Stated Meeting Report

Architectural Projects: Current and Recently Completed Work

Frank O. Gehry

I am going to speak of some of my current work, of the basic intentions behind various projects, and, primarily, of the process that guides those intentions. First of all, I would like to say that I believe that architecture is an art. The majority of what is built today is not designed by architects who think of their work as an art. The challenge to work from fantasies, to translate these fantasies into a finished building and carry through with the energy of the initial idea, is very difficult. The definition of one's own creative intent is difficult enough, and more so when this intent must also be clearly communicated to so many parties. The search for a real balance between one's intentions, knowledge, and values—and the situation of this search (that is, the client, budget, social issues, construction industry)—make for a very complex equation. It is a process of discovery and negotiation, of remaining open to new resolutions.

It is easy, in architecture, to live in the past. We all have a lot of nostalgia for our historic buildings. Most people feel comfortable living in a little brick house, or a wood clapboard house, or some other known type. I am not immune to that. I like it myself. But I also think that one has to explore living in the present, and I believe it is important to communicate new ideas and discoveries.

Unfortunately, the marketplace, in our time, edits us all out. You just don't get buildings built (unless you are very rich and can

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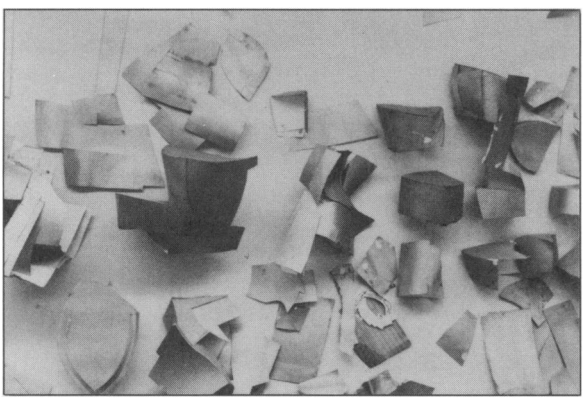
afford to build them yourself) without being responsive to numerous issues. The development of a project, from aspiration through process to result, is the development of forms and of a language that resolves those issues and maintains the force of the original idea. This is not to say that architecture is a unilateral project. It needs clients and people who have desires and needs, and I have found that when I engage the client, I design my best buildings. In order to work with a client, I have to explain myself as the project develops, so that it does not appear to be so mysterious.

I was once introduced to a scholarly gentleman from Princeton who asked me if I had nightmares; people often have that reaction when they look at my buildings. After he heard me talk about the process of designing architectural structures, he realized there was a little more to it than that. I communicate my ideas to clients through models and drawings, which help me to describe my purposes as clearly and directly as possible. This increases the likelihood that I will succeed in achieving buildings that they and I like. I tend to be very thorough in the process: I carry it as far as possible, and allow it to carry me as far as it can. It is a nonlinear, sometimes endless process.



Guggenheim Museum, Bilbao

When I finished school with a planning background, I believed that becoming an ar-

chitect was an act of social responsibility. I did not want to do rich guys' houses; I wanted to work only on big plans. There were not many opportunities for that sort of work around, and certainly those who had it did not want to hire characters like me. I dealt with what I got, and soon got what I deserved, and that was that. I accepted my lot optimistically and worked with what I had, making it what I chose to make it. It was in this context that process became very important to me. I was interested in what artists were doing, how they were working with materials and craft, and consequently I learned a lot from them. I wanted to deal with people who were making buildings, I wanted to engage them, which is not what we are trained to do as architects. I wanted to break down those barriers, which will take two more lifetimes.

I am a slow architect. I take a long time to create, so the thought that I simply toss my building ideas into the air and watch them land is the furthest thing from the truth. My own house shows some of my approach; over the years, it continuously develops. Originally, it was just an old traditional house. Then I built a new house around it and played with using cheap materials. I had tried previously to do fine workmanship and find ways of making things with beautiful details. However, when I started as an architect, I didn't have the kind of clients who demanded that, and at the same time I found a culture lacking in a decency in craft. My friends in painting and sculpture were using junk and cheap materials and making beautiful art, and I was lured into exploring that idea.

