## Siène Jourda 2001 John Dinkeloo Memorial Lecture

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## Françoise-Hélène Jourda

Taubman College of Architecture + Urban Planning University of Michigan

#### 2001 John Dinkeloo Memorial Lecture

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734 764 1300 phone 734 763 2322 fax www.tcaup.umich.edu

### Françoise-Hélène Jourda An Architecture of Difference



John Dinkeloo on the Gateway Arch in St. Louis

#### Introduction

The annual John Dinkeloo Memorial Lecture celebrates the life of an outstanding American architect and one of this College's most distinguished alumni. John Dinkeloo graduated from the architecture program at the University of Michigan in 1942 and went to work for Skidmore, Owings and Merrill in Chicago. In 1950 he returned to Michigan to work with Eero Saarinen in Bloomfield Hills where he was centrally involved in all of the major commissions in that office. John Dinkeloo played a key role in the design of the TWA Terminal in New York, Dulles Airport in Washington DC and the Gateway Arch in St. Louis to name just a few.

When Eero Saarinen died suddenly in Ann Arbor in 1961, John Dinkeloo formed a partnership with Kevin Roche. That partnership not only completed the remaining projects from Eero Saarinen's practice but also went on to design a series of outstanding buildings. These projects were published internationally and many, like the Oakland Museum, the Ford Foundation Headquarters in New York and the Headquarters of John Deere in Moline, received major design awards in America.

John Dinkeloo was committed to the integration of technology and design. In advancing that commitment he devised innovative building systems, and his curiosity led to the development of numerous new materials which have subsequently become widely used throughout the world. He worked closely with clients and industry while collaborating with fabricators to invent different types of glazing, design thin curtain wall assemblies and pioneer the use of high strength low-alloy weathering steel. His contributions in the field of architecture were widely recognized. He received the Medal of Honor from the New York Chapter of the American Institute of Architects in 1968, and in 1974 Roche Dinkeloo received the AIA Architectural Firm Award.

At the same time that John Dinkeloo's work was internationally acclaimed, it was to inspire generations of architects around the world. As a result it is hardly surprising that for this lecture series we have sought out architects whose work elevates construction to the level of art. It is a series that has brought architects with a passion for design, particular interests in materials and technological invention, and who are working actively in creative practice both in America and abroad to speak at Michigan.

We are extremely grateful to John Dinkeloo's family for their support for this lecture. In particular, his wife Thelma and son Christiaan Dinkeloo, an architect who also graduated from the University of Michigan, have given sustained and generous support, and his grandson Derek Dinkeloo, also a graduate of the architecture program here, has maintained a consistent interest in this lecture series. I would also like to thank Emeritus Professor Henry Kowaleski and his wife Geraldine for their support that also makes this annual lecture possible. Their enthusiasm and generosity are very much appreciated.

It gives me great pleasure to introduce this year's Dinkeloo Lecturer. Françoise-Hélène Jourda graduated from the School of Architecture in Lyon in 1979 and established a practice with Gilles Perraudin, a fellow student. They went on to win a series of international design competitions that enabled them to realize a number of significant award-winning buildings in Europe. Continuing to live and work in the city where they had grown up and studied, they designed new subway stations, housing and the International School in Lyon while also continuing their competition successes for projects abroad. Their work has been widely published and in the last few years was exhibited at the Pompidou Center in Paris, the Royal Institute of British Architects in London and the Architectural League in New York.

Recently Françoise-Hélène Jourda moved to Paris to open her own office - Jourda Architects - and has been designing a number of buildings in Europe. In Germany, she has overseen the construction of Jourda & Perraudin's competition-winning project for the new Educational Center at Herne-Sodingen. This is an extraordinary building that provides for an ambitious mix of uses and demonstrates both a clear sense of environmental responsibility and an inspired interpretation of the tectonic. It is a building that I think John Dinkeloo would have both enjoyed and admired.

Françoise-Hélène Jourda has taught in Europe and North America and is currently Professor of Architecture at the Technical University in Vienna. Her work is preoccupied with design, the potential and properties of materials, and the precision of their assemblies. It is work that demonstrates a genuine belief that design is research and that the creation of architecture is an integrative process. I am especially delighted to welcome the distinguished French architect Françoise-Hélène Jourda as our special guest and the 2001 Dinkeloo Lecturer.

