

# THE MUSEUM OF THE BUILDINGS

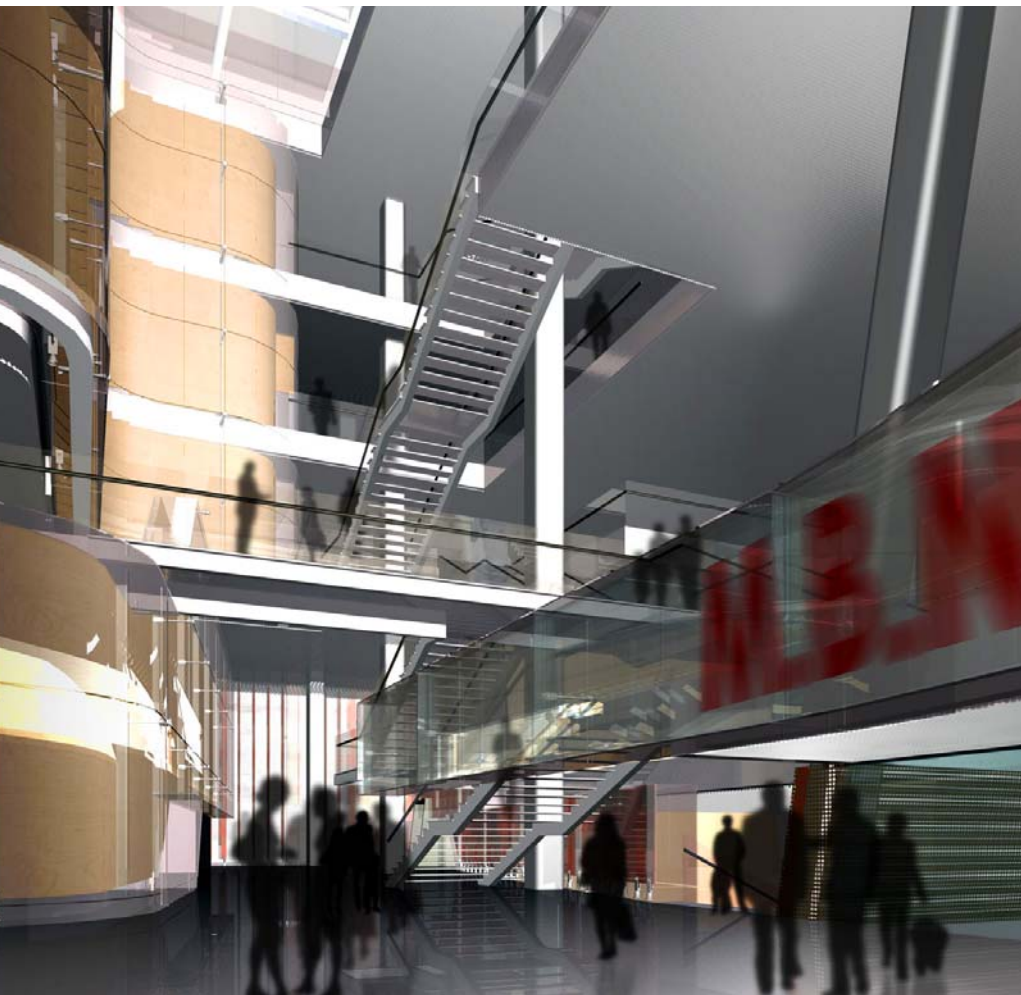
in New York City

by Bart Chui

The broad and ambitious title of this project offers the opportunity to investigate into the relationship between the city (urban design), the building (architecture), and exhibition design (interior architecture). The three fields all deal with spatial problems in very different scales. The ultimate goal of this project is to break the barrier between the city and exhibition design through architecture.

In this project I attempt to utilize digital media in the design process for the first time. **form•Z** has been used as the tool to visualize the design ideas in very early phases and helps design-decision-making throughout the entire process. The first design study through **form•Z** is to figure out the building's relationship to its immediate context. I first built the model of the maximum building size according to the zoning code. After

compromising with the program and with a goal of looking for a massing scheme coherent with the context in mind, it is placed in a digital site model, and manipulated through both subtractive and additive operation. The relationship of the building and its adjacency is the best illustrated by the day and night view and the elevations. It can be interpreted as an appropriated agglomeration of adjunct buildings.