I became fascinated with the idea of building in a sense of movement with static materials. Historically, there are a lot of references. At the Parthenon, Phidias played with that idea—not in the building, but in the sculptures. And the Indian Siva figures are extraordinary, if you look at the best ones: when you look away, you are sure they moved. That has always fascinated me.

Whether it is important that I have gone this way, I don't know, but I do relate it to the fact that we live in a fast-moving time. Things are changing very quickly, and perhaps there is some relevance to it in this sense. Architecture is about a need to build something more than a dumb box, and this need is what I call decoration. Every architect has his or her way of applying decoration. If you were to look at the building costs at my office, or at the firm of I. M. Pei or Richard Meier or Cesar Pelli or any other architect of note, you would see that approximately the same percentage of the budget is spent on the decoration of the building as on its basic construction. We all do it differently, of course, because we each have a different language. In my case, the decoration—for now—is this sense of movement, achieved through the use of building materials.

Early on I became known for building with chain-link fencing. I was interested in the denial of materials prevalent in our society; things like chain-link were being manufactured and used in great quantities, yet people hated and denied them. I used chain-link with the intention of making it acceptable and trying to express its beauty. Instead, people became even more angry with that idea. For some reason, this denial continues to hold a strong value.

The work that interests me now has to do with collaboration: with developing relationships with other talents and surviving with one's ego intact; with speaking one's own language and having one's own firm beliefs and ideas within the context of a collaboration. I like to work with artists and even with other architects.

Cities are complicated. The kind of buildings that were done just before and just after World War II by one single architect—the giant malls, towers, enormous complexes like Rockefeller Center—are overwhelming. The city is about a different kind of thing today, politically and urbanistically. Democracy

does have an impact. Now the city is more open to a number of ideas. I think the idea of collaborating and trying to make something happen is a positive thing.

I worked with Claes Oldenburg and his wife, Coosje van Bruggen, on a building—for the Chiat/Day Agency in Santa Monica—and I took a leap of faith. When you are commissioned to do a building, you don't want to give it away to other people, but I gave Oldenburg and his wife the front door. It ended up becoming a pair of binoculars. I knew that if a photograph of this building were published, it would show the binoculars, not the entire building. Sure enough, two books have been published with cover photos of the binoculars only, leaving the rest of the structure out—but I never think of it as anything other than my own building. The collaboration worked.

To get closer to the building trades, I agreed to do an exhibit in Washington with the Sheet Metal Workers Union of America, an organization for which we built a fairly complicated structure. The union is connected to metal workers around the world, and they have agreed to provide me with technical assistance wherever I go. They have lived up to that agreement, most recently on a project in Bilbao, Spain. They have helped me to work within my budget and still achieve the forms I want. This collaboration has certainly made possible some of my successes in the use of metal materials.

I am fascinated by fish. There is a story about my grandmother and the fish in the bathtub, but my fascination with fish really has to do with their movements: these beautiful architectural shapes flip their tails and make all kinds of beautiful, subtle, extraordinary balletic moves. I started to play with their shapes, study them, make artifacts. Then I began using the images of fish in motion as tools to try to understand how to build multicurved shapes. During design, I use these artifacts as place holders, indicating

the intent of the movement I want to achieve. Slowly, these pieces evolve into forms that finally resolve both the pragmatic and sculptural needs of the project.

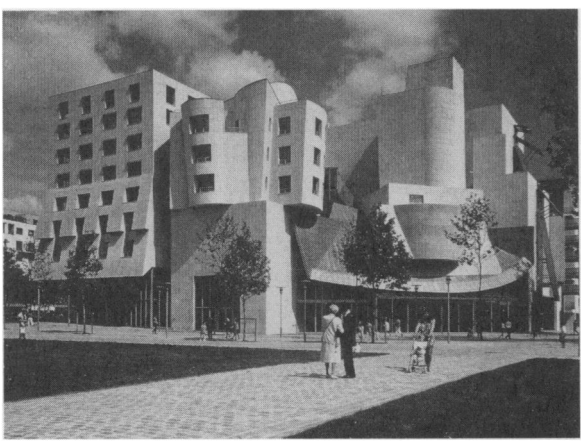
At the University of Iowa, we built a block of concrete clad in stone, for laser experiments. The offices are very crystalline, in metal, in the spirit of crystals on the river. The support facilities to the complex, which required no windows, are contained in a very smooth curved shape. I was able to make a sculpture of it, and it is either a fish or a boat or something of the same family.

