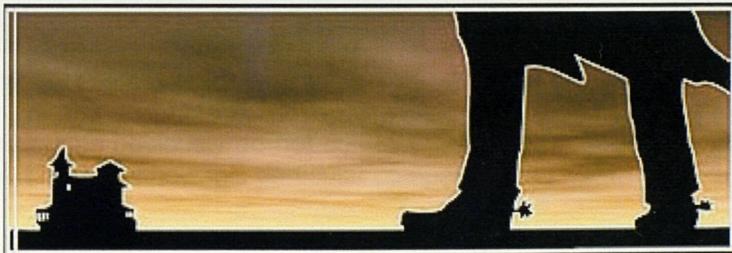
Example of a daylighting schematic

## RESPONSES

- Since the climate is hot in the summer and can be cold in the winter, passive solar strategies should be used in order to utilize solar heat in the winter and reduce it with overhangs in the summer. Heat is more likely a problem temperature than cold, so the building must aim to reduce the cooling load. For the most part, more heat comes from lights and equipment than from the sun. Natural light should be brought into the building with skylights and other openings, while care to diffuse the light by bouncing it and shading the direct light should be taken. Deadband thermostats should be used.



The images above and below are from a visual effects company, and though they are not actual representations of what the company does, they are figurative expressions of how they view themselves.



## PSYCHOLOGICAL CONTEXT

When the air outside is cool and the interior of the building is too warm, then outside air should be drawn in to the building rather than using air-conditioners to cool the building.

## PSYCHOLOGICAL CONTEXT

The psychological context includes the micro-culture of digital artists and programmers. This may very well prove to be the most significant factor to the psychological context, since digital artists are a very selective group, and have definite ideas about who they are. There are other psychological factors, which the location of Dallas presents to the project. Those factors range from as seemingly insignificant as traffic to the psychological ramifications of living in Texas. Traffic in Dallas is an issue, which *will* affect the people who are traveling to and from the facility. How a client enters the building from a vehicle can affect the mood when they are doing business. A bad drive can end up ruining a project. Traffic isn't unbearable in Dallas, but this is Texas, and everyone has a car and a truck. Size does matter in the Lone Star State, and pride is like a badge for many Texans.

## RESPONSES

- The intersection of Art and Technology is a context in itself, and every aspect of the building should give in to the holistic, cre-



Another expression of imagination and reality combining in the midst of art and technology: an editing suite housed in a cave. The employees obviously do not conduct their craft in this environment, but it is part of how this particular company views itself.

## PSYCHOLOGICAL CONTEXT

ative, encompassing micro-culture experience. Form, materials, openings, and structure of the building should all display in them "High Tech/High Touch" duality, to give people a psychological reflection of what occurs on the inside of the building.

- [PERFORMANCE REQUIREMENT] The facility should be a presence in form and phenomenon. The building must command the essence of the Texas spirit, while maintaining the image of digital artistry. The building should radiate feeling, rather than just looking like other buildings in the area.
- The building's entry should alleviate the frustrations of the outside world and draw the people into the building. This should be accomplished by providing a sense of comfort and inspiration. This should be a place that it is worth beating traffic for. The entry, then, should draw people in and then open up into a rich reception area, giving a sense of an explosion of space. Sound from the outside should be reduced to extremely low levels with the use of acoustic materials and perhaps white noise such as water.

**Precedence** Perhaps one of the best examples of the

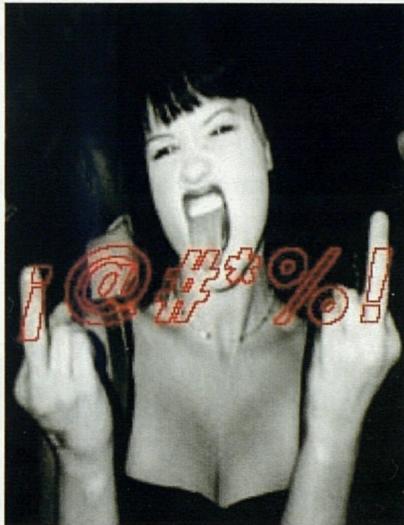
## CULTURAL CONTEXT

psychological effect on the participant is the Walt Disney parks, and the Walt Disney animation studio.

## CULTURAL CONTEXT

The cultural context of Dallas Texas is an influencing mixture of old and new elements, spanning from Texas's independence from Mexico to the latest in music and art. The Lone Star State enjoyed a brief independence before being annexed by the United States in 1845. This brief period of time has left a residual pride of freedom that is unparalleled by other states. "The Deep Ellum Art Festival is an annual event that consists of a mosaic of visual art and artists, continuous music on four stages, and other creative endeavors". [Deep Ellum Website, 1998] Deep Ellum has a reputation as a place steeped in the history and heritage of the blues, and is a present-day Mecca for cutting edge music of all types. The Kimball Art Museum is not far away, and is in itself a work of art and representation of culture.

The other culture that has a vast influence on the facility is that of the computer graphics artists and programmers which will populate the building. They are best described as "free-spirited" and "anti-corporate". They come early, stay late, and play when they feel they need to, because they don't punch a clock. The people who work in this field generally love the work to the extent of there being no division between work



A Dallas local at one of the clubs in Deep Ellum shows some spirit.

## CULTURAL CONTEXT

### R&R Room

To refresh the imagination and re-energize the body and spirit, the R&R Room is the perfect place to visit. Comfortable sofas and numerous confectionery vending machines provide rest and convenience, while light meals and beverages and even a massage machine cater to your needs. It's not only an ideal location to relax, but also a great place to exchange ideas with fellow staffers.



This visual effects facility describes an "R&R Room", where staffers are encouraged to gather.



and play. Long hours and weeks at the office are compensated by doing what they love to do, rewarding results of their labor, and adoration by fans and colleagues. They consider themselves renegades, "rock stars" [Kuwabara, 1998], artists, and Techno-Geeks all in one package. Even the programmers of the field consider themselves to be artists in their own right.

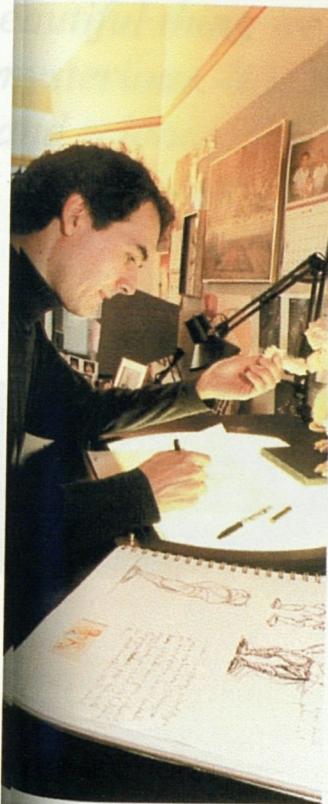
## RESPONSES

- Because of the long hours and unstructured work schedules of the artists and programmers, they often need spaces for rest and relaxation at any given time in order to rejuvenate themselves when the workload is high for an approaching deadline. Both outdoor and indoor recreation spaces should be provided, along with kitchens, lounges, and many spaces for them to catch a nap now and then. The environment should be such that they will not hesitate to relax when needed, but activities should be separated enough so they will not have to exercise restraint from play when work needs to get done.
- The cultural center that is Dallas should reflect its independent and progressive culture on the facility in a positive way. The facility and surrounding site should focus on pedestrian, rather than vehicular, circulation

## CULTURAL CONTEXT

and provide vistas and walkways.

**Precedence** In most or all facilities of this type, focus is on the artist and programmer and the craft. "Creative Perks" are given by many in the industry, including Hollywood Cinesite and other FX houses.



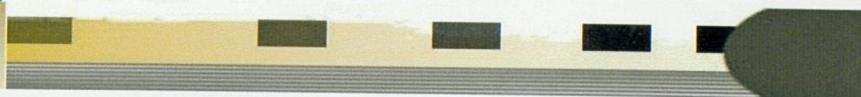
*The most beautiful thing we can experience is the mysterious. It is the source of all true art and science.*

*-Albert Einstein*



*The difference between fiction and reality? Fiction has to make sense.*

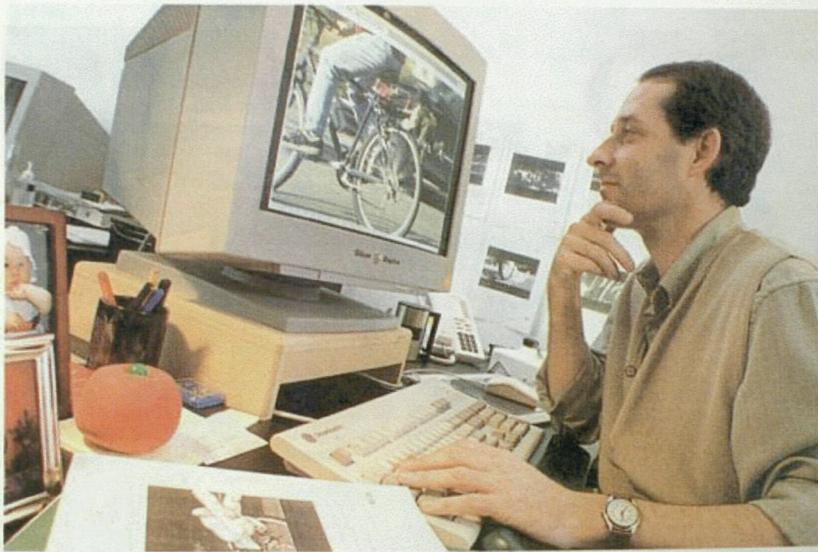
*-Tom Clancy*



## EPISTEMOLOGY



Traditional animation and methods of producing visual effects is in many fundamental ways the same as it has always been. Artists are grouped into categories and they move up through the ranks from drawing keyframes or coloring images to supervising entire animations, and eventually leading entire projects. The information age has increased the speed in which artists work and advance, and demand that those who previously had to be skilled in character creation and artistic ability now be skilled with the computer and its software as well. Tron was the first feature film to include digital imagery as we know it, and since then, it has become a staple element in movies, commercials, and TV. Companies like Disney have an animation facility for making Cel Animation, and ILM started out in a small office, using a very limited budget and what space they had. Digital technology's lowering cost and more widespread usage has changed the requirements of those buildings to encompass the new tools, and has made a new type of facility necessary. Since then ILM has expanded, and Pixar is Disney's CGI (Computer Generated Imagery) production jewel. Companies like ILM, PDI and Sony Imageworks have huge shares of the industry, both in feature animation and in visual effects. Drawing boards and model shops are still in use, but the majority of the craftsmen are skilled technically, and they have brought with them a new micro-culture and a new economic impact.