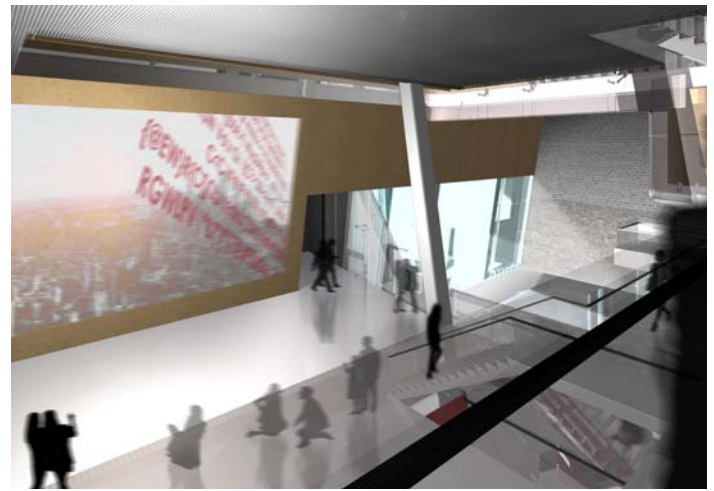


View 1

After forming the preliminary massing scheme, a hole connecting the two ends of the site is carved out. It forms the public corridor on ground floor, recreates a cross block transparency and provides the medium for intense urban activities within the building. The media skin on one side invites people to go behind and step up the stair to enter the museum (view 1). Another triangular space is carved out perpendicular to the corridor and forms the entry to the museum. As a welcoming gesture, the slanted wall of the triangular space creates an illusion of a heightened room, which provokes the feeling of walking in the canyon of skyscrapers in New York City. It is also used as a projection wall for moving images, bringing information of the city to the visitors. The space frames the existing brick wall of the neighboring building as a part of the exhibit. The juxtaposition of an old wall next to a new structure provokes visitors' imagination and contemplation on the history of the city (view 2). As the visitors proceed from the public corridor to the triangular space, and eventually into the museum space, the series of events are linked up by a monumental staircase soaring from the ground floor to the top floor. This strategy ensures clarity of circulation. It also gives a constant reference back



View 2



View 3

to the major spaces while visitors are roaming in the museum (view 3).

As the design develops, **form•Z** also helps to determine the construction details. It turns out to be the most important feature in connecting the content of exhibition to the city.

As a museum, there is certainly a need to present delicate artifacts or projection images in a contained box, very much

like in an art museum. But more often the exhibits need to be presented in a certain context as a reflection of actuality, just as a building should sit in the city for a full reading. Sometimes both strategies need to be employed to achieve a new reading of the exhibits from the visitors. Thus I come up with the idea of an ultimately flexible exhibition space – not the Miesian enclosed, empty white space, but the space with the freedom of either closing out or opening up the interior to the outside world (diagram 1).

It is made possible by the building skin. Its goal is to ensure the control of such connection between the exterior and the interior by actively changing its transparency. A more transparent skin provides more connection to the actual context, while a more solid one makes the interior more detached from its environment. An appropriate transparency can be adopted depending on the nature of exhibition. Sometime the exhibition material is presented together next to a view opening to the exterior at the end of the room (view 4, wall on the left), or sometimes the materials are simply presented in a totally confined room (view 5). The skin also wraps around the building and folds to form the interior lining, defines galleries of different sizes and gives subtle changes to the continuous space. It is not only introduced as the external envelope, but also as an active interior spatial divider, such as the media skin wrapping over the public corridor on ground floor mentioned before.