The fish keeps rearing its head and getting bigger and bigger. A friend of mine—Bruce Graham, the Chicago architect—designed a hotel in Barcelona and asked me to do a small fish sculpture for it. I took the language of his building's exoskeleton as the language of the project. The piece grew and became a fish-shaped trellis. How to build it was interesting—and very difficult to represent by conventional drawing and descriptive geometry techniques. We contacted Dassault Systèmes, the French company that builds the Mirage Fighter, and they taught us how to use CATIA, a three-dimensional modeling program they developed for airplane design. It's the same program that Boeing used in the design of the new 777. Our entire office is wired now, but back then pieces like the fish trellis were very difficult to understand and represent. We linked up with the manufacturer and builder in Barcelona and got them into CATIA. We talked to each other through the machine. The process led from a formal intention to the investigation of very sophisticated computer systems in order to build these shapes.

Architects often are asked to build additions to existing buildings. I have always thought that if you try to copy the existing building, you only trivialize it. We were asked to build an art school adjacent to the Toledo Museum of Art, in Ohio. The original building is a neoclassical structure with three beau-

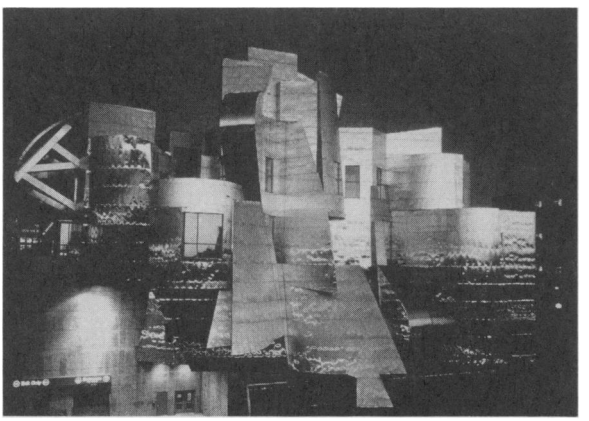
tiful porticoes of white marble. The art school had to be attached. We made the addition very compressed, a series of stacked volumes. We built it in lead-coated copper, which does beautiful things with the light and works well with the stone of the museum. On the entry side, the building is all glass, and the classrooms all open into a courtyard.

In Paris, at the American Center, the context was also very important, and yet somewhat ironic in the end. The program called for housing, a restaurant and an outdoor cafe, a theater, and a museum. You enter from a park. The buildings in the vicinity were older, traditional, built of a local limestone. I decided to use the same stone for my building and create a relationship with the surrounding buildings, so that on the main street I would be very polite and responsible and hold the line. But when we actually started construction, most of the area, the existing context, had been torn down. By the time I was finished, my building looked like the last vestige of the older French architecture. In fact, a critic wrote, "Why didn't they tear this one down, too?" The new context looks like social housing in Copenhagen. That is the sort of thing that occurs in a fast-moving city; as one tries to respond to the context, it changes, always more rapidly.



American Center, Paris

At the Weisman Art Museum, a small museum in Minneapolis, on the banks of the Mississippi River, the site was a prime consideration. One of my first sketches shows the wrinkled façade on the riverfront. The façade is twisted and turned. It started out as a corrugated plane because the best views are up and down the river, not straight ahead. As we worked on the shapes, the façade became more active in response to the logic of the window openings. The building hooks onto a bridge, so that the approach to the façade is from a distance. The façade deals with the river and the bridge and the city, while the rest of the museum is a straightforward box. The interiors are articulated by the shapes of the skylights, while the galleries are simple and pragmatic. The river façade is clad in polished stainless steel to play with the light. In the evening, when the sun goes down, there is an extraordinary reflection on the façade and on the river. You get this beautiful present from nature.



Weisman Art Museum, Minneapolis

We were commissioned to do a project in Prague, an office building for a Dutch insurance company. The site is on a beautiful square, overlooking the Vltava River. Vaclav Havel lives in the adjacent building. The site was destroyed during World War II, when the Americans accidentally dropped a bomb in

February 1945, and it has been empty since then. It is one of only three sites in historic Prague where modern building is allowed. Havel came in and wanted to fix the corner.