One of the less cluttered spaces of ILM

The history of the Visual Effects facility is somewhat limited, since it is just now coming of age. Most of the buildings currently used are not designed for the specific purpose of producing CGI. There is information about the methods used, however, and there are facilities that have been designed for traditional animation and production. But given the prominence of the new medium of computers, CGI will soon be the norm, rather than the exception. As George Lucas stated, digital production will eventually envelop all other production means.

"FX" people can be divided roughly into 2 broad categories: production and non-production. Non production includes human resources, payroll, technical support, and people not involved directly in creating the visuals, but still needed. Production can roughly be divided into 3 categories: Programmers, Technical Directors, and Artists. Programmers are the ones that create the custom tools, but rarely create the images. Artists compose the artistic side; they are mainly character animators, painters (digital), modelers, matte painters and others. TDs are in the middle, since they use technical knowledge and their artistic eye to solve problems and obtain the final "look" of the shot. They usually create shaders, create procedural animations and models, do things like particle systems, create some custom tools, set up bone and skin characters and set up their constraints and expressions, extract elements from live action plates and composite CG, and work with real and blue-screen elements.

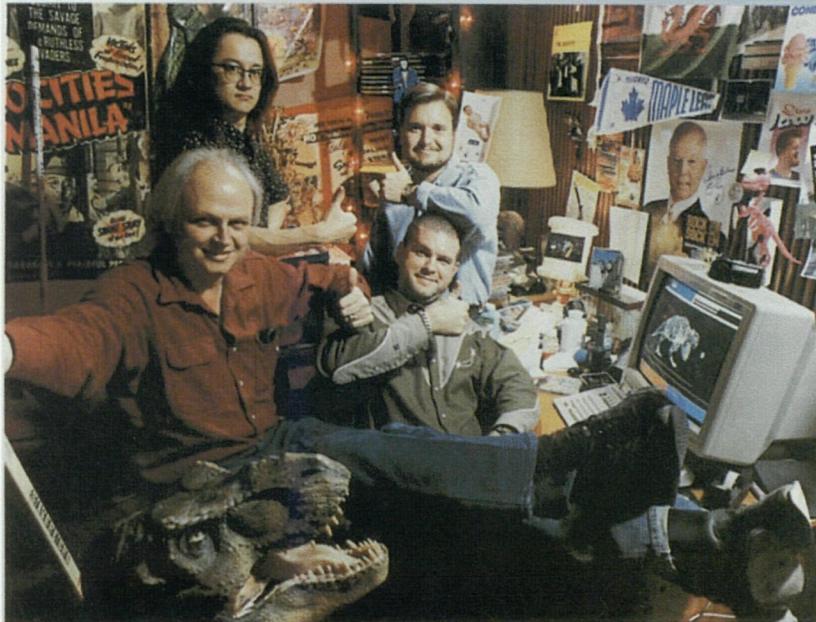
## FACILITY

Artists in the CGI field use a combination of art and technology to do things they previously could not do with traditional means. [Cotta Vaz 1996] They have a different prerequisite and a different medium to work with, and they therefore should have a facility that reflects the dynamics of their craft. The building will be a Visual Effects Facility in Dallas, Texas. The visual effects industry thrives on the intersection of art and technology. Traditional artists and animators are drawn to a field where they are limited only by their imaginations. [Cotta Vaz 1996] The visual effects house of today deals largely in Computer Generated Imagery (CGI) to create their magical vision, thus combining the imaginative with the rational and technical from an idea's conception to its final presentation. [Sony Imageworks 1998] They create works for people; they visually craft the scenes with the goal of making an audience feel, hear, see, and touch on a psychological level. CG artists practice in phenomenology.



ILM Staffers collaborating in one of their offices

- Artists should have direct access to one another, and to the “techies”, or programmers for collaboration on projects. Often an artist needs a bit of code written for the tool, so that the piece can be completed. They must work together to get a job done. Spatial arrangement should have the art and programming departments adjacent to one another, and not depend on networks to



Thumbs up! Muren and company celebrates ILM's *Jurassic* success in "The Pit" (the colorful office of CG artist Steve Williams). Clockwise from left: Muren, Mark Dippé, Eric Armstrong, and Steve Williams.

One of these CG artist's home away from home

take the place of human interaction.

- Spaces must be provided for current tools and in anticipation for future tools, as well. Drafting tables and computers both have a place in this facility, and interchangeability is another concern. Network and power wiring must not interfere with circulation, and the spaces should be arranged in such a way, that a computer or other piece of digital equipment could be placed virtually anywhere. Wiring chases should be an architectural feature; perhaps columns, large tubes, or some other functional feature could house the additional "guts" that the facility needs.
- Anticipation for fluctuation of staff and upgrading of systems must be designed for. Expansion and upgrading is not only a possibility, but also almost a certainty. Some of the spaces, such as the server room and the open artist and programmer spaces should be oversized, and extra power and networking drops should be provided for these areas.
- Almost every person in this facility will stare at a screen for long hours, or otherwise will be drawing by hand, sketching, or some

## FACILITY

other activity. The quality of light throughout the facility is a very important factor. Lighting should be primarily user-controlled, with natural lighting utilized when possible and incandescent lighting when necessary.

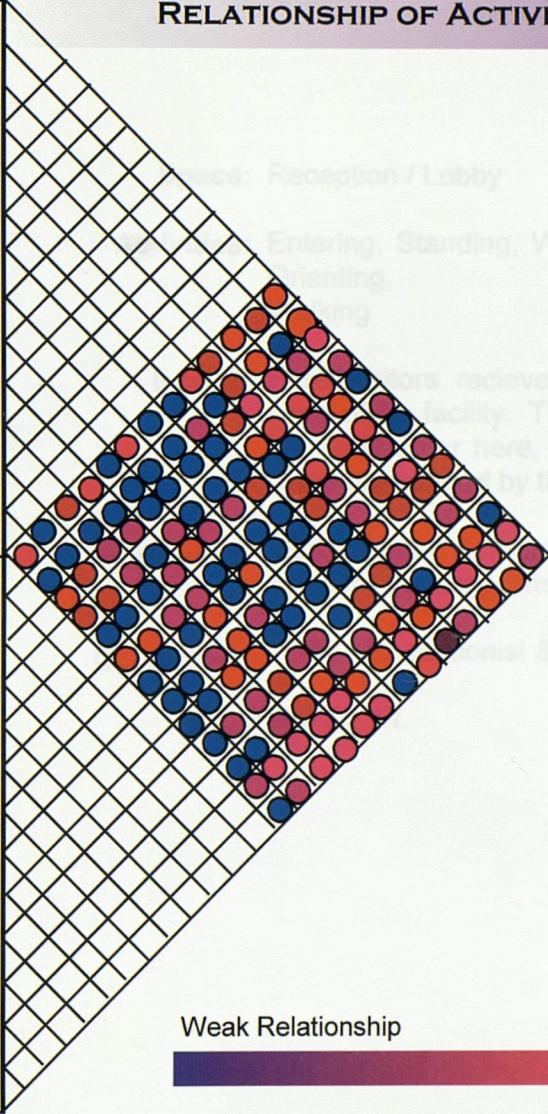
**Precedence** Industrial Light and Magic and Pacific Data Images are two very cutting-edge leaders in the CG realm. Although proprietary to an excruciating degree, some of what they do and how they work is published.



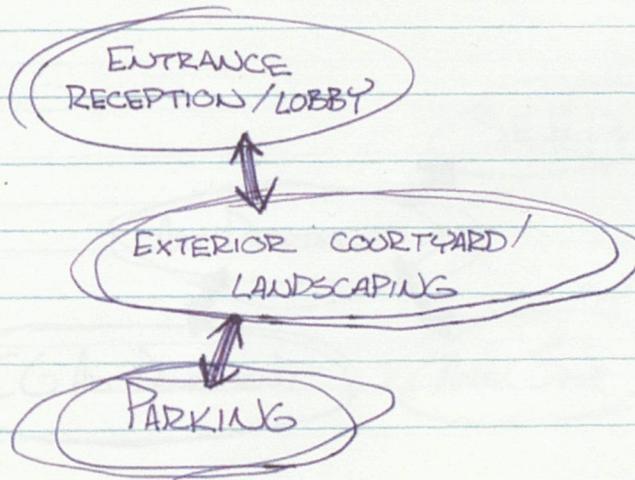
A CG artist at ILM studies character models

**RELATIONSHIP OF ACTIVITIES TO SPACES**

- Art Department
- Programming / Research and Development
- CG Art Department
- Model Shop
- Conference Spaces
- Server Room
- Human Resources
- Management
- Systems Administration
- Editorial and Scanning Department
- Stage and Equipment Engineering Department
- Reception / Lobby
- Kitchen / Lounge
- Drawing, Sketching
- Rendering, Modeling
- Relaxing
- Meeting, Conferencing
- Coding, Programming
- Waiting, Relaxing, Orienting
- Editing
- Scanning, Compositing
- Digitizing
- Animating
- Servicing, Supporting
- Managing
- Researching, Developing



Weak Relationship  Strong Relationship



**Space:** Reception / Lobby

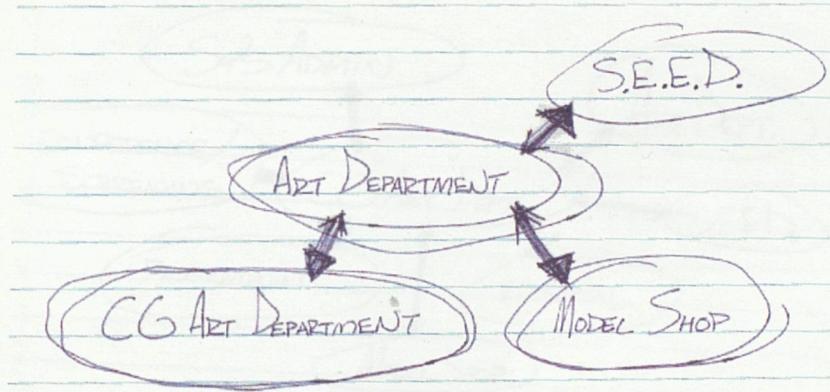
**Activities:** Entering, Standing, Waiting, Conversing, Orienting, Walking

**Issues:** Here visitors receive their first impressions of the facility. Those who work here will likely enter here, and should not become disparaged by the entering.