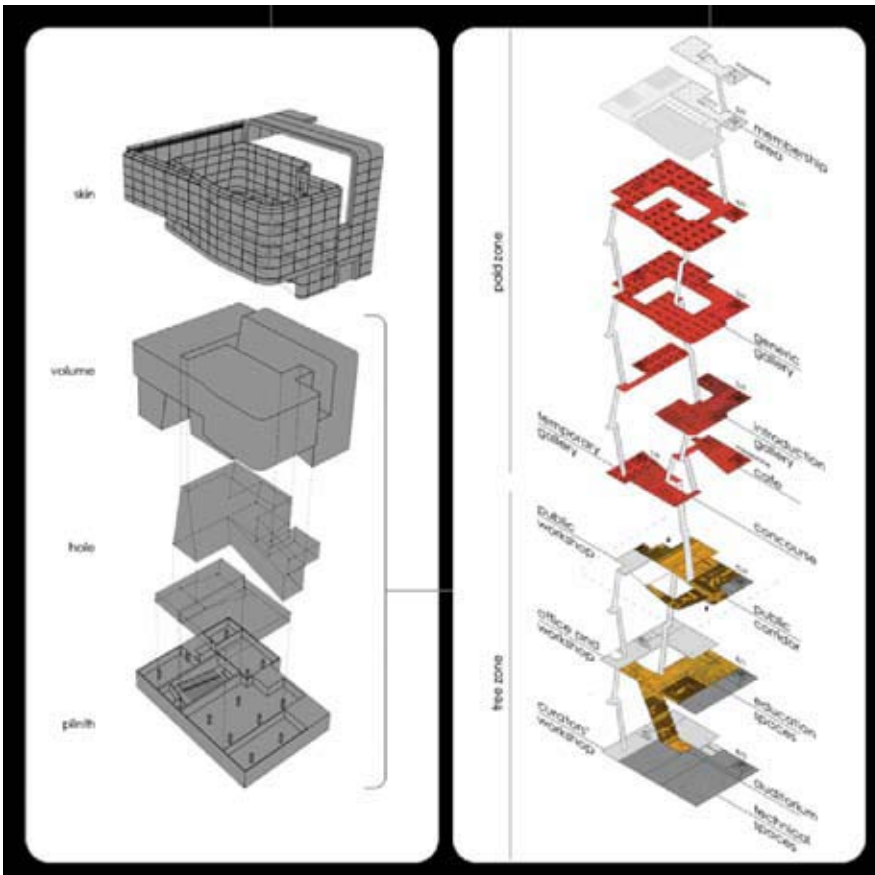
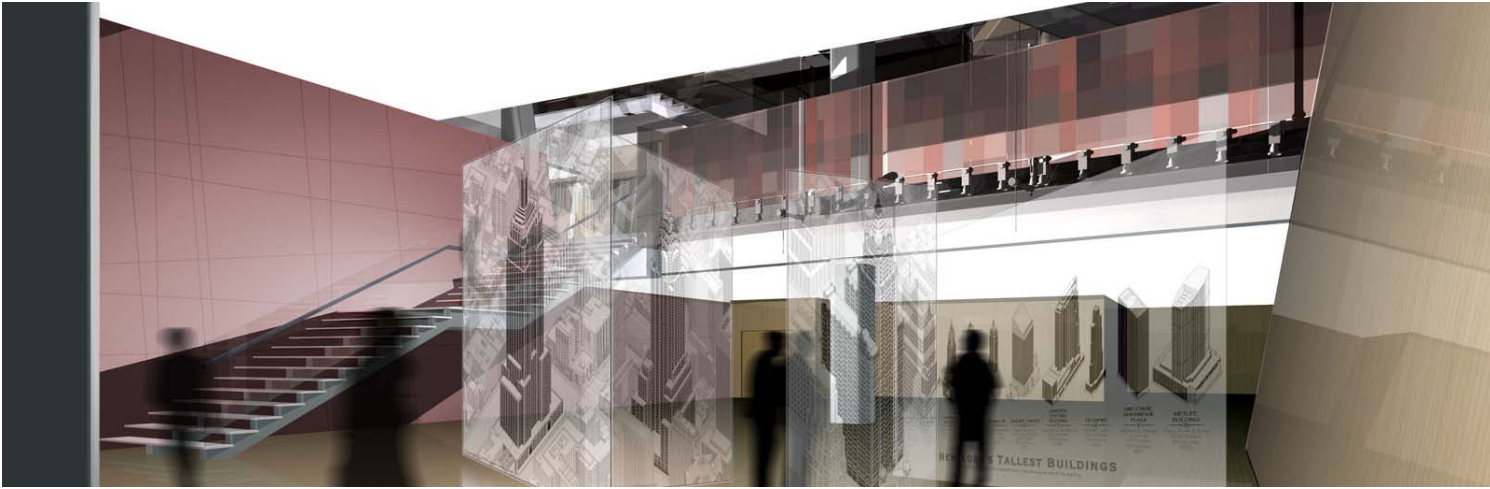


Diagram 1

The skin is a triple layer construction controlling penetration of natural light and view (view 6). The vertical fins, slotted in between the double glazing, are operable by turning and sliding. It controls the relationship between the exhibition and the city as discussed above. It also regulates the interior lighting quality the atmosphere of the gallery space. I am pursuing a gentle, natural light that penetrates into the building when the operable fins are opened. The design and actual construction of the skin is investigated through modeling in **form•Z**.



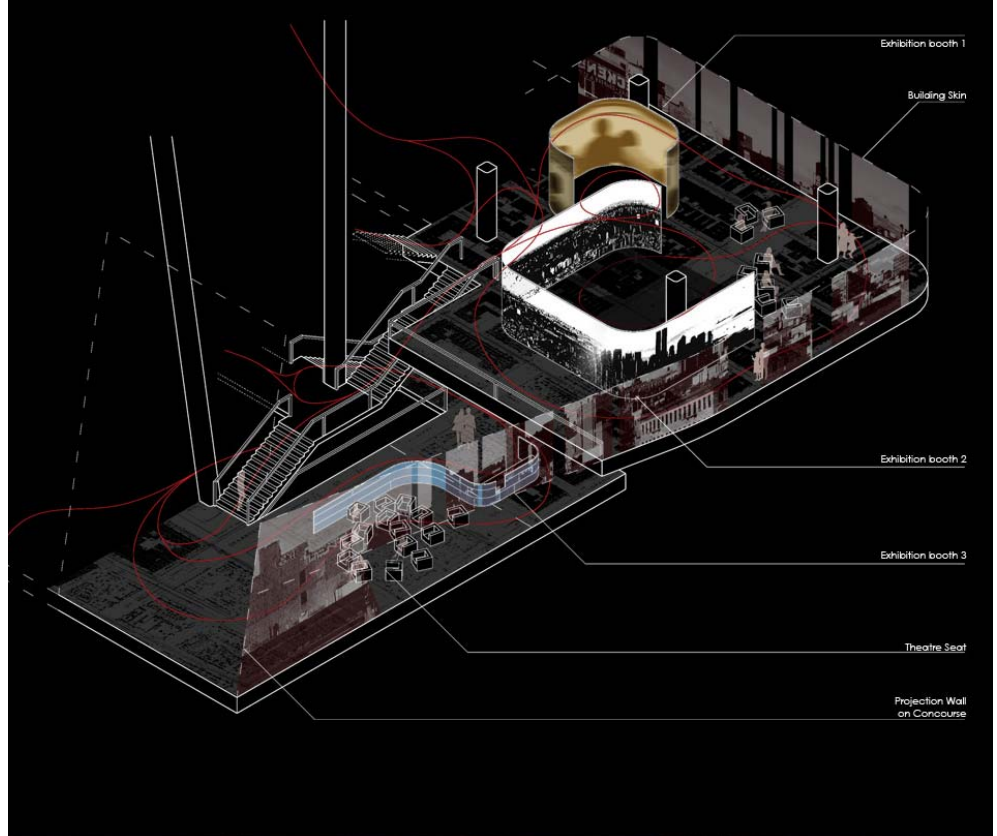
Views 4 and 5



Top to Bottom: East, West, and South Elevations

To achieve the desired lighting quality and figure out the appropriate member size of the operable parts, I first finish the basic design in sketches, which is translated into preliminary vector drawings. **form•Z**'s modeler enables a freedom in altering the members' dimension easily. As an experiment, a series of models with different member sizes are generated. Then the operating mechanism for the system – rotating, sliding, and retractable members, are tested and animated.

**form•Z**'s rendering engine, **RadioZity**, is capable in predicting lighting quality to a high degree of accuracy and thus is used as an investigative tool to emulate the interior lighting. After entering the fixed parameters to the program, including the opacity of glass, the time and the site's longitude and latitude, a series of animations are generated. Rendered images that were produced (but were lost in a computer crash and are not shown here) depict the intensity of the light, how far the shadow penetrates into the space, and the most interestingly, how the interior shadow pattern changes as the light source moves etc. Through trial-and-error, constant discussion, and convincing renderings, an appropriate dimension and operation mechanism for the skin can then be determined. It actually also suggests a certain floor height to floor slab ratio for such lighting condition to



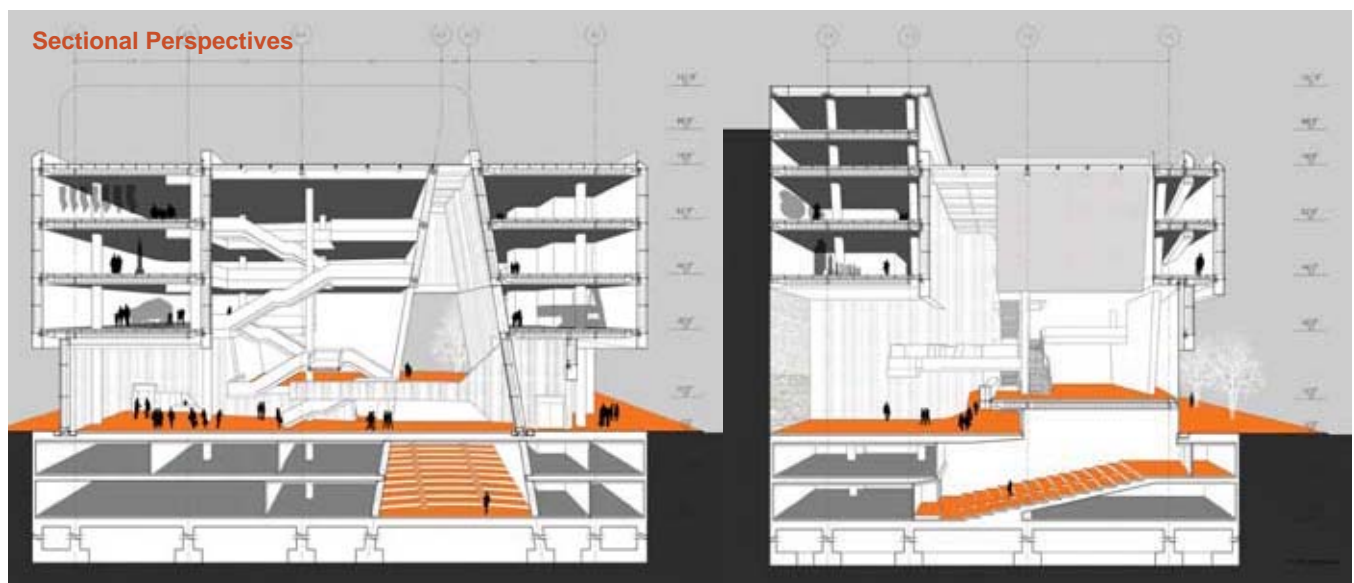
**Diagram 2**

occur, which in turn refines the basic massing scheme and influences other design decisions, including placement of building service core and circulation pattern.

With the help of **form•Z**, the goal of the design – to bring exhibition design and urbanism together through architecture – is achieved through the massing strategy and the transparency of skin. Apart from design-decision-making, the

program also helps in illustration and analysis of design ideas. The sectional perspectives and organizational diagrams are the digital model in 2D vector drawings exported to other vector-based programs. They are extremely effective in conveying design ideas.

To conclude this exercise on digital design in this short paper is difficult, but I am very glad to incorporate **form•Z** into my design media tool box.



Day View



Night View



Interior View from a Physical Model



Exterior View from a Physical Model



**Bart Chui** received his BA Degree in Hong Kong University and Master of Architecture Degree from University of Oregon. He has been a teaching fellow at the University of Hong Kong (2004-05) and University of Oregon (2006), where he taught a digital media course and was visiting studio critic. Mr. Chui has received numerous design awards, including the Student Design Achievement Awards from Society of American Registered Architects, and an honorable mention in the international design competition jointly held by NTT DoCoMo, Inc. and Shinkenichiku in 2007. He currently works at John Friedman Alice Kimm Architects, Los Angeles. Mr Chui is interested in architectural conservation and sustainable urbanism. He was on the team on application process of Macao to world heritage listing in 2005, and has participated in several international conferences, including the International Association for the Study of Traditional Environments (IASTE) in 2002, and Modern Architecture of Asia Network (mAAN) in 2001.