Brian Carter Professor and Chair of Architecture



I am honored to have been invited to give this lecture which celebrates the life of the internationally renowned architect John Dinkeloo. He was an architect whose work I have long admired. It is inspiring work that demonstrates how passionately he cared about the inherent nature of materials, the details of construction and the connections that link them to design. His concerns are also at the heart of my own approach to architecture and design, and so it is a great pleasure for me to be here on this very special occasion to speak at the University of Michigan.

There are however some obvious differences - I am French, a woman and also the mother of four children! But before being a woman, I am first and foremost an architect - that is my life. However, it seems to me that the role of an architect in Europe today is also different from that of an architect at the time when John Dinkeloo was working in the United States. For example, although I graduated as an architect when I was guite young, I decided not to work in an architectural office. Instead I started working with Gilles Perraudin, a fellow student who had studied engineering before training as an architect. We had no work but together we were able to make designs especially for competitions. Competitions have been an important part of architectural practice in France for a long time, but during the eighties new rules were developed to ensure that they were also more widely used as a way of selecting and commissioning architects to design new buildings across Europe. It is an encouraging system that has enabled a number of young architects to design and build a series of outstanding buildings. As Gilles and I were both teaching, we had enough money to live and at first we started preparing designs for competitions for projects in Lyon. However, one of our former professors suggested that we should submit work for international competitions and so we made a design submission for the European Passive Solar Competition. We won that competition and, after giving a lecture about our scheme, were approached by somebody in the audience who we later discovered was from the Ministry of Culture. They were interested in our ideas and subsequently gave us another award. These opportunities were very helpful in establishing our own practice while we were still quite young.





In 1982, three years after I had graduated, we won another competition. This was even more significant. It was for the design of a new School of Architecture in France. The new building was to replace the school where we had studied in Lyon and that had subsequently been damaged by fire. This project was a very good lesson that taught us a lot about working with clients and also how to build buildings. Up until this point, we had designed and built a couple of houses locally and had also won competitions to design new housing to be built of rammed earth at Isle d'Abeau and the La Lanterne school in the new town of Cergy-Pontoise. However the design of this new School of Architecture presented a completely different order and complexity of work.

The 90,000 square foot building was to provide all the facilities for a new school on an existing campus at Vaulx-en-Velin on the outskirts of Lyon. Our proposal was to create a large open design studio in which all of the students could have a space to work. In many ways, it was an idea for a space not unlike your own studios that I have seen here at Michigan. Our design grouped the activities of the School so that all of the classrooms and workshops were located on the ground floor and housed within a heavy concrete structure. This base not only provided an actual foundation for the studio above but also a metaphoric one.

It designated the place in the school where skills and knowledge would be acquired before being developed in the studio upstairs. As a contrast, we wanted the studio to be a large daylit open place where ideas could be easily explored and the design process freely observed.





Consequently, we designed it to be defined by an open but clearly articulated structural frame that supports a light roof. This stratification is broken along the length of the building by a central public street that provides access to all parts of the school and also serves as a space for exhibitions, discussions and informal meetings. The central axis is terminated by a square that contains a cafe and the library and links the teaching areas to an independent building housing the offices for the faculty and the administration.









In the selection of materials and the detailed design we tried to express how the building works. For example, the structural systems at each level are made explicit. The cellular classroom spaces on the ground floor are defined by the mass and weight of the reinforced concrete walls and the vaulted ceilings. In contrast, the studios above are situated within a single open space that is defined by a structural frame made up of glue-laminated timber columns and beams with specially designed cast steel connections. We designed these connections for the project and each one represents an effort on our part to explain how the structural system is working. Each of the elements of the structural frame is clearly articulated. In this way the very different materials and construction systems are made explicit and the performance of the structure is made obvious.

The studio is enclosed by glazed walls that are shaded by a series of external fabric structures. Double glass walls provide additional insulation in summer while ensuring that solar gains can be utilized to pre-heat air that is circulated in the winter. As a result, the design of the building seeks to work with nature and provide good levels of natural daylight, utilize solar gain and take advantage of the thermal capacity of the structure so as to reduce dependancy on mechanical and electrical systems wherever possible. In this way, the building also becomes a teaching device - a way to help students understand the physics of the building. It shows how the different structural and environmental systems work and demonstrates how the choice of materials, design and detailing of these systems has been integrated to inform the architectural idea.