**Adjacency:** Management, Screening Room, Main circulation, Parking, Exterior Courtyard

**Occupants:** 15-20 + Receptionist & Desk

**Size:** 900 Sq. Ft.



**Space:** Art Department

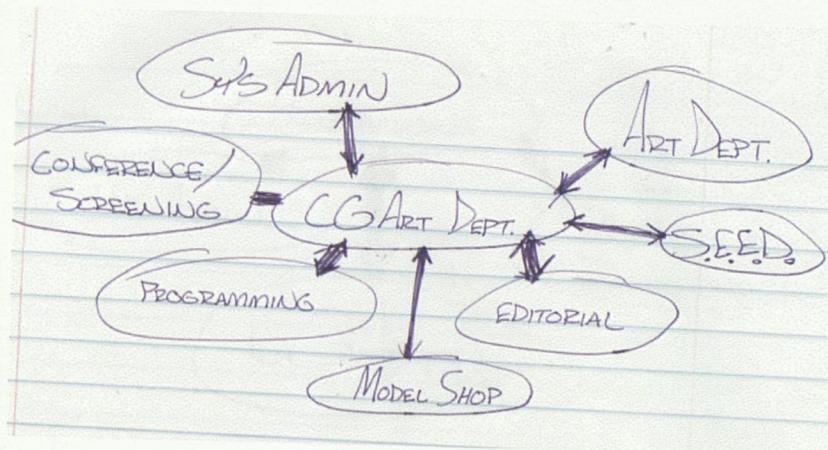
**Activities:** Concept Art Creation, Storyboard Creation, Foundation Art Creation

**Issues:** This space should be an open space, with places for pinning up the storyboards and concept-art for review. Both computers and conventional tools such as paint is used by the artists in this space.

**Adjacency:** CG Artist's Space(s), Screening Room, Stage and Equipment Engineering Department, Lounge / Kitchen, Model Shop

**Occupants:** 6 (10)

**Size:** 1000 sq. ft.



**Space:** CG Artist's Spaces

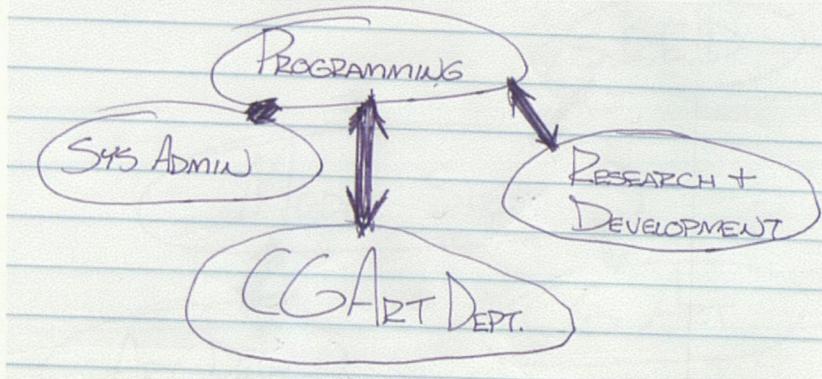
**Activities:** Character Modeling, Character Animation, Hard Surface Modeling, Hard Surface Animation, Special Effects Creation, Lighting and Design Creation & Implementation.

**Issues:** This series of spaces has to be flexible and comfortable. This is the heart of the facility.

**Adjacency:** Programming, Screening Room, Stage and Equipment Engineering Department, Lounge/Kitchen, Art Department, System Administration, Model Shop

**Occupants:** 30 (40)

**Size:** 3000 sq. ft.



**Space:** Programmer's Spaces

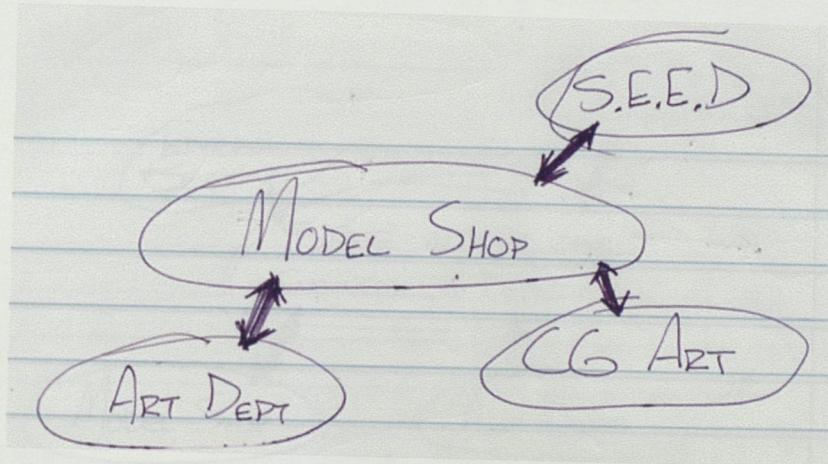
**Activities:** Writing Code, Researching and Developing New Technologies, Building and Maintaining Software Base, Designing Proprietary Software and Routines

**Issues:** This is the brains of the facility, and still a creative entity itself, because they must design and implement new software, or write "plug-ins" for existing software. They need to have direct access to the CG artists.

**Adjacency:** CG Artists, Lounge / Kitchen, Screening Room, System Administration

**Occupants:** 25 (35)

**Size:** 1250 sq. ft.



**Space:** Model Shop

**Activities:** Building Miniatures, Building Macquettes, Digitizing Models for Animating

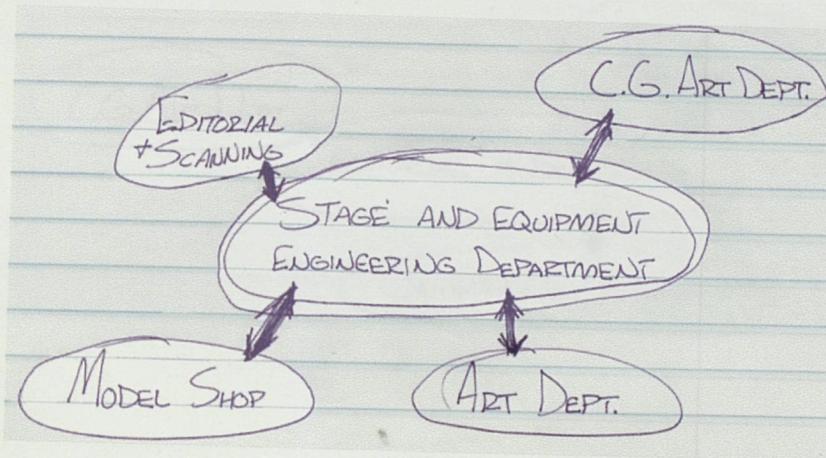
**Issues:** This is the place where models are built that would be either too complicated or too costly to do wholly in the computer. This department also aids in visualizing an end product.

**Adjacency:** CG Artists, Lounge / Kitchen, Screening Room, Art Department, SEED

**Occupants:** 5 (8)

**Size:** 1600 sq. ft.

## ANALYSIS OF SPACES



**Space:** Stage and Equipment Engineering Department

**Activities:** Visual Effects Photography, Background Plate Photography, Elements Photography

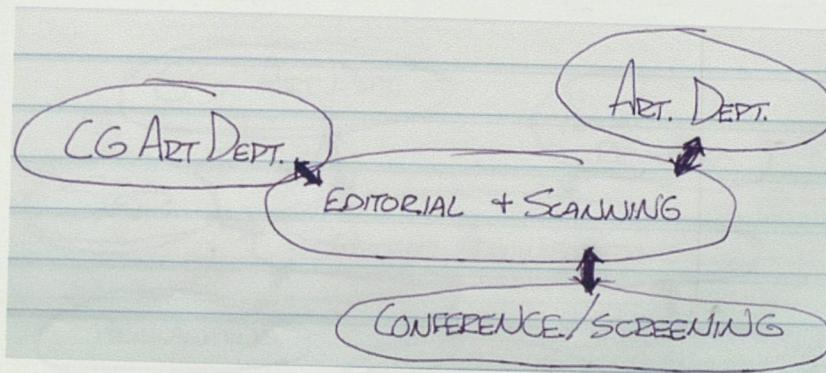
**Issues:** This department photographs non-CG elements and Mattes. This is an important job, because not everything is currently CG.

