Design Center, Linz, Germany. 1989-1993. Herzog + Partner. General view of the congress and exhibition hall with light transmitting roof. (photo: Dieter Leistner, *Thomas Herzog*, Prestel: Munich, 2002).

parsons students interview thomas herzog

Luis Berríos-Negrón, Jarrett Boor, Brina Goldfarb, Harriet Grindel, Tim Paul Milton, Federico Negro

The German architect, Thomas Herzog, has generated international attention and regard for his innovative mediations of technology and nature. Combining a highly refined aesthetic approach, groundbreaking technological research into material conservation, and an acute awareness of historical precedents (many of which have been forgotten), Herzog has redefined the role of the architect. Herzog was at Parsons in April, 2003, to give the Michael Kalil Annual Lecture on Natural/Technological Systems*, and *Scapes* interns took the opportunity to interview him. Herzog is a Professor at the Technical University, Munich, where he is also the Chair of Building Technology. Since 2000 he has also been the Dean of the Faculty of Architecture at the Technical University. He is also a member of the advisory board of the Fraunhofer Institute for Solar Energy Systems, Freiburg, Germany. Documentation of some of his projects and academic research follows the interview.

Luis Berríos-Negrón: Here at Parsons there is an attempt to develop an approach to sustainability across our whole curriculum. Among other things, do you feel that pursuing sustainability will enhance the civic and public presence of the architect?

Thomas Herzog: Such pursuits must enhance the presence of the architect because such competencies are essential for architects. It is a question of mankind's future survival. The first question is who is responsible for the environment, and who is responsible for the manmade environment in particular? The second question is who will pursue these issues? Part of this manmade environment is building. And who is responsible for building? At least two, maybe three parties. One of these is the architect, another is the client, and another is the society represented by the state bureaucracy. Even if the title of architect is eliminated, somebody will still be responsible for the building as a whole. The design and realization of a building cannot be subdivided because a building is a whole organism. It was Plato, 2400 years ago, who said the architect is the one who tells the others what to do. It could have been another figure who achieved dominance, but historically it became the architect. Someone has to be responsible, if not, everybody will suffer.

As far as I can see, in the developed countries there are many, many places where this kind of responsible thinking is taking place. And by the way, there are many possibilities to earn money, to not only do research and be paid for this kind of work, but to do development on new kinds of products. It's much more interesting than to just make forms and then ask engineers how to realize them. I think it's crazy, I mean, if you are interested in building, in the sense of envisioning in three-dimensional space and considering the qualities of material construction, you are necessarily interested in the knowledge on which design is based. So you have to have the technical knowledge. You can't make music without mastering the piano or the violin. And you have to be on the upper level; if not, the others will tell you what to do! [Laughter]

Federico Negro: How have your experiences in building helped you to introduce the issue of sustainability into the classroom?

Herzog: When I started teaching in 1973, in Kassel, I was the youngest professor of architecture in Germany, 32 years old. At that time, students were very skeptical of a professor who had a professional life in addition to teaching. They had very naïve sayings – there should be no capitalistic interests… you must work only with the students… students must be well trained, etc. After a while, they understood that if the teacher didn't develop, there would be no quality. And I remember it was about two or three years later that the students would ask "Do you have a practice? Do you practice as an architect?" And if you said, no, I don't, they would respond "I'm not interested in you, because I don't want you to tell me what you have done ten or five years ago, I want to know what is being done now, because after a short while I will be out in the work world." So I think this is one response.

Another response, on an individual, personal level is that I always wanted to make things. Not that many, but things I was interested in. That's why I used the university as a training center, or as a field to do research. Because when you work as an architect, you are not being paid to do research. The client asks for a perfectly working building, inside the budget, and on time. So there isn't the possibility to do research on the job, unless you have, say, a large company with departments for research and development. If the building budgets and the practice are large enough, then each of the industries involved may produce what you want. I remember that many years ago when I was in Chicago, S.O.M. people told us that they could get whatever materials or products they wanted because they had so much work that industry would follow whatever they were interested in. But this situation is different from what I have been able to do through the university, because these developments are still carried out by industry, not primarily architects.

I think it is essential to get feedback from the experience of practice, to know what kind of substances should be developed. I mean you can tell students about practice, but that's not the same as your own experience. That's why I always argue for students to go out and work somewhere. Because normally the university does not really simulate practice, even though you can talk about the practice. I mean when somebody tells you a story, you might memorize the story, but it's not your own experience. It's narrative. What you can do at the university is to teach students methods and what is needed in the profession, and this is long-lasting knowledge. It's much better than talking about the current style because after two years that style will pass to give way to the next thing.