In the same year that the School of Architecture was completed, we designed and built a house for ourselves in Lyon. It was a tiny building by comparison to the School but was a design that also explored the idea of working with nature. The house is simple and inexpensive. There is a tent canopy that is supported on a tree-like steel structure that defines a space within an existing walled garden. Underneath the canopy there is a collection of differently shaped timber boxes and glass screens planned to form a series of rooms.

The building was constructed very quickly – it took three days to erect the steel structure, one day for the fixing of the canopy and then six months to finish the house off because we were building it by ourselves!

We wanted to make this house under a large single roof and to design that roof to create a distinct microclimate. This desire to create a micro-climate is also connected to a social idea. It is an idea that functions well for a house. A house that is designed for a particular family has a uniqueness, but it also provides for a group of independent people who are living together. In this design, the all-embracing roof denotes the unity of the family.





However, under this roof it is also possible for individuals to live their own lives, cook a meal, make conversations and have babies. And underneath this canopy the shaped timber boxes, built from the same wood that is used for making boxes for wine in Bordeaux, underline the different personalities of each member of the family.

The scheme seeks to extend the house by connecting the interior rooms with shaded outdoor spaces and the broader landscape of the garden beyond. In these ways our design sought to be both inside and outside - to weave links with nature.

This concern with nature and the interconnectedness of systems suggests an architecture that is rooted in ecology. This ecological approach is something that is very important in Europe, especially in Germany, and perhaps this is another difference between being an architect in Europe and one in America.

Development in European towns and cities is generally much more dense than in the United States and of course petrol is not so cheap in Europe either. As a result, architects are sensitive to the idea that we must design to protect our resources. However, our interest in ecology is not only to save energy but also to save natural materials and protect the landscape. For me this is very important.





Nowadays we can change the geography, shape mountains, form lakes and create whatever landscapes we want to see. Yet everywhere we also see similar people – people wearing similar suits and ties, living in similar houses and working in the same sorts of buildings that are all built using components selected from the same building materials catalogues. So it is difficult to be sure whether you are in Europe or North America, Africa or Asia. I hate this idea!

As architects we need to understand the culture, the place, the climate and the sites where we are asked to build. And the one thing that we cannot easily change is the climate. Through the consideration of ecological concerns we are confronted not just by architectural styles but by the culture and the relationships between that culture, geography and climate. We consider that, by protecting nature, we are advancing culture and making architecture.



My interest in ecology is prompted not only by current concerns but also by this possibility of making a new kind of architecture. This affects how I have chosen to work as an architect in other ways. For example, after we won a competition to design three experimental ecological houses in Stuttgart, the city wanted to build them as part of the International Garden Exhibition which opened in 1993. The houses were designed according to the climate and created configurations of space that could be used by the occupants differently in winter and in summer. The houses were planned as row housing with each unit consisting of two parts a stone house and a glass house. Both were sheltered by an over-arching metallic roof that was supported by tree-like steel structures. The stone house provided minimal living space - a refuge that could be used comfortably during the winter. The glass house could be used during sunny days or opened up to the garden to provide additional spaces during spring and summer. We were experimenting with different ways of living and hoping to find the means of establishing a kind of nomadism within the house. However, at that time I neither lived in Germany nor spoke German, so I could not be there to see the experiment or supervise the project. The building was eventually completed in time for the exhibition, but after that experience I decided to learn German so that on the next project, I could work directly with the clients, participate more actively in the experiment, be on site and oversee the construction. For me, this is a very important part of how to design and to be an architect.







In the office we try to work on the design of very different things a lamp, a canopy, a house, law courts or a road bridge. We work on these projects at the same time and, although they are at very different scales, each informs the other. We also make many models as a way of understanding our designs and thinking of how they might be constructed. These are important experiences for the people in the office. And while these projects pose a range of problems, they are all based on an idea of design being between

the reality of nature and the artificiality of construction. Perhaps it is the same for us as human beings - that we are increasingly located between the natural and the artificial. **Certainly I think that, in designing,** we can explore those areas between and perhaps as a result, the things we design will also develop a life - buildings will breathe and adjust according to the activities that they house or change dynamically in relationship to their physical surroundings.