**Adjacency:** Model Shop, Art Department, Lounge / Kitchen, Scanning, Screening Room

**Occupants:** 5 (10) + Large Equipment

**Size:** 1800 sq. ft.

## ANALYSIS OF SPACES



**Space:** Editorial and Scanning Department

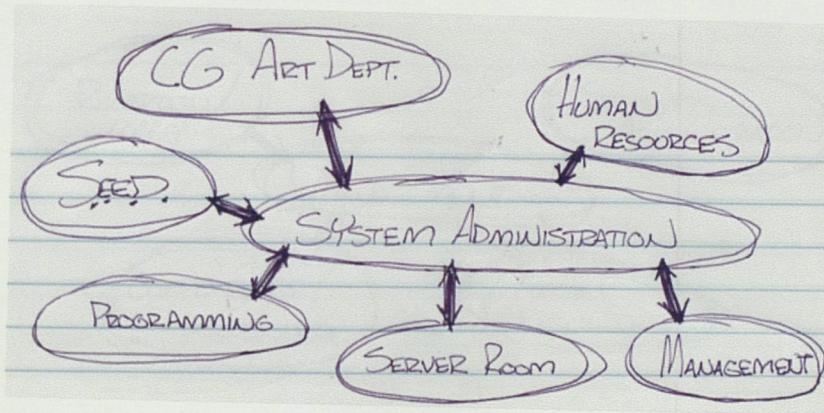
**Activities:** Tracking and Digitizing of Specific Shots

**Issues:** This shop puts film to digital and puts digital to film. This is a very important part of the facility, because the primary medium which the facility distributes is celluloid, rather than disk.

**Adjacency:** SEED, Lounge / Kitchen, Screening Room, CG Art,

**Occupants:** 5 (8) + Large Equipment

**Size:** 900 sq. ft.



**Space:** System Administration

**Activities:** Servicing and Supporting Hardware and Software, Answering Questions, Fixing Problems

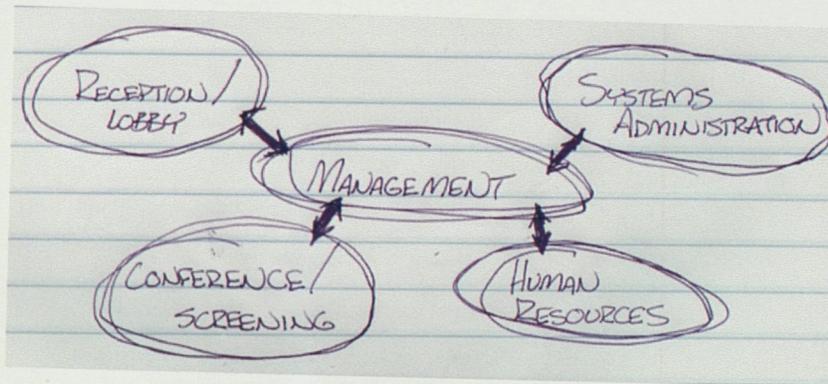
**Issues:** This area is needed to keep all the other areas that use computers functioning properly.

**Adjacency:** Lounge / Kitchen, Screening Room, CG Art, Programming, Management, Human Resources

**Occupants:** 5 (10)

**Size:** 600 sq. ft.

## ANALYSIS OF SPACES



**Space:** Management

**Activities:** Contacting Clients, Overseeing Projects, Setting Deadlines, Paying Bills

**Issues:** Management keeps the facility running. They may participate in projects, but it is possible that they won't.

**Adjacency:** Lounge / Kitchen, Screening Room, CG Art, Programming, Management, Human Resources, Reception, Conference, Art Department, Model Shop, SEED, Scanning, Sysadmin

**Occupants:** 7 (10)

**Size:** 500 sq. ft.

**Space:** Server Room

**Activities:** Maintaining, Routing, Networking

**Issues:** The Server Room is an important part of the facility, it is the hub that all the computers in the facility are connected to. This room should provide special cooling and room for expansion, and special attention should be given to wiring for this space.

**Adjacency:** All Spaces (to a degree, not physically located next to all spaces, but connected)

**Equipment:** 15-20 large Server Computers and Disk Arrays, space for 1 SysAdmin

**Size:** 940

**Space:** Conference Rooms

**Activities:** Talking, Meeting, Lounging, Sleeping, Watching, Critique, Screening

**Issues:** Several conference spaces should be provided with multi-purpose use in mind, both to serve as multi-media centers for reviewing presentations and having conferences, and during non-peak hours used as a "lounge" for employees to just hang out.

**Adjacency:** CG Art, Art Department, Kitchen / Lounge, Programming, SysAdmin, SEED, Management, Human Resources, Model Shop, Scanning

**Occupants:** 15-20 per space

**Size:** 4500 sq. ft. each

**Space:** Human Resources

**Activities:** Recruiting, Assisting, Writing Checks, Scheduling Holiday Time, Scheduling Sick time, Distributing Benefits, Planning, Allocating

**Issues:** Human Resources is needed as a direct association to current and future employees and the relationship between the people and the entity which is the facility.

**Adjacency:** CG Art, Art Department, Kitchen / Lounge, Programming, SysAdmin, SEED, Management, Model Shop, Scanning

**Occupants:** 5 (10)

**Size:** 500 sq. ft.

**Space:** Kitchen / Lounge

**Activities:** Cooking, Snacking, Talking, Relaxing

**Issues:** The Kitchen and Lounge is an important space for "down time" and rejuvenation for the programmers and artists who have been sitting and staring at a computer screen for long periods of time.

**Adjacency:** CG Art, Art Department, Programming, SysAdmin, SEED, Management, Model Shop, Scanning

**Occupants:** 15-20 per unit

**Size:** 300 sq. ft. each

**Space:** Restrooms

**Activities:** Restrooming

**Issues:** An unavoidable bodily function, the restrooms should be accessible without being intrusive. Showers and personal storage within these spaces is a possibility.

**Adjacency:** All

**Occupants:** 8 per unit

**Size:** 135 square feet each

## ANALYSIS OF SPACES

**Space:** HVAC

**Activities:** Heating, Cooling, Maintaining

**Issues:** HVAC.... Heating, Ventilating, Air-Conditioning.....

**Adjacency:** Separated from most. Services all.

**Occupants:** N/A

**Size:** 1000 Sq. Ft.



## RELATIONSHIP OF SPACES FOR ADJACENCY AND SEPARATION

	Art Department	CG Art Department	Conference / Screening	Editorial and Scanning Dept.	Human Resources	HVAC	Kitchen / Lounge	Management	Model Shop	Programming Department	Reception / Lobby	Restrooms	Server Room	Stage & Equipment Engineering	Storage areas	System Administration
Art Department	Dark Red															
CG Art Department	Red	Dark Red														
Conference / Screening		Pink	Dark Red													
Editorial and Scanning Dept.		Red	Dark Red	Dark Red												
Human Resources					Dark Red											
HVAC						Dark Red										
Kitchen / Lounge		Red		Red	Pink		Dark Red									
Management				Red	Pink		Dark Red	Dark Red								
Model Shop		Red		Pink	Pink		Dark Red	Dark Red	Dark Red							
Programming Department		Red		Red	Pink		Dark Red	Dark Red	Dark Red	Dark Red						
Reception / Lobby							Dark Red	Dark Red	Dark Red	Dark Red	Dark Red					
Restrooms		Red		Red			Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red			
Server Room							Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red		
Stage & Equipment Engineering		Red		Pink			Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red		
Storage areas		Dark Red		Red	Pink		Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	
System Administration		Dark Red		Red	Pink		Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red

**Legend:** White: Separation  
 Dark Red: Contained Within  
 Red: Adjacent  
 Pink: Somewhat Adjacent  
 Rose: Somewhat Separated

## SPACE SUMMARY

	# of Users	# of Each	Usable Square Feet	Gross Square Feet	Occupancy Load	Occupancy Rate
<b>VISUAL EFFECTS</b>						
Art Department	10	1	1000	1200	100	12
CG Art Department	30	1	3000	3600	100	36
Storage areas	N/A	2	200	240	300	0.8
Restrooms	10	2	270	324	50	6.48
Kitchen / Lounge	15	2	600	720	15	48
<b>FX SUPPORT / ENGINEERING</b>						
Programming Department	25	1	1250	1500	100	15
Editorial and Scanning Dept.	8	1	900	1080	100	10.8
Model Shop	8	1	1600	1920	200	9.6
Stage & Equipment Engineering	10	1	1800	2160	50	43.2
Kitchen / Lounge	15	2	600	720	15	48
Restrooms		2	270	324	50	6.48
Storage areas	N/A	5	500	600	300	2
<b>TOTALS</b>	<b>91</b>		<b>11990</b>	<b>14388</b>	<b>1380</b>	<b>238.36</b>

$818.17 \times 0.25 = 204.5 / 36 = 5.7$  (egress)

CODE REQUIRES 6 EXIT DOORS TO THE FACILITY.

## SPACE SUMMARY

	# of Users	# of Each	Net Sqare Feet	Gross Square Feet	Occupancy Load	Occupancy Rate
<b>ADMINISTRATION</b>						
Management	10	1	500	600	100	6
Server Room	N/A	1	940	1128	300	3.76
Human Resources	10	1	500	600	100	6
System Administration	10	1	600	720	100	7.2
Storage areas	N/A	4	400	480	300	1.6
Kitchen / Lounge	15	1	300	360	15	24
Restrooms		2	270	324	50	6.48
<b>INTERACTIVE SPACES</b>						
Reception / Lobby	20	1	900	1080	7	154.2857143
Conference / Screening	25	4	4500	5400	15	360
Restrooms		2	270	324	50	6.48
<b>HVAC</b>						
		1	1000	1200	300	4
<b>TOTALS</b>	<b>30</b>	<b>19</b>	<b>10180</b>	<b>12216</b>	<b>1337</b>	<b>579.8057143</b>
<b>GRAND TOTALS</b>	<b>121</b>			<b>26604</b>	<b>2717</b>	<b>818.165714</b>

$$818.17 \times 0.25 = 204.5 / 36 = 5.7 \text{ [egress]}$$

CODE REQUIRES 6 EXIT DOORS TO THE FACILITY.