I was very influenced by the work of Frei Otto, but I learned that I wanted to do my own work a bit differently. Frei Otto did tremendous work in the research and development of lightweight structures. While he was doing research into tents and membrane structures in a serious way, he was guiding us young guys, and at the time he was responsible for the development of the construction of the German pavilion at Expo '67 in Montreal.** But on the other hand, he never practiced as an architect in a conventional sense. So there were always others who followed through in reality, who were in the real battle. He didn't have to dirty his hands. He fabulated fantastically. He was a great man, like Bucky Fuller. But he did not carry out the ideas personally, and that was not what I wanted to do. I wanted to see ideas through to completion being in the position of a free professional.

Tim Paul Milton: I read in a recent article that you build with location in mind and allow the outer skins of your structures to flex with the changing conditions. What advances do you see in construction materials, such as glass, wood or concrete? And how do you see them changing and adapting in the future and encompassing environmental and ecological aspects into the materials.

Herzog: One of the most important things, which I hope will become clear in my lecture tonight, is that it is not enough to refer to local conditions by reacting to the local climate. When you think about sustainability, you must also consider the program, and think about the lifespan of the building. The lifespan of what we call the sub-system is a very complex and important issue. It is the major aspect, I think, in the issue of sustainability. In a very large object like a building, the embedded energy, and the materials used should last. Recognition of this fact calls for structures that are adaptable. If you seriously consider this problem, you must avoid any fashionable, spontaneous action. Mankind has invented other disciplines to do artistic things. And I

Left to right: Thomas Herzog, Luis Berríos-Negrón BFA '03, and Brina Goldfarb M.Arch '04.

Left to right: Harriet Grindel M.Arch '05, Jarrett Boor M.Arch '05, Lavinia Herzog, Thomas Herzog, Brina Goldfarb.

think that for me it shows how primitively many architects work, and how primitive many clients and their marketing strategies are, when they consider being different to be the major issue. For me, I think it must also be better if it is different.

A building's major requirement is to separate the outer climate from the inner one. We can't stay outside all year long, so we need to be protected and we need to have a certain level of light, humidity and temperature. Once this is achieved, what takes place within and without can change. Take a space like the one we're in. I'm sure a lot of things could take place here - you could dance, you could have a restaurant, you could have offices, you could have a school, you could have a hospital. I've been to the German Academy in Rome, which was built for artists, but after the war it was used as a hospital. The major characteristics of a building structure should work well in the long term, but you can't presume the future, because you don't know what it will be. You can't think of the human being, let's say within one hundred, or two hundred, or five hundred years. Maybe some fashions and demands will change, but if you build in an intelligent way, good buildings will be able to respond.

We have other opportunities to show our individuality. Make a movie or dance in a different way, or light a building in a different way. But never base a building on that. Don't create for publication. Because journalists don't know anything about architecture, they look for difference. And in a little while they will ask for the next big thing. These last two decades have developed in a completely wrong way. Many architects are without character. Focusing on the next new thing because it is the way to success, to be published in the journals.

Jarrett Boor: How does sustainability fit into constantly changing, or constantly perceived to be changing economies?

Herzog: From the very beginning it was wrong to argue that the use of solar technologies should not cost a dollar more than other systems. The client sometimes wants to spend money for something that is not really a necessity. Polished granite from India for example, nobody could say that is a necessity. But I know of cases where people have said, why only three centimeters, why not five, it is more solid? So one could say that if it makes sense, and it works aesthetically, then why not use panels that collect renewable energies?

Another level, concerning economy, is that one has to have the freedom to plan and shift the sub-budgets. Consider a double-skin façade. Its use is becoming quite fashionable, and therefore has become quite risky because every architect who wants to be considered progressive is trying to use double-skin façades, and through that some projects have posed problems that have raised the costs. But let's say you know why you want to use a double-skin façade. You have two options. One option is to use up your entire budget on this and not have enough left over for the other elements of the building. The other is to say I will have the money for this double-skin because its functionality will permit me to logically cut out some other element. So, for example, when we did the Hanover tower, the double-skin eliminated the necessity for a suspended ceiling and a double floor for insulation. This permitted us to add additional stories within the originally prescribed height of the building. And that meant a higher profit, and the client understood that. This approach is necessary, because otherwise you can't add anything to the original equation. Clients often say, you have this money for the staircase, this money for the façade, that for the structure, and do what ever you want, but stay within these prescriptions! I think the kind of strategizing we did in Hanover is necessary, because it is much more convincing than saying the architect's additional mental energies result in a higher cost. In that case, clients can say, well I agree, and I voted for the Green Party, but in this case it's my own money… [Laughter]

Brina Goldfarb: The word sustainability is often used now as a blanket term for what might otherwise be called "the good society." Implicit in the notion of the good society, and to some extent within the notion of sustainability, is a critique of capitalist labor relations. When I hear you speak of inventing new materials and forms, thinking critically about technology, it calls to mind the Arts and Crafts movement. At that time there was a notion that in re-thinking the techniques and technology of industrial society, one could revalorize the work of the artisan, the worker. To what extent do you see the new experimentation taking place within the sustainability movement as both working within the capitalist system, but also looking to reinvent it?

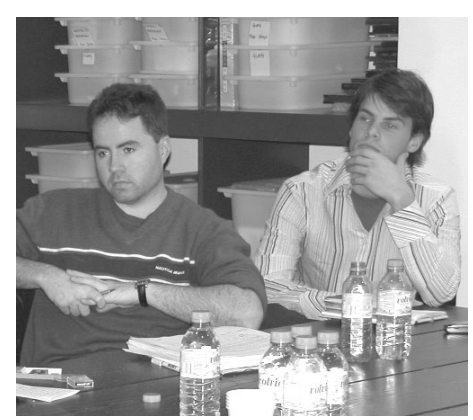
Herzog: It's not easy, you know, not easy. Of almost everything that mankind has invented throughout thousands of years, each tool could be used to improve life or it could be misused and destroy society or the individual. The general options made possible by evolution and industrialization should not be forgotten, what individuals learned through the effort to survive. When we think about building or the production of everyday objects – the work of industrial design – work must be oriented according to human categories. That's what I think is the top priority. On a schematic level, on a philosophical level, on an aesthetic level, on the level of ergonomics, we must always consider what is healthful, what is best for human beings.

This should be much more than the work of a craft, of the development of something that is produced only once. It could be the development of something produced a million times, or even more. This ambition then asks for perfection, it asks for reflection, it asks for real development, not just immediate fabrication. All coordination between, let's say, the brain, the hand, and the eye should concentrate on the development of prototypes. We must focus on how to competently develop something for the first time, and then on how to improve it. In order to develop a product in the best way, you have to deal with technological processes, with logistics, with material science. These aspects must be present from the beginning on, but they must not play the largest role in the beginning. And this is not a negative process - the production is there, and the technology is there, and they can be controlled. The responsibility of the designer is much higher than that of the person who is responsible for a single object that can be thrown away if it is undesirable. The quantities involved in building are very meaningful.

What was missing for a long time was the question, what will become of the object after its use? Recycling becomes an issue. There was no interest in this question because neither the designer nor the producer was held responsible by society. Now they are. It was not that long ago in Germany, for example, that factories were built that take back used products and retrofit them. And those that are competent in doing so earn more and more profit. It's a marketing argument, which in this case fits quite well with environmental issues. So there are options, but we have to have the freedom as architects to develop solutions, to start with programs but without a specific solution in mind. That's a fight I've fought many times, even with good-willed people who have set ideas about what are the right solutions. And this cuts off the spirit or any kind of creativity. It's a bureaucratic approach to tell an architect what should be one result of his work.

Harriet Grindel: How do you see society's acceptance of sustainability as having changed over the last thirty years, and how do you see this change continuing into the future? Do you see sustainability continuing to become more acceptable?

Herzog: You mean acceptance by society in general? From kindergarten on, it's now understood that it's a question of the future, and it's not a question of fashion shifts. On the level of global communication, everybody knows it. There may be many approaches, but inside our field, I believe in pioneer action. I believe in the quality of pioneer buildings, and the importance of the influence of pioneering prototypes. We must make transparent the result and the actions, the methods, so that everybody who is willing can follow.



"I am often asked what it is I find so fascinating about technology. I always answer by saying that the artistic potential must proceed from a command of technology; that this is by no means a tedious, irksome matter, but something that should be fun. In this respect, the instruments available to the architect are being extended. In the past decade, enormous progress has been made in expanding the range of tools for the planning, calculation, simulation and above all the visual representation of buildings. But critical competence is also required in selecting and applying these instruments."
Thomas Herzog, Architecture and Technology

So there are no secrets. The best society is an open society, a transparent society. That was my feeling from the beginning, and that's why I began to publish. It's necessary to communicate what's being developed so it can be understood.