We didn't want to copy the nineteenth-century façades, but the entire area is nineteenth-century, beautiful and intact. The existing buildings were articulated by implied towers, shaped elements, bay windows, and domes. I decided to use these elements to develop the shapes for our project. One problem was that the floor-to-floor height, because it is a modern office building, is very short—only nine feet. The building next door and all the adjacent buildings contain only four or five very tall floors, whereas a modern building of the same overall height contains seven or eight. I wanted my building's windows to blend into the context of the surrounding structures' windows, which vary from building to building; all I could do was move one window all the way up to the ceiling and the next down to the floor. This movement of the windows helped tie the entire street front together by denying one single insistent horizontal line. Playing with this rhythm, we were able to activate the façade and still respect the basic composition of the street.

For the two tower shapes in that building, we made many models, trying to find the right line. At one point the glass tower looked like a woman's dress. The Czechs are very against representation and proud of their sense of the abstract. The model had a certain look, simply as a circumstance of the model making. I pinched it in at one point because the window in the building next door has a view of the castle across the river, and we didn't think our tower should block it; that wouldn't be very neighborly. So we made this cut, and the model looked like a dancing figure. The Czechs named the glass tower "Ginger" and the other tower "Fred." The paper published an article stating that Frank Gehry was bringing Hollywood kitsch to Prague. Of course, I never intended this.

ING Office Building, Prague

The design had to be approved by a public referendum, so I was asked to appear at the castle, before a large audience, with people on my right who were for me and people on my left who were against me. Irving Lavin, the Princeton art historian, was sitting in the audience because he had gone there with me. When I made my speech, I said the design had nothing to do with Fred Astaire and Ginger Rogers. Irving put up his hand, and they acknowledged him. He said, "Architects don't know anything about what they are doing. Of course it is Fred and Ginger. Of course they are dancing. They are making love on the banks of the river." He went on and on and on. And they applauded. Everything was all right. I nearly killed him. So it *is*

Fred and Ginger. You are allowed to call it that now, thanks to Irving.

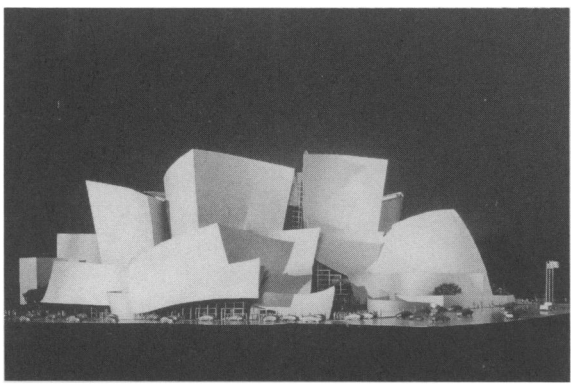
We produce a lot of mock-ups, full-scale studies, some of which are very awkward looking. We study the parts that will be the most difficult to build—the worst pieces, whether that's because of structure or color or details. We look at each part full-size and then change the details to solve the problems. We use the computer to lay out the structure and to study its assembly. The computer has allowed us to more easily understand the complexities of a shape and to study rational ways of building. We are trying to use the computer in the design process as well as in building construction. For example, the computer often enables us to have pieces of a structure prefabricated in the shop and then delivered to the site and erected. Windows are also being prefabricated and then installed as complete units. This capability for involvement in the construction process allows us more freedom and budgetary control. We now can propose solutions from both the design and construction standpoints and more clearly communicate our intentions. We can thus achieve something special even within very strict parameters.

For the public transit system of Hannover, Germany, we built a small bus stop. I like to work on projects of different scales. My work on small projects, especially in furniture, allows me to experiment and to work out new ideas quickly. The city invited ten architects to do bus stops around the city. The buses are painted green and white, so I used green and white stainless steel panels for the canopy and galvanized steel for the support structure. The panels flow over the structural frame, like the scales of a fish. The piece is very light; it almost floats. That project was developed using CATIA. The bus stop was built completely in a factory near Venice, Italy, and then disassembled and shipped to Hannover, where it was erected in one day. The city liked it so much that we were commissioned to

build a bridge for Hannover's trains. It too will be stainless steel—a simple curved shape about 400 meters long. The tracks will be flush with this stainless steel plate. People go on the bridge only in the train, so from the road you will see only a sheet of stainless steel that crosses the landscape, with green and white trains going back and forth on it. At one point the bridge lifts up over an underpass at the entrance to the Hannover Fair. The client requested an acknowledgment of the fair, so we designed curved wings of metal, a kind of opening gate that floats above the tracks at that point.