Rethinking Architecture: A Reader in Cultural Theory. Edited by: Neil Leach. Routledge, New York, NY. 1997.

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## ARCHITECTURAL THEORY BIBLIOGRAPHY

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Star Wars Official Website. <http://www.starwars.com>.

Interview with Manuel Alducin, Advanced Computer Machinery, Computer Graphics Special Interest Group (SIGGRAPH)

\*Precedence photographs taken from various magazines and journals, including Architecture and Urbanism, Japan Architect, Architectural Review, Architectural Record, Rolling Stone, and Star Wars Insider.

Throughout the duration of this project, from its conception in the program to the actual building's design, the project transformed and changed as it matured. The many layers of the project did not click into place without much research, learning, and discovery. Some of the initial ideas and theories were altered or abandoned altogether, while new ideas and theories wove themselves into the building's concept. Through this process of adaptation and decision-making, a great deal was learned about design.

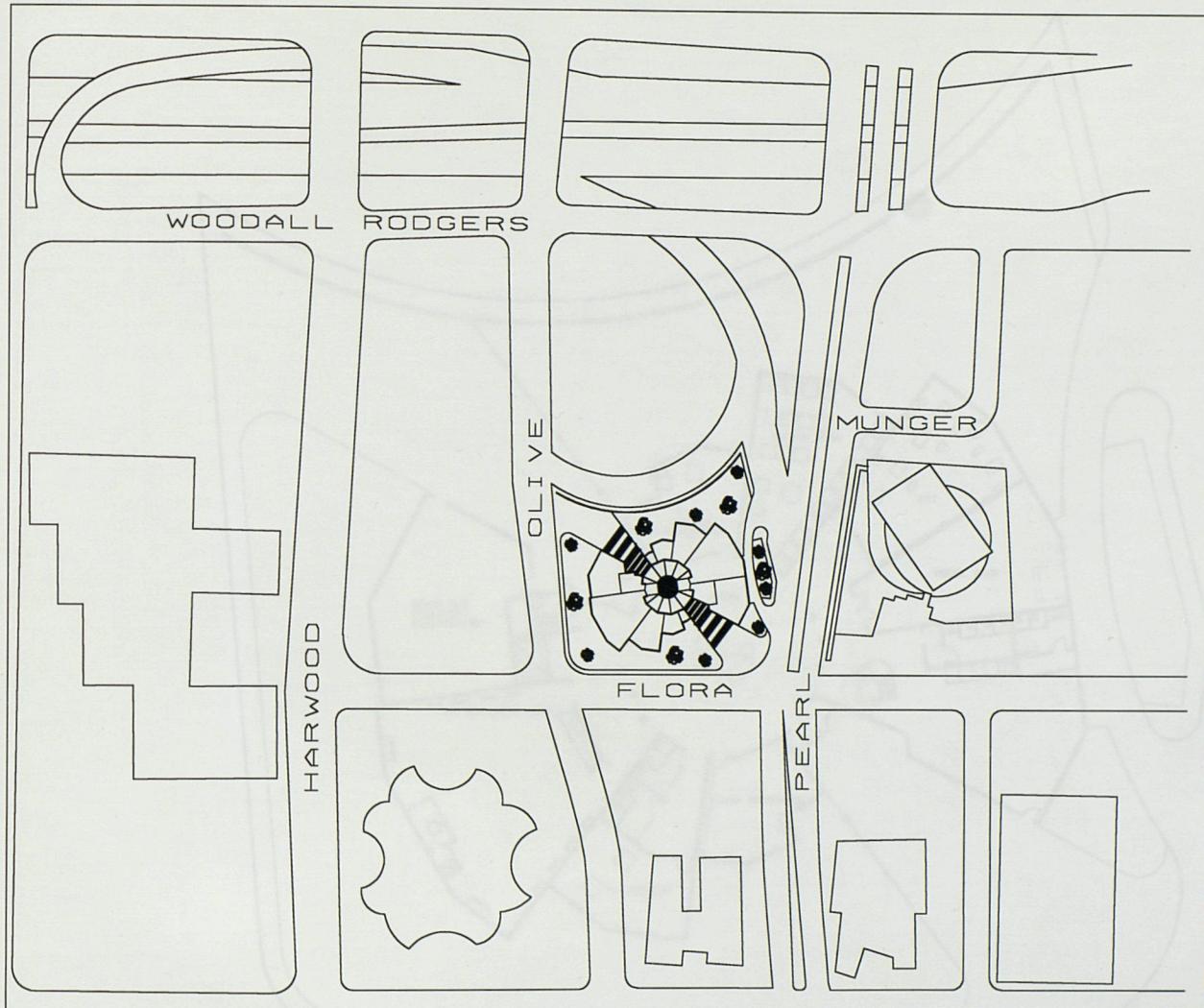
First, a building program is not a crystalline and inarguable construct that ensures that a facility will be designed successfully. It is an outline that aids in decisions and provides rationale for design based on research. Theory cannot always be applied directly into a form, especially when the requirements of a facility are complex and varied enough to require more than simplistic or diagrammatic scheme. A program will not necessarily translate directly into a design, in other words.

A design project of this magnitude is not something that is done by one person. It takes collaboration by many parties, all contributing ideas and suggestions. Not all advice is practical, and many times is highly opinionated, but this is the nature of something that (if it were to be built) would be viewed and inhabited by a great number of people. Not everything a designer wants in a building is going to be popular, or even understood. It is important to gain this collaboration early in a project before a large investment in time and resources is dedicated to ideas that cannot or will not be assimilated by a majority.

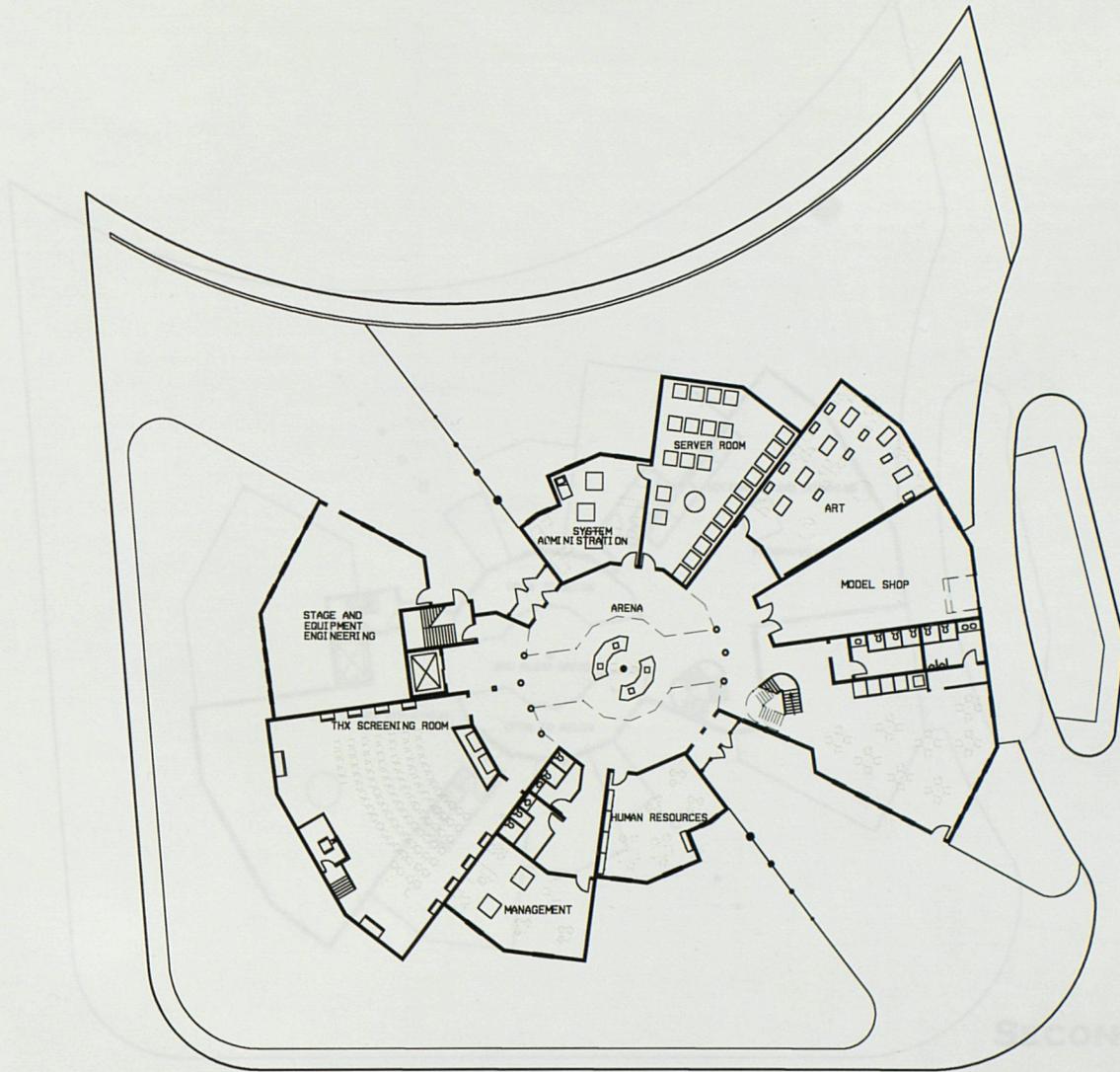
Presentation is the vessel in which a design is translated to others, and any deficiency in the vehicle is perceived to be a deficiency in the design. This is not something that was just learned, but something that was clarified more than in any other project I have done. Several factors are at work here, including time management and planning as a whole. Delusions of grandeur are what become of that which seemed a good idea at the time. Plan for the simplest of presentations, then once that goal is achieved, plan for something more, but do not plan for the most only to neglect the simplest.