As we have been designing, we have considered the idea of being in a natural setting or an artificial one or of being outside or inside the building. So for example, in designing the International School in Lyon, we planned a narrow linear five story building for the classrooms. They were located on four floors and along the south side of the building with stairs, lockers, and the toilet accomodation planned along the north side overlooking the river. This building was extensively glazed so as to provide good levels of natural daylight in the school. We designed specially fabricated adjustable external screens to provide shading from the sun in those areas of the classrooms that were exposed. Using computer programs, we were able to plot the path of the sun across the curving facade and define precisely were shading was required. On the north facade of the building, shading was not required as none of the areas were habitable rooms. A second structure, that consisted of a large roof, provided an open space in which all of the other activities - assembly halls, gymnasia, restaurants, workshops and auditoria could be planned.









That roof, suspended from a series of steel masts so as to provide large column free spaces, was planted with native grasses and wildflowers to create a new landscape. Where these two buildings come together, the design creates a space between the outside and the inside. It is an area with an intermediary climate, yet is a space that can be inhabited. In this school, this space became a covered main street for the students.

This brings to mind the Ford Foundation Headquarters in New York that was designed by Kevin Roche and John Dinkeloo. That scheme create an intermediary space within the building which formed a garden, an amenity for everyone who worked there. For us this garden explored ideas similar to those that shaped the design of our house – ideas that are based, not on making buildings which are always highly insulated, but on the creation of useful spaces between inside and out, and the benefits of placing one building inside another.







The Education Center at Herne-Sodingen in Germany, which opened recently, is a scheme that represents a more detailed response to some of these ideas. It was developed following the announcement of an international competition to design a building that would be the centerpiece of a vast land reclamation scheme for a large site in the heart of the Ruhr Valley. Formerly the industrial powerhouse of Europe, this area had become a derelict, polluted wasteland with all of the attendant social and economic problems. Consequently, the former coal mining area of Mont-Cenis in the town of Sodingen was designated as the Internationale Bauausstellung Emscher Park - a special demonstration project that extended over 800 square kilometers and was to be designed to regenerate the area to bring new jobs and land uses to the region. An extensive new landscape was planned to transform this old industrial site into a large urban park.

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This park was to connect to the existing town center and also include new housing, civic buildings and an 'Academy' within its new landscape. We won the competition to design the 'Academy' in 1992. The building, planned for the Minister of the Interior of Nordrhein-Westfalen, was to accommodate a wide range of uses and be designed not only to change the perceptions of the area but also serve quite literally as a beacon for the redevelopment of the town and the region.

Typically in this part of Northern Germany there are cold winters and relatively cool summers. As a result, we recommended the construction of a large glass house that could contain all of the various activities of the 'Academy' and create an alternative micro-climate under one roof. This idea of the sheltering glass envelope creates a climatic shift. Within this building the conditions are similar to those of Nice, and we suggested that it would be possible to build a series of smaller buildings and, at the same time, create a vast landscaped garden in the spaces between. The very large glassy building that we proposed was to be 75 metres wide, I65 metres long and I6 metres in height. We were inspired by the Crystal Palace – an enormous glass, wood and cast-iron building that had been designed by the gardener Joseph Paxton to house the Great Exhibition of I851 in London – and by Buckminster Fuller's scheme to construct a light glazed dome over New York City.

Unlike these two projects however, the structure of the glass building at Herne-Sodingen is made entirely of wood. Using this readily renewable resource, pine from the region has been dried naturally and used to make rough hewn circular tapered columns and lattice beams that comprise the structural frame. The building envelope is glazed and has been designed to serve as an efficient and highly serviced skin. In designing this skin, a detailed study of the performance of the envelope was carried out by architects and engineers under the auspices of the European Community as a part of the Joule 2 Program.











Community funding for this research on building design and performance was invaluable to us as architects. It sponsored a collaboration that enabled us to design a building that not only created a new micro-climate but which anticipated a 23 percent saving in energy and also generated power rather than merely consuming it. The large roof consists of I0,000 square meters of photovoltaic cells which provide one megawatt of power annually. That power is used to heat water and make electricity for the building, with any excess being sold to the national grid. The cells are grouped in different densities and form cloud-like patterns that also provide shade for the interior spaces while transforming the building into the largest solar power station in the world! Within this glass skin, we have also made use of holographic elements which help to direct light to specific areas within the building. As the building was constructed over former underground mineworkings, we also developed systems to utlize the more than one million cubic meters of diluted methane gas that are released each year, which are used to fuel both electricity and heat generation units.