The Walt Disney Concert Hall in Los Angeles is a controversial project now because it has started and stopped. It has been held up not because of the design but because of poor management. I wanted to achieve a real sense of movement in the building. It is a large structure set in an even larger context. The hall is surrounded by towers, and I wanted to activate that environment. The walls became evocative of sails. The client wanted stone—and it is very difficult to build stone walls to follow these shapes. The most difficult pieces are very subtle; it is hard to see that they are curved. Each piece has very little shaved off it to make the curved façade. In order to define the curved surfaces, we digitized the design models. The computer analysis of the forms produced rational patterns and cutting templates. It showed us how many pieces of each type we needed and how to combine pieces to achieve the designed surfaces. It also enabled us to monitor the costs closely. The budget allowed us only 5 percent compound-curved stone—that is, curved in two planes—and about 45 percent stone curved in one plane only. The remainder of the stone had to be flat. By combining these three types of stone in various radii and arrangements, with the aid of the computer, we produced the forms we wanted, within the budget. We used the same program to drive the cutting tool that cut the stone.

This was a breakthrough for us because it put us in control of the process of cost management. Architects, for the most part, are treated like children, and contractors are treated like parents. With the computer, we are starting to reverse that; we are going back to being the parents in the equation. I think the responsibility really should lie with the architect. The insurance companies are excited about this; they're saying, "Gee, somebody wants to be responsible!"



Walt Disney Concert Hall, Los Angeles

For the Disney project, we studied several prototypes, especially the Concertgebouw in Amsterdam, the Boston Symphony Hall, and the Berlin Philarmonie. We interviewed two acousticians. One, in Germany, had done the Philarmonie; he said to make the stage wider and to make the walls wider at the stage. The other, a Japanese acoustician, suggested the opposite. We were puzzled. I had the great idea of inviting them to have dinner together with us, because each said he respected the other.

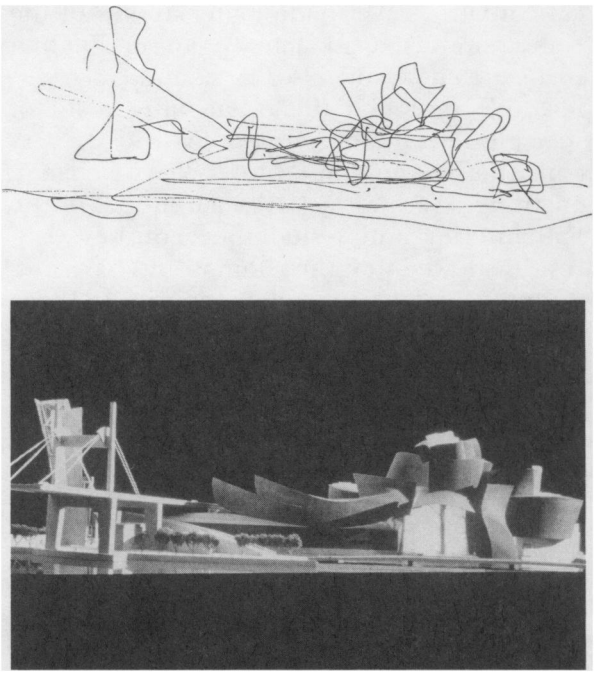
The Japanese, Dr. Nagata, and the German, Dr. Kraemer, sat opposite me at dinner. We asked them questions, and they absolutely, totally disagreed—but each said that he respected the other and that the other was the better acoustician. It finally disintegrated into a knock-down, drag-out brawl, and Dr. Nagata won.

However, we still patterned the interior after that of the Berlin Philharmonie, with a surround stage. I had the idea of designing the hall interior as a kind of "barge," built entirely of wood, on which people play and listen to music. We wanted wood not because of its acoustic properties but because it conveys a certain psychological character associated with the instruments. In the Disney Concert Hall, 300 of the 2,500-person audience will be able to sit behind the orchestra, as in Berlin. The box surrounding and holding the barge will be of white plaster, and people will enter it at four points.

The basic design is a synthesis of curved, sculptural shapes within a regular, symmetrical container. We made many studies of the ceiling in order to achieve an undulating surface that would also be acoustically perfect. We designed the organ after a lot of struggle with the organ people, who are very conservative and don't want to let you change anything. We built a 1:10 scale model of the hall interior and tested the acoustics. The results showed that the room would have outstanding acoustics, equal or superior to those of the best halls in the world. I heard Mozart's Sonata, electronically speeded up to compensate for the one-tenth model size, as though it were being played in the hall. I am not sure of that simulation's accuracy, but in acoustics, nothing is a sure thing. At least we know we are close enough to be able to perfectly tune the hall when it is finally built.

We are currently building the Guggenheim Museum in Bilbao, Spain. The project is a collaboration between the Basque government and the Guggenheim Museum in New York. Our office was selected to handle it after an invited competition involving two other firms. The site is very tough aesthetically and, at the same time, very beautiful. The riverfront context is industrial, set in a wonderful green valley that helps offset the toughness. This environment is especially enticing to artists.

In designing the building, I had to deal with the character of the river, which curves and goes under a bridge, as well as with the bridge itself and the surrounding urban environment. My intent, with the client's complicity, was to continue the toughness of the riverfront and use images of boats. We aligned the entrance with the main street in town and then pushed the building to the riverfront. The clients had asked for a tower that had no functional use except to mark the bend in the river and relate to the city hall, which is quite distant from the site. With this gesture, the museum locks itself to the bridge and also sets up other relationships with the city.



Guggenheim Museum, Bilbao

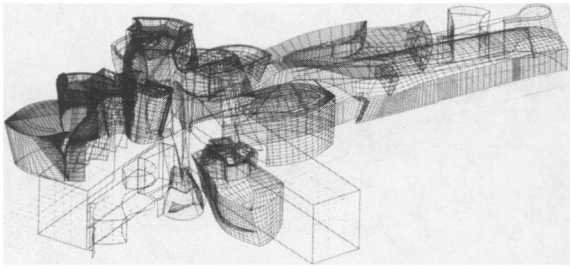
My first sketches, which often end up looking like the finished buildings, were turned into preliminary models, done impressionistically. As we started to make the building work, the Guggenheim and the Basques became very involved. They requested a big central space, reminiscent of that in Frank

Lloyd Wright's Guggenheim in New York. But in the Bilbao museum, they wanted it to be bigger and more adventurous—not so much a place to hang art as a place to provoke artists. Of course, they also wanted a lot of traditional galleries, as well as provocative galleries with which living artists could interact. The latter galleries would be given over to six or seven artists into perpetuity. Each artist would select a gallery and set up a show, and there it would remain, really linked with the space in which it would be viewed.

Guggenheim Museum, Bilbao

As always, we first built rough models that were endlessly changed and studied. All over my office, I had pieces of various façade patterns hung on the wall; it looked like a tailor's shop. Slowly, the models evolved, and when we got to versions with which we were happy, we digitized them into the computer, refined the shapes, and played back the images. I don't like the aesthetic of the drawings produced by the computer. I use them only as tools to develop the shapes. Each piece of the structure was developed with the aid of the computer, and because of this control, the steel framing costs came in at 18 percent under budget—pretty amazing when you're building a complicated steel structure in a foreign country.

I worked in two or three scales at once, forcing myself to think of the real finished



Guggenheim Museum, Bilbao

building as I worked. Models and drawings are very seductive; you get lost in them and forget where you are. If the drawings and models are too beautiful, sometimes you can fool yourself. By forcing yourself to change scales, you stay real.

For the final design, a model was carved by a mandrel run by the computer program. We used this model to visually check the shapes and ensure they were exactly as we wanted them, as well as to monitor and set up the structure. This is a $100 million project, in a country with a different language, far away from our office. With the computer, we have been able to control the total cost to within 1 percent of the budget.

The final design comprised offices, the main galleries for permanent exhibitions, and three special temporary galleries, which are shaped. The largest temporary gallery is longer than a football field, and it can be partitioned to create a series of rectangular spaces. All the shaped galleries can also be subdivided in a fairly rectilinear manner. The regular spaces are for the artists who are no longer alive; we figure they can't protect themselves, so they should have stodgy galleries.

We researched lighting intensely for this project. In the galleries, we decided to use theater catwalks for the lighting in order to optimize flexibility. We have been developing a special fixture with Rambusch and have spent a lot of time refining various other types of light fixtures. In some of the spaces, it is a real challenge to develop fixtures and a lighting scheme that can provide even illumi-

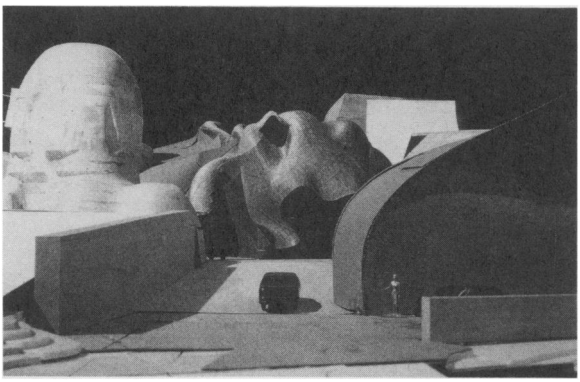
nation. Especially in the temporary galleries, we want to provide the opportunity to modify the lighting quickly. At the same time, we don't want something too complicated and precious. The catwalks provide a viable alternative and also often help scale the space.

The atrium space, which is about twice the size of that in the New York Guggenheim, is very exciting because of the fluidity of the shapes and forms. It is an extraordinary space—a little bit of Fritz Lang's *Metropolis*, which I sort of pushed when I saw it going that way. I want to put a hologram of Frank Lloyd Wright in it, looking disgusted at what he sees. The main space is illuminated by skylights and a huge glass wall facing the river. The exterior metal skin, covering the curvilinear forms, will be titanium, a light metal. Bilbao is a steel town, and we wanted to reflect that by using a tough, durable material. We were able to get a bid on titanium that matched the cost of stainless steel. The rest of the building—the more orthogonal pieces and the plaza—will be clad in stone.

We have worked a long time on a house for a client—ten years, to be exact. It has been like having a MacArthur grant. He never really intends to build anything; he just pays for different studies, fantasizes living in them, and then changes his mind. Several months ago he persuaded us that he was getting serious about building, so we completed a scheme to build. The plan includes a dining room, living room, den, master bedroom, kitchen, and garage, totaling about 28,000 square feet. There is also a swimming pool, as well as a conservatory filled with sculptural shapes that form rooms and spaces. My favorite piece, designed by Philip Johnson, looks like an octopus, and others look like the head of an ancient horse skeleton and a snake, and then there are some fishlike pieces. It looks as if they are all holding hands, walking across a hill. We invited Philip Johnson, Richard Serra, Claes Oldenburg, and Maggie Keswick

to design some pieces in the landscape. We really wanted to collaborate.

The exciting thing about the interaction was that it was like a chess game with Philip. He would look at what I was doing and make a move, and then I'd look at it. He knew how to preempt my next move just a millisecond before I made it, and that cut me off at the pass. I had to wait, and then I'd come back and make a move again. It was that kind of dialogue, and it was fascinating.



Lewis Residence, Cleveland

This project allowed for so much experimentation and development. I would love to build this house, but I won't have the pleasure; it will never be built. It is rare to find a client willing to support this kind of study, and I think that over the years, the opportunity to do this formal research, to play like this, has led to the vocabulary of many of our recent projects.

There are a lot of microclimates of talent in architecture and language—in this country and throughout the world. I think a pluralistic society requires all of us to survive, to grow and prosper and realize our talents to the highest and best use, and to help others achieve the same—because we need more help and more talent. A lot of talent does not get through the system. As a teacher, one is keenly aware of that. Around us we see that people are being cut off and isolated, al-

though there appear to be so many more possibilities for expansion throughout the world. It is ironic: most of us believe in democracy, but that system has created a world that looks strange, chaotic, and different, and we do not like it. We are struggling, and it is easier to go back to models that appear more coherent and seductive now. But we have to remember that those models developed in a different time and under a different political philosophy. If we are to survive, we need to live in the present and try to work toward the future. I will reiterate what I have said many times: I could not face my children if I had to tell them I had no more ideas and had to copy something that had happened before. That would be like giving up and telling them there was no future for them.