Mechanical systems should be designed as early as the structural system, which should be designed early also. Chases and mechanical rooms are much easier to integrate before the interior spaces are designed. Systems are the lifeblood of the building; without this the building may look nice, but it will not function. As an afterthought, systems are worthless without a great deal of work and pain to make them work within the constraints of the design.

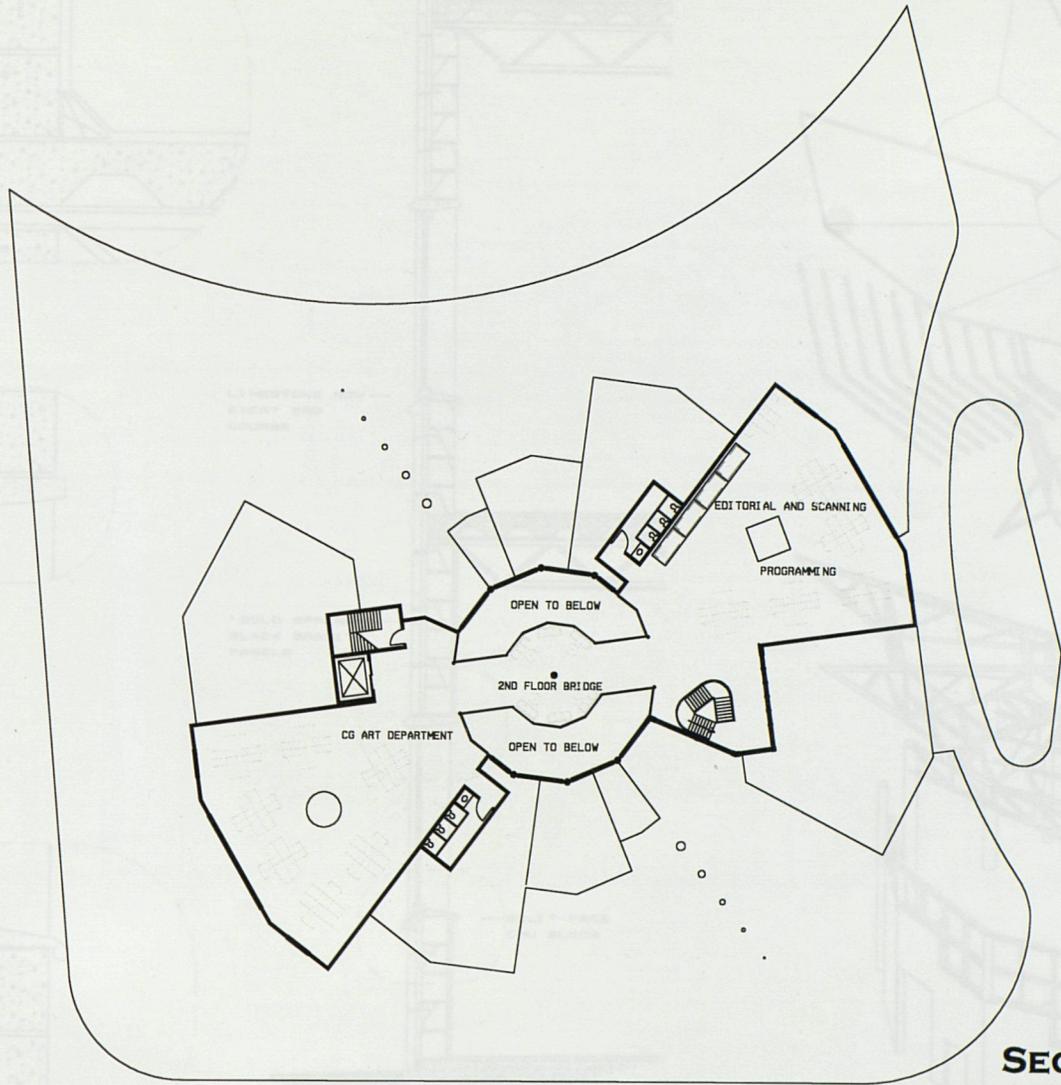
Many things have been learned during the course of this design project, and not the least of which is the lesson of learning rather than regretting. I believe that this project would have been a great success, even with its current design configuration, if there had been a team of people working on the design rather than myself alone. It was no less than a valiant attempt at the aspirations in the program, and although it could have been better here and there, replication of the project would yield the desired results.



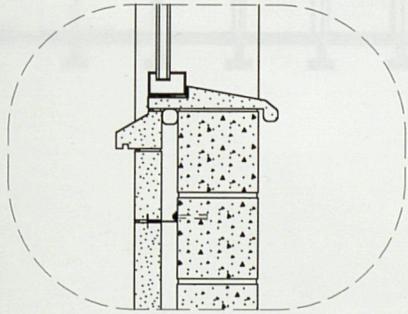
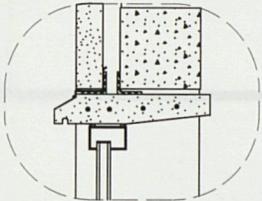
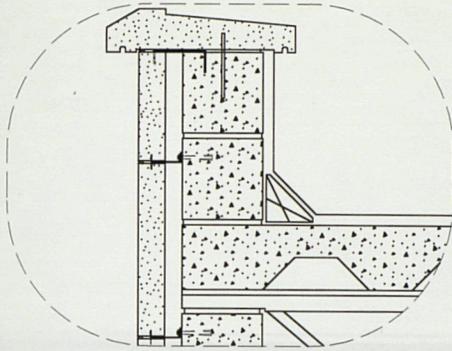
**SITE PLAN**



**FIRST FLOOR**



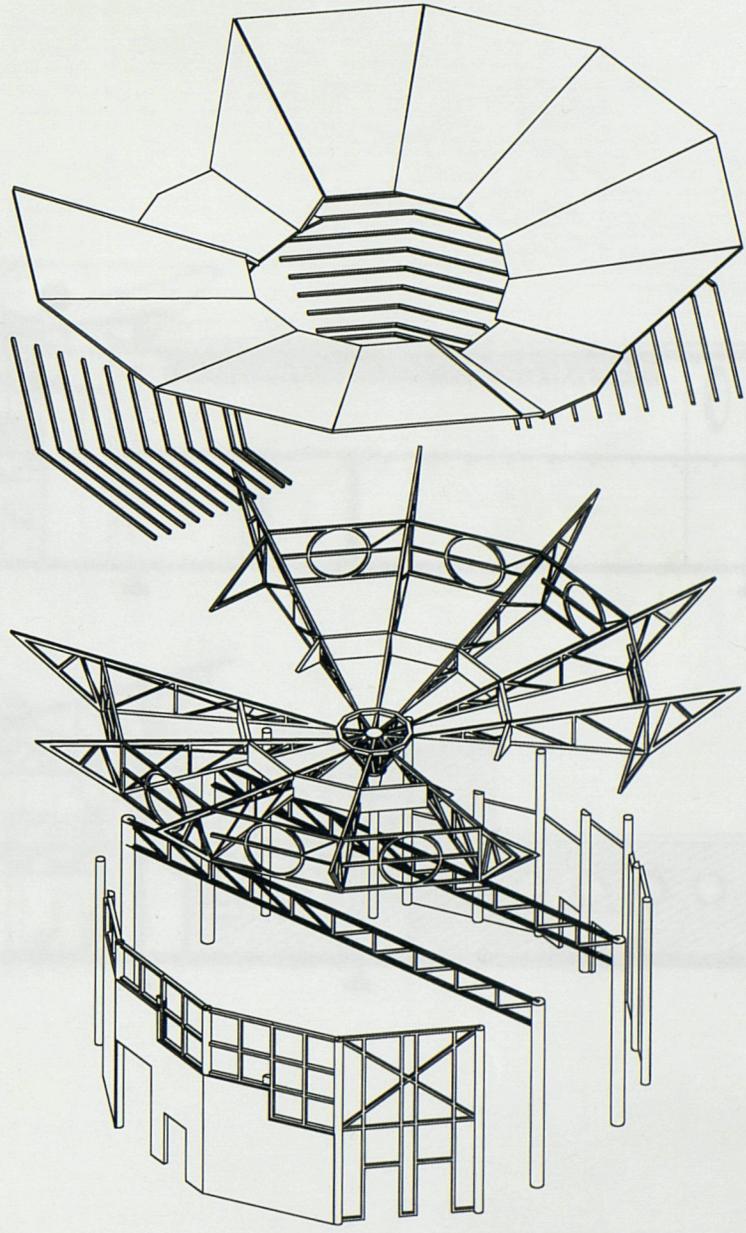
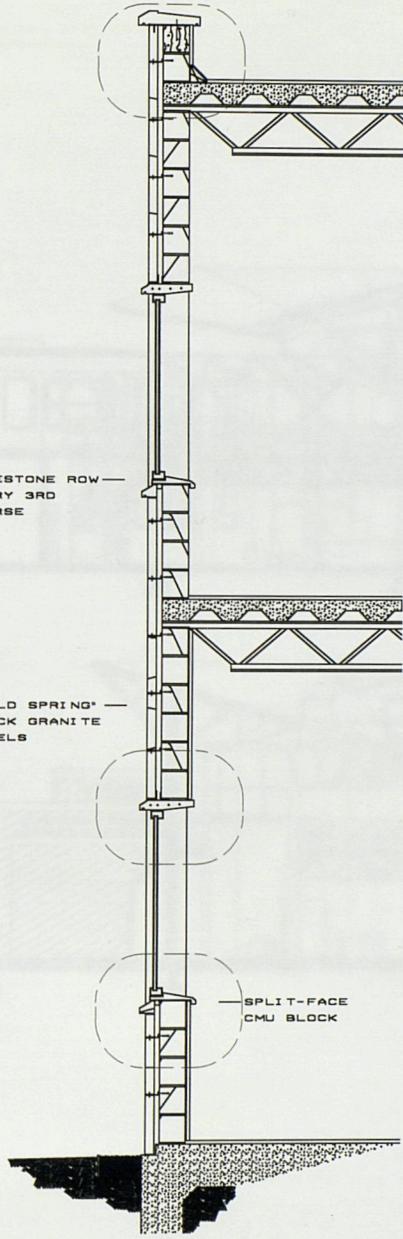
**SECOND FLOOR**