Exploiting the mine gas in this way prevents the release of methane into the atmosphere and reduces annual carbon dioxide emissions by 12,000 tons. Similarly the rainwater is collected from the vast new roof to be reused as grey water within the building.

In this way, the design underlines the importance of research in architecture. We sought to create a building that substantially saved energy and reduced CO<sup>2</sup> emissions and became a clear demonstration of the benefits of a new modern architecture. Support from the European Community enabled us to work with university research institutes, scientists, specialist engineers and fabricators and to design a building that became a basis for technological innovation and a vehicle for invention.

The building is also a conspicuous civic focus. Within this large naturally ventilated glass house. the idea was to create a series of smaller freestanding buildings which would be dedicated to a range of public uses. As they were inside the glass house and protected from rain and wind. these buildings could be built very simply. They provide a government training center with classrooms, a library, cafe and meeting hall, residential accommodation, recreational facilities, a social welfare center and civic offices. The library, which is sited immediately adjacent to the public entry, is housed within a large conical form. The other facilities are planned in two linear buildings that are organized on two or three floors and sited within a winter garden planned with large open spaces landscaped with trees, gardens, terraces and a pool. By designing a building that creates a Mediterranean micro-climate inside the large glass house, these spaces between are sheltered, warmed by the sun in the winter, and shaded and cooled by natural cross ventilation from opening windows during the summer months. They offer the possiblity of an enriched public life within semi-outdoor spaces that are beyond the defined rooms of the building yet connected to the wider landscapes of the park and clearly situated within the region beyond.









I now have my own studio in Paris where I am currently experimenting further with these ideas – ideas that are influenced by materials and the orders of the natural world but also ones that where architecture is viewed as both research and a civic act. I am still making many designs for competitions and have been lucky that a number of these have been successful. As a result, I am working on the design of many kinds of buildings and on projects in several countries in Europe. This may be a different way of making a practice than many architects in America.

Yet it is one which is aimed at continually developing an approach to design that is rooted in those same preoccupations with curiosity and invention that seem to be so important here in Michigan and which are especially inspiring in the work of that outstanding architect John Dinkeloo.

Françoise-Hélène Jourda.

#### John G. Dinkeloo

John G. Dinkeloo was born in Holland, Michigan in 1918 and graduated from the architecture program at the University of Michigan in 1942. Upon graduation he joined the office of Skidmore. Owings and Merrill in Chicago where he worked first as a designer and then subsequently became the chief of production. Eight years later John Dinkeloo returned to Michigan to join the office of Eero Saarinen and Associates in Bloomfield Hills where he was to become a partner. During this time he was involved in the design of many important projects including the TWA Terminal at Kennedy Airport in New York, Dulles Airport in Washington DC, the Gateway Arch in St. Louis and the Morse and Stiles Colleges at Yale University. Following the sudden death of Eero Saarinen in 1961 John Dinkeloo formed a partnership with Kevin Roche, becoming a partner of Kevin Roche John Dinkeloo and Associates in 1966. This practice was to become one of the most distinguished architectural offices in the United

States and – with the completion of projects such as the Ford Foundation in New York , the Headquarters for John Deere in Moline and the Oakland County Museum in California – became a practice whose work has been internationally recognized.

John Dinkeloo was responsible for the development of thoughtful, elegant and highly original systems of design and technical innovation. These included the use of structural neoprene gaskets, new glazing systems and high strength low alloy weathering steel in exposed structures of buildings. In 1968 he received the Medal of Honor from the New York Chapter of the American Institute of Architects. Six years later the practice received the Architectural Firm Award from the American Institute of Architects. In 1955 the Ford Foundation Building was selected for the AIA Twenty Five Year Award. John Dinkeloo died suddenly in 1981.



John Dinkeloo 1918-1981

The John Dinkeloo Memorial Lecture was established at the College of Architecture + Urban Planning as a recognition of his extraordinary contribution to architecture and to honor the work of this distinguished architect from Michigan and highly respected alumnus of the University of Michigan. The John Dinkeloo Memorial Lecture has been delivered by architects who are internationally recognized for their work in practice.

#### The John Dinkeloo Memorial Lectures

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#### Acknowledgments

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Françoise-Hélène Jourda helped to prepare material for this book and we are grateful for her assistance and that of her colleagues in the office in Paris. We are also grateful to Françoise-Hélène Jourda and Gill Perraudin for so generously allowing the use of the drawing and photographs of the buildings that they have designed.

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# Françoise-H