I very much believe in future options. There are so many developments within scientific knowledge that architects don't use at all. It's incredible. They're there – methods, kinds of analyses, and materials. We have new tools, so much we can do, and each project is a new chance. There are always the normal problems, time problems, budget problems, but in terms of research and production I am very optimistic, I must say. If not, I would stop and do different things. Just to give you a number. In the early eighties, in Freiburg, in the Southwest of Germany, I got involved with the Fraunhofer Institute for Solar Energy Systems (ISE), and there was just a handful of people. There was one physicist who was doing research in this direction, and the Institute gave him five years to see what would come of it. Now they have more than three hundred people working just on solar power, amongst which there is not one architect. Maybe it's not essential but I think architects must be able to work with them. I am doing so and some of my younger colleagues who did their diplomas with me are doing the same. So it's wonderful. All the knowledge is there, all the possibilities. It's like when you go into a Greek restaurant and go into the kitchen and sniff, sniff and ask for a taste. Very often scientists don't know how to apply their findings in this field. It has happened that I have pointed out to them that a particular inquiry they're involved in is not useful, and they should pursue other directions. Freiburg is not the only place this is happening. In Bavaria at the Technical University of Munich, we are integrating our studies within the university and the other disciplines welcome us warmly. I have never in my life had the experience of an engineer or natural scientist being close-minded with regard to expanding the scope of their own discipline. That's why I say that I am very optimistic. There are so many questions, but they must be asked the right way.

Berríos-Negrón: I'm glad that you've based your argument on the question of survival. Hopefully, that's how consciousness about this will be raised.

*The Michael Kalil Annual Lecture on Natural/Technological Systems is sponsored by the Michael Kalil Endowment for Smart Design. The Endowment was established in 2001 at the Department of Architecture at Parsons School of Design, in memory of designer Michael Kalil. Kalil's career crossed over many disciplines, encompassing the work of educator, interior architect, philosopher, scientist, and artist.

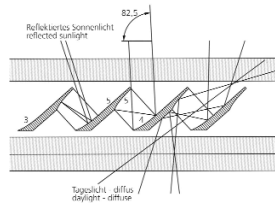
**Frei Otto helped to pioneer purely mathematical, computer-based methods for developing the shape of roof structures. He also developed the modern convertible roof type, in which variable geometry permitted the roof canopy to be extended or retracted at will.

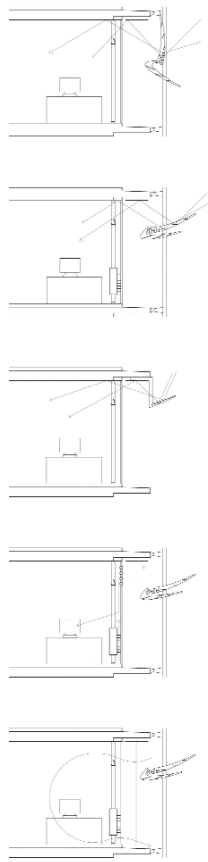
Left, Tim Paul Milton MALD '03; right, Federico Negro M.Arch '04.
Photographs: Talia Ariely MALD '03

thomas herzog
herzog + partner, munich, germany*

The Michael Kalil Annual Lecture on Natural/Technological Systems

"In searching for the optimum form, it is important not to resort to routine solutions, but constantly to ask oneself, as a member of a creative, responsible and open-minded team, how a solution for a particular brief might look… I think Mies van der Rohe was quite right when he said that one should not seek to reinvent architecture anew every Monday morning. That is neither necessary nor sensible. A society is in danger of falling apart if its buildings, which are also important cultural symbols and sources of identity, consist of nothing but hyper-individualistic details that fail to communicate the sense of a coherent spiritual heritage. Even so, as soon as one treads new ground in social development – in safeguarding human existence – one dare not make the mistake of simply clinging to existing images."





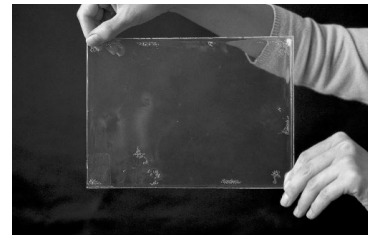
Right, top: Design Center, Linz, Germany. 1989 -1993. Herzog + Partner. General view of the congress and exhibition hall (photo: Dieter Leistner), and diagram of roof. The volume of air in the hall is reduced to a minimum through programmatic modulation of internal height via roof section.The light-transmitting roof uses a material developed in collaboration with Christian Bartenbach - a plastic retro-reflecting grid, which allows indirect radiation to enter the building, while direct sunlight is screened off.

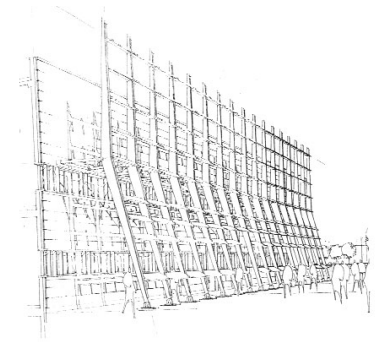
Left, top: Guest Building for the Youth Education Centre, Windberg, Niederbayern, Germany. 1987-1991. Herzog + Partner. View of timber-boarded front facing the village (photo: Dieter Leistner). Spaces used for long periods of time are heated and lit with solar energy and daylight through the use of translucent thermal insulation, among other materials. Thermal energy is distributed throughout the building based on orientation and temporal, programmatic calculations. Vacuum-tube collectors on the roof supply energy for hot water.

Left, bottom: Extension for the Supplementary Pension Fund of the Building Industry, Wiesbaden, Germany. 1994-2003. Herzog + Partner. View from west to the dining area (photo: Robertino Nikolic). Planning laws were exploited to articulate a spine structure with four office tracts set on top. The resulting programmatic flexibility allows the building to resist obsolescence. Timber cladding includes thermally insulated panel construction. Ventilation flaps control the natural intake of air. Fixed triple glazing with an inert gas filling is used for thermal insulation. In winter, a small convector on the internal face preheats the intake of external air through the ventilation flaps. The development of this element was supported with funds form the German Federal Foundation for the Environment.

Right, top to bottom: Extension for Pension Fund. South face, daylight deflection when sun shining; south face, daylight deflection when sky overcast; north face, daylight deflection when sky overcast; centrally controlled natural ventilation; natural ventilation with open ventilation flaps.

Left: Wall Elements. Thomas Herzog with students of architecture, University of Kassel, Germany, 1976. Prototypes for foam or air-filled wall construction, involving determination of optimal production methods and surface materials. Observations of weathering followed for seven years.





Above: Photovoltaic Canopy in the Commercial Zone of South-East Erfurt, Germany, 1999 - 2001. Herzog + Partners. Research by Roland Krippner, with Peter Bonfig. This metal canopy was attached as part of a rehabilitation of an industrial hall. Since the construction work had to be executed in a number of stages, the photovoltaic installation was made independent of the façade plane. The aim was to achieve a robust yet slender column construction, a small number of connections, and low-cost fixings, which would allow the work to be executed by local firms. As well as regulating solar energy, this canopy creates a landmark visible over a great distance.

Top three: Light-Transmitting Building Components. Dissertation research, Helge Hartwig, supervised by Thomas Herzog, TU Munich**. Views showing thermally induced change in diffusion. Thermotropic layers in the outer skins of buildings can be used to control the transmission of radiation. This research was supported by the German Society for the Advancement of Scientific Research.

Above, bottom: Non-Image-Forming Concentrators for Sunshading of Buildings. Dissertation research, Thomas Kuckelkorn, supervised by Thomas Herzog, TU Munich. This research is based on the use of the optical structures of compound parabolic concentrators. Sunlight can be reflected away from the building to avoid overheating, while diffuse zenith light is deflected into the internal spaces.

Above: Solar Research Station at the Technical University (right side), Munich. Herzog + Partner, 2000. A major element of the work carried out within the architecture department at the University consists of practical investigations in the context of dissertations, and research and development projects. The program for the station required the creation of a raised platform with ideal sunlight conditions. The south façade can be removed and replaced so that various façade systems can be tested. Quantitative data can be obtained using small, true-to-scale models.

Left: Multi-Tower Solar Plant (right side). Dissertation research, Philipp Schramek, 1997-2001, supervised by Thomas Herzog, TU, Munich. Towers are laid out so that respective heliostat fields partially overlap. A multi-tower solar installation represents a new form of solar-tower plant, which can be erected as roofing over open parking areas, and large, flat-roofed buildings.

* All images and text in this section are from *Thomas Herzog, Architecture and Technology* (Prestel: Munich, 2002). This book accompanied the exhibition of the same name, originating at the Deutsches Architektur Museum, Frankfurt, Germany. Captions are drawn from the book, to which the reader is directed for extended discussion about projects.

** Dissertation research is conducted by students with engineering degrees, who receive a doctorate upon completion of dissertation.