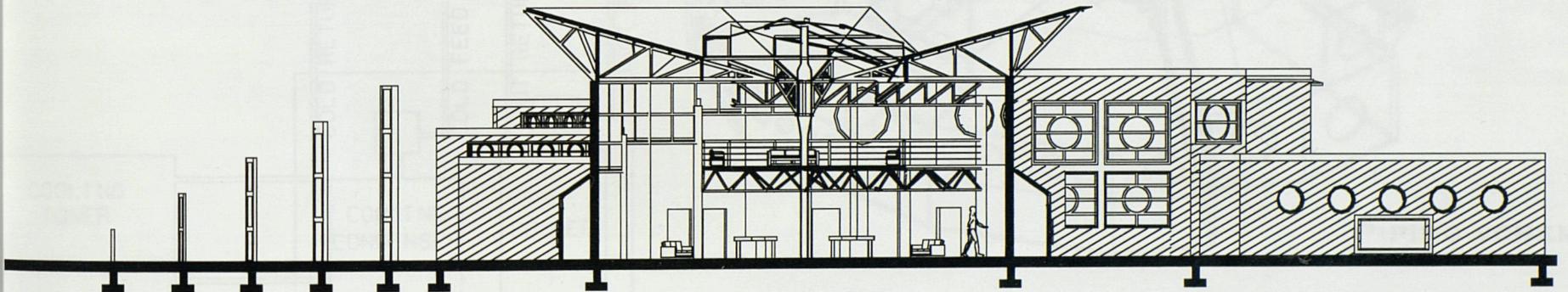
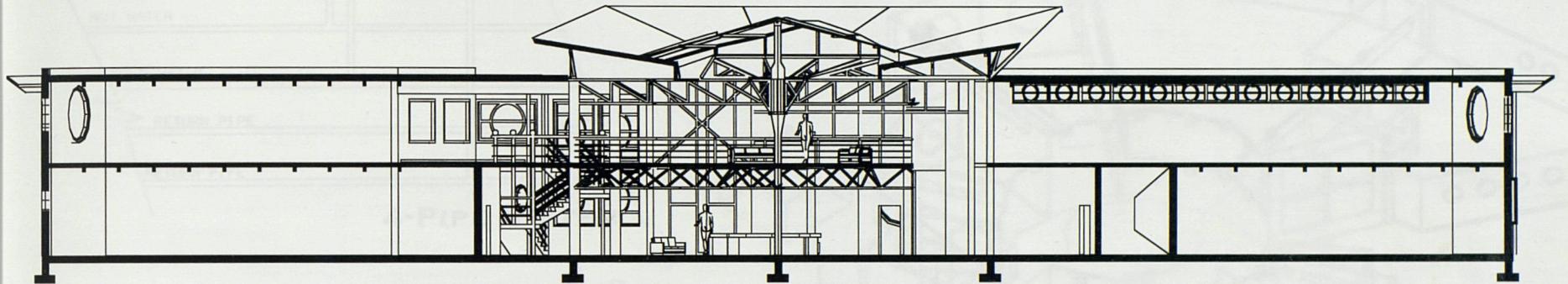
LIMESTONE ROW —  
EVERY 3RD  
COURSE

\*COLD SPRING\* —  
BLACK GRANITE  
PANELS

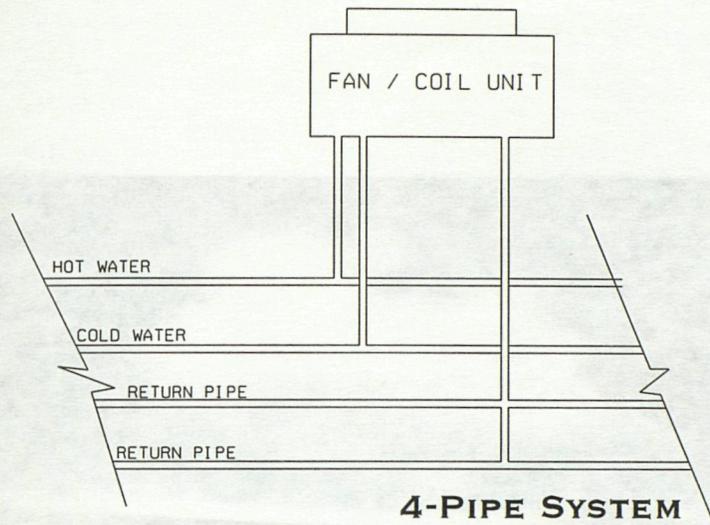
SPLIT-FACE  
CMU BLOCK



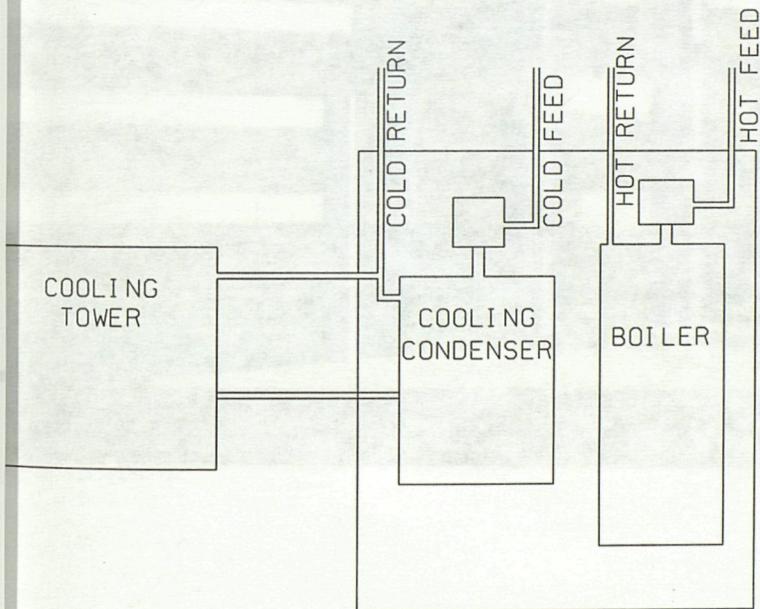
FAN / COIL UNIT



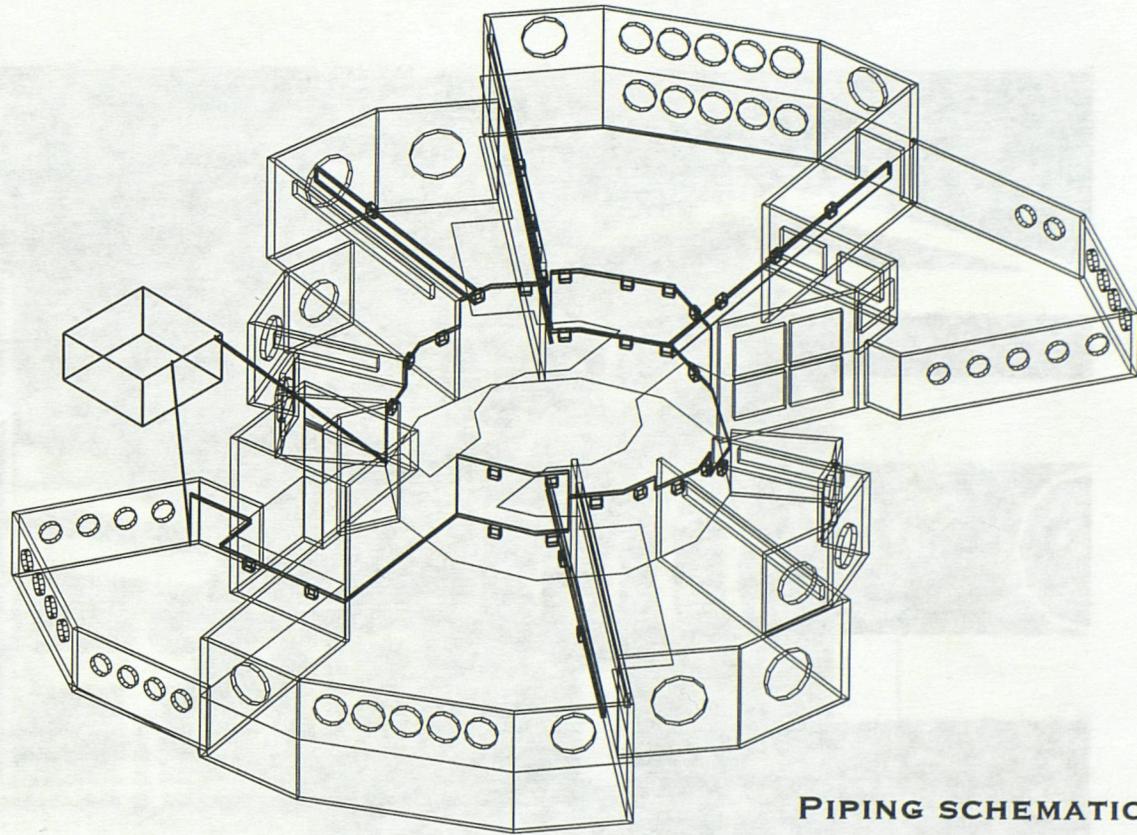
MECHANICAL ROOM COMPONENTS



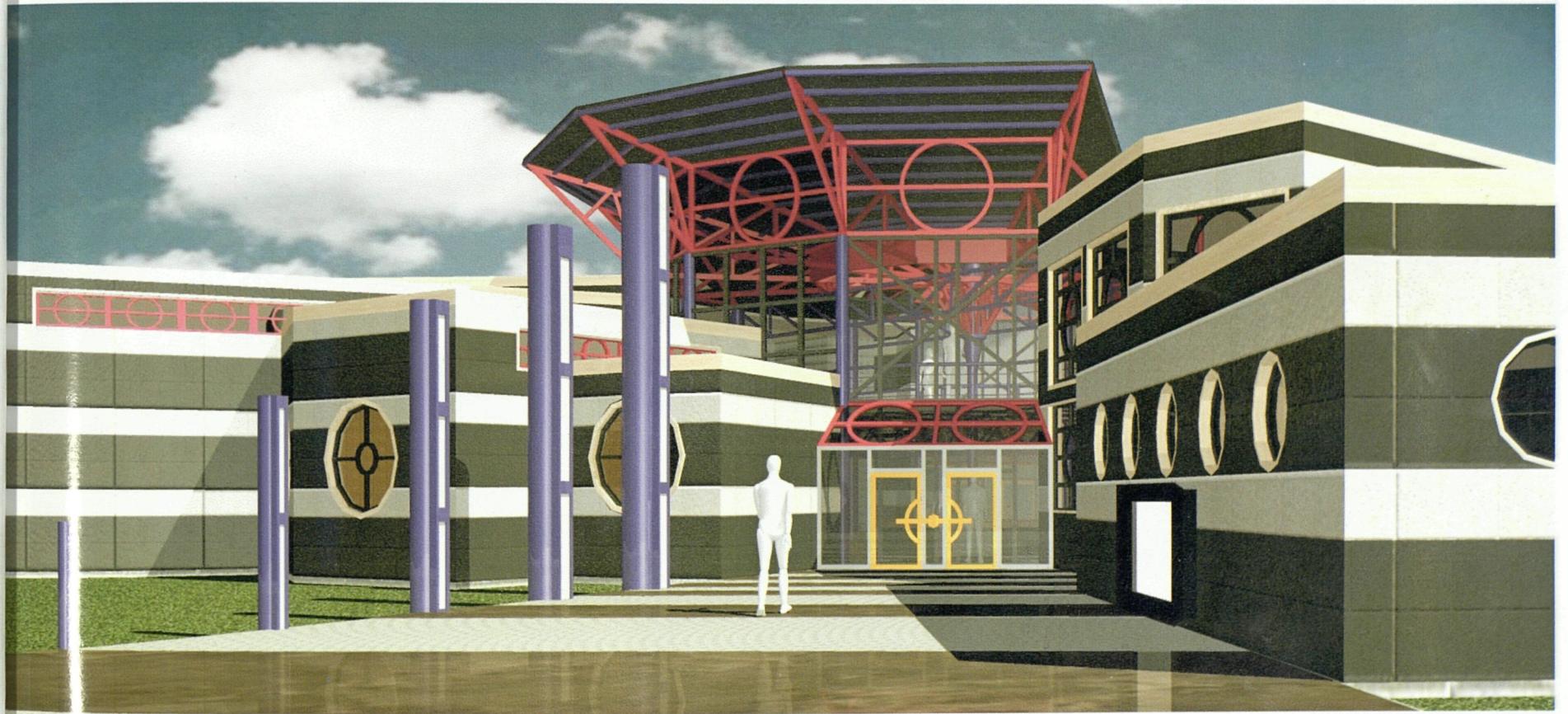
**4-PIPE SYSTEM**



**MECHANICAL ROOM COMPONENTS**

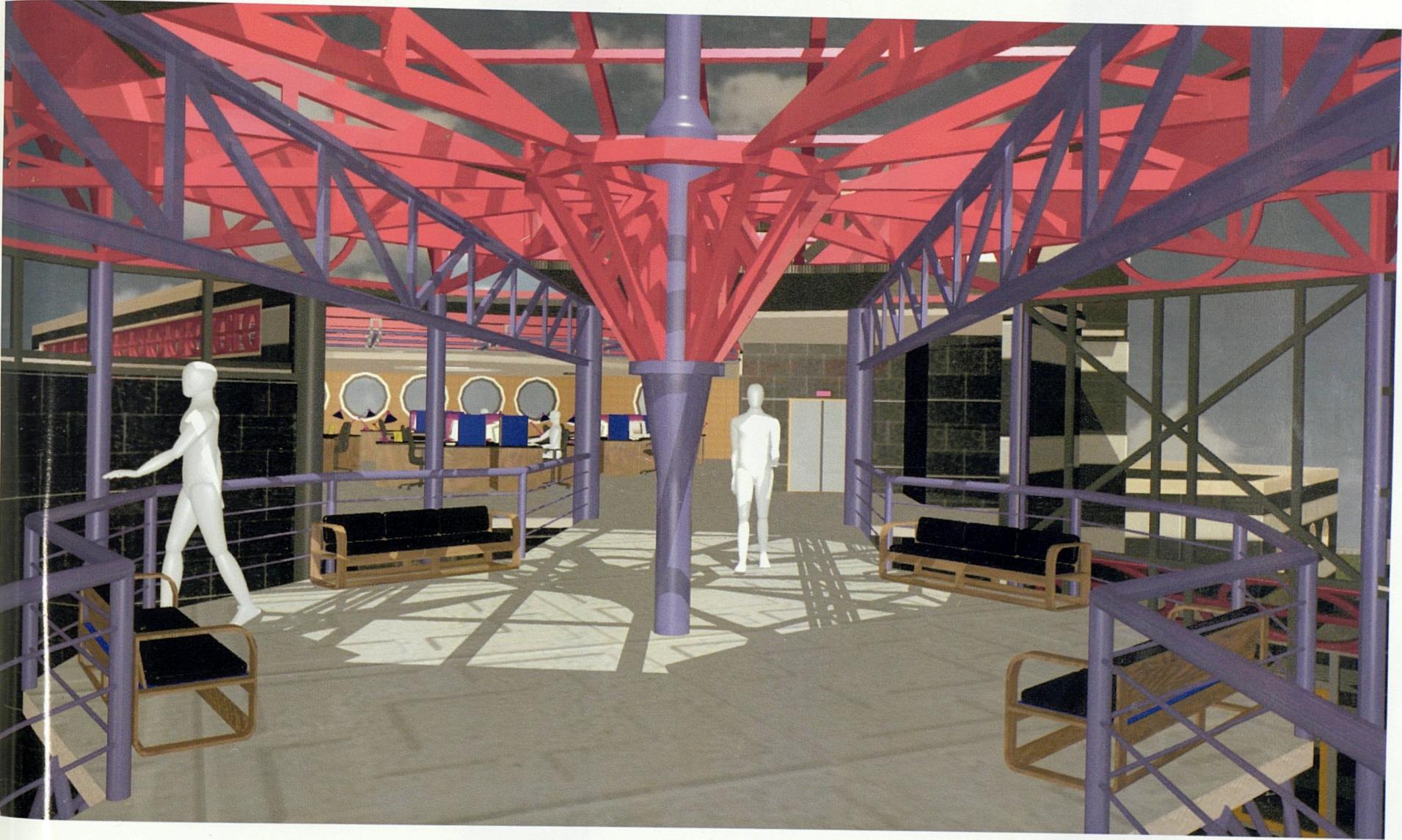


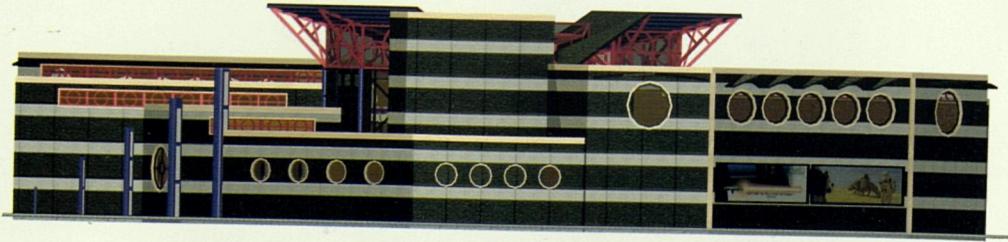
**PIPING SCHEMATIC**



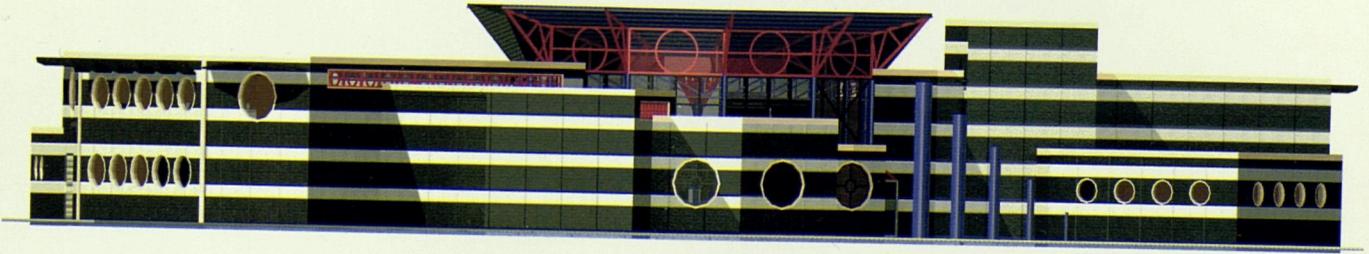




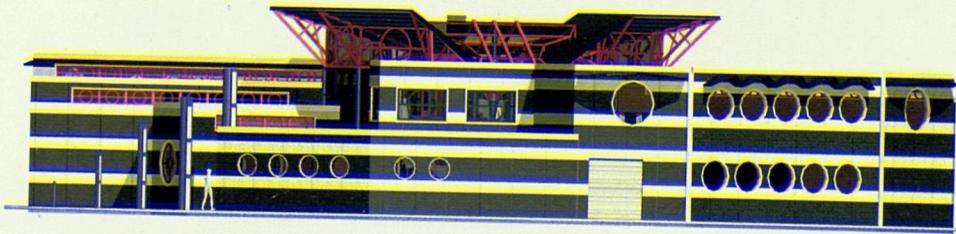




WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION