

# Digital and Analog Strategies for Design Studio

BY THOMAS FOWLER, ASSOCIATE PROFESSOR

## INTRODUCTION

In a third year design studio, assignments are crafted for students to refine skills in both digital and analog media tools (physical modeling and traditional drawings), to allow them to see the advantages and disadvantages of both, to develop a critical attitude towards media and to develop a design project using these tools. Students start out the quarter participating in a week-long group warm-up diagramming exercise that allows students who are not as familiar with **form•Z** to learn how to use the software in the context of completing a design assignment. Groups are arranged with students who are familiar with **form•Z**, along with students who are not. These groups of no more than four students collaborate and the students who are least experienced with the software are exposed to a fair amount of the software navigation as the student or students who know the software assists in this process.

Students in the process of developing their individual design projects for the quarter use the diagramming and modeling strategies learned from this warm-up exercise. Early individual design exercises are exploratory and students are encouraged to use **form•Z** for its iterative ability and its facility in generating rich graphic vocabularies that are suggestive of spatial character and experience. The use of **form•Z** is balanced with physical model building and traditional drawings to sort out issues of scale and siting. Later exercises such as programming models and 3D vocabulary models, along with sun diagram overlays, require students to translate early vocabularies into working building elements.

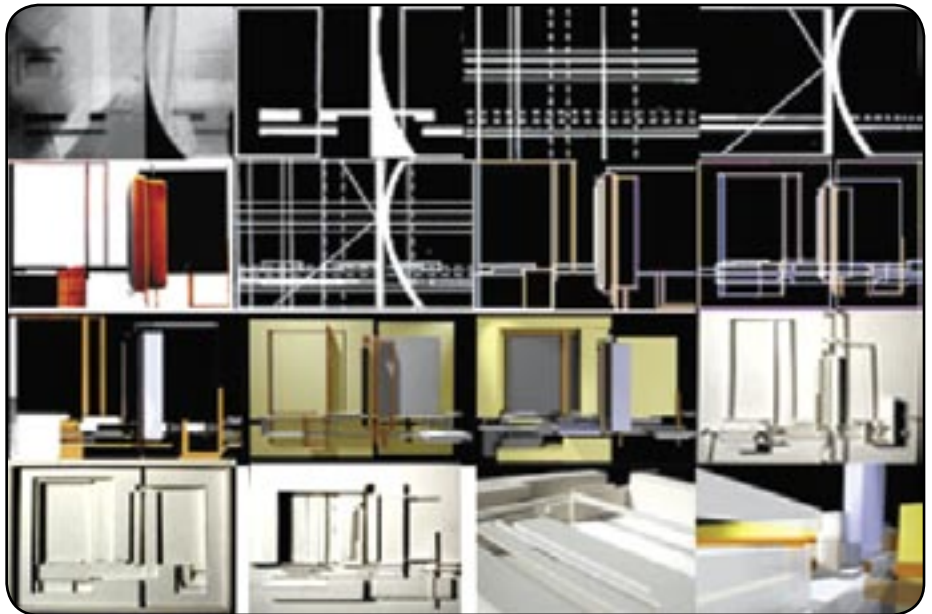


Figure 1: Warm-Up Exercise Summary

### GROUP DIAGRAMMING WARM-UP EXERCISE (Figure 1)

This seven-step analog and digital exercise is based on Bauhaus principles of craftsmanship and visual perception. A strict set of guidelines applied foundation principles of the Wassily Kandinsky method of analytical drawing that breaks a still life composition into diagrammatic forces to express tension and geometry. Each step alternated between analog and digital media. This exercise started with still life images, then proceeded to acetate overlays, to analog/digital diagrams, analog/digital relief models and ended with a spatial manipulation device. The outcomes from these group projects provided a foundation strategy for individual student project processes.

### EXERCISE 01: Poetic Site Readings (Figures 2,3,4)

In this exercise, diagram and relief models identify elements from the context that are significant to the student designer.

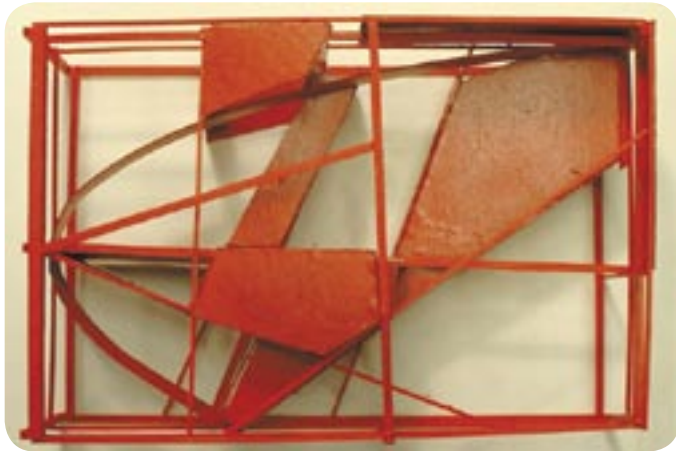


Figures 2,3,4: Poetic Site Readings

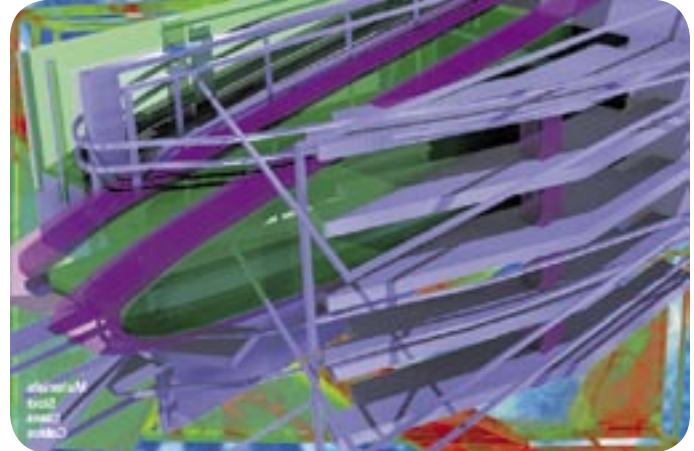
## INDIVIDUAL STUDENT PROJECT PROCESS COMPONENTS

Shown below is a currently in process project (Fall 2005) that shows the analog and digital component pieces for the design project. This is a multi-use project that is sited in New York City. All work is by the third year student Katsunori Shigemi.

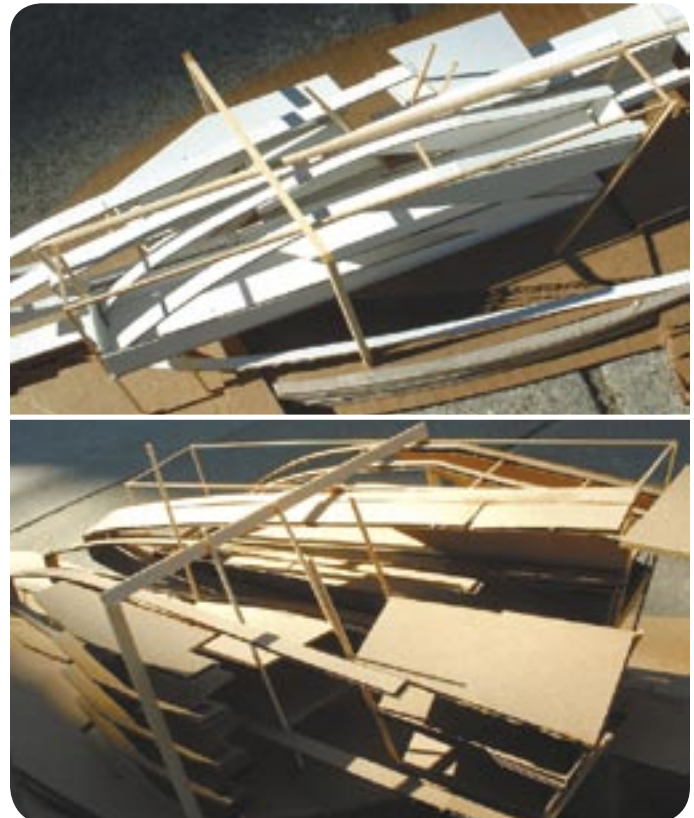
**EXERCISE 02:**  
Analog and Digital Relief Studies of Space (Figures 5,6,7)  
Site diagrams and relief models provide a strategy for exploring the space sectionally.



**EXERCISE 03:**  
Analog and Digital 3D Vocabulary Studies (Figures 8,9,10)  
Sectional relief model studies provide the strategy for exploring the architectural vocabulary of building project.



Figures 5,6,7: Analog and Digital Relief Studies of Space.



Figures 8,9,10: Analog and digital 3D vocabulary studies

## CONCLUSION

Going back and forth between **form•Z** and analog media offers the advantage of revealing more quickly and more clearly weaknesses in a project as well as inconsistencies between a student's original intentions and what is revealed in their work. The successful students quickly make connections to the linkages between the digital and analog components of the emerging process of project.

## PROGRAM DEVELOPMENT

"Amusement Park Voyage" is the concept for my project, which is the Art & Culture center on the south point of Roosevelt Island in New York. This Art & Culture center re-defines the historic island as an amusement park-like structure and is for all ages of people to have physical and visual contacts with art, culture and history through the experiences of the architecture.

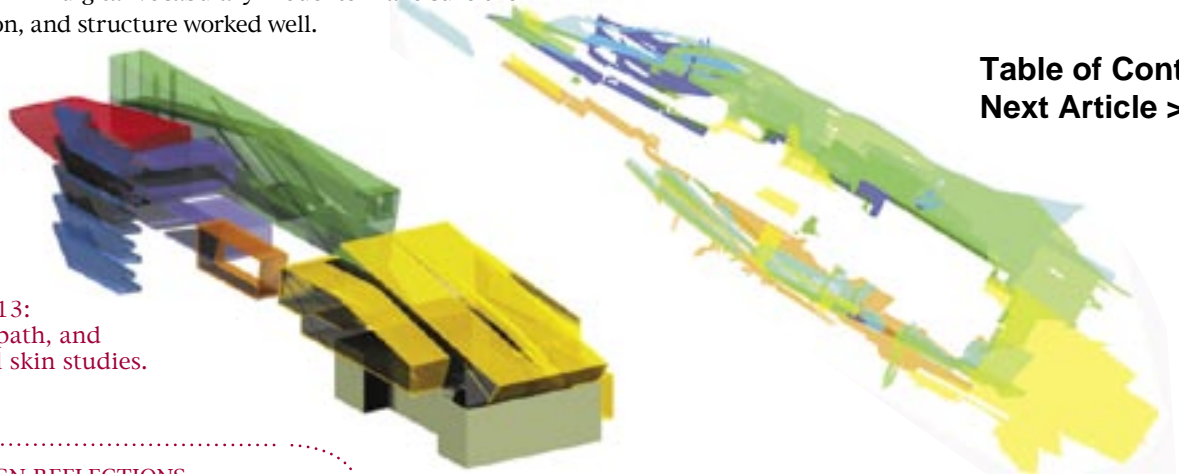


I took two different approaches to come up with the design of my project. One was programming, with placing colored 3D volumetric models in **form•Z**, instead of using the traditional bubble diagramming technique. Because of using **form•Z** for 3D programming of spaces, it was easier to understand the relationships among the spaces. Using **form•Z** for program development is particularly helpful when the structure has multi stories, since you are able to study the vertical relationships of space too. I was able to save a time since also it was quite easy to move and replace the lumps on **form•Z**. The other approach I took was analyzing the site with diagrams and physical relief models (figs. 2,3,4). Changing the scale and cropping, I made multiple line drawings and 8-1/2" and 11" relief models. These analog drawings and models were really significant through the entire program development, because what I needed to do after this was to transform the diagrammatic lines and relief models with **form•Z**. Based on the drawings, I used **form•Z** to interpret the lines and study the composition three dimensionally along with considering the spaces between the shapes. I made three different digital relief models as positive, negative, and hybrid, and this hybrid one (fig. 7) became an important base for the next phase, which was making the volumes of space inhabitable. Considering the program, I stretched, rotated, moved, and repeated the digital relief model in **form•Z**, and then I created a digital vocabulary model (fig. 8). After that, I made an analog vocabulary model based on the **form•Z** digital vocabulary model to make sure the scale, circulation, and structure worked well.

## PROJECT REFINEMENTS

Besides making the analog vocabulary model, I developed cross and longitudinal section drawings with CAD software and exported as a DFX file for further 3D development in **form•Z**. These drawings showed the qualities of the inside spaces and relationships between the spaces. Also I made some diagrams from the digital vocabulary model by simply turning on and off the layers in **form•Z** to study the circulation, structure, and program. This series of digital documentation helped me to study and develop the project further. In addition, changing the color, transparency, and reflectivity on surface styles of **form•Z**, I started to think about the materials. Studying sun path, I decided upon the location of the glazing and sun shade devices. Quickly checking all elevations of the structure based on sun path study, I was able to develop the vocabulary of the building skins, so they all worked with the specific orientation of the site. Also, **form•Z** allowed me to look inside the spaces so I was able to reflect the outside of the structure inside regarding the interior vocabulary of the spaces.

**EXERCISE 04: Program, Sun Path and Developmental Skin Studies (Figures 11,12,13)**  
 Programming, sun path, and skin study models are developed from architectural vocabulary models.



Figures 11,12,13:  
 Program, Sun path, and developmental skin studies.

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## PROJECT DESIGN REFLECTIONS

What I learned in the first week warm up group project (fig. 1) was the importance of switching from analog to digital media as a way to understand the advantages and disadvantages of using particular tools to understand my project. The one thing I discovered when I first ventured into the design of my project was that it initially was too much of a physical model driving my design investigation. As a result, what I got was a generic vocabulary, which was simply extruded from my foundation analysis diagrams and relief models. In contrast, when I did develop a digital vocabulary model to work in tandem with the physical one, my project benefited from using the physical model to understand the whole of the project and the digital model to explore the project immersively along with being able to develop the details of the skin of the project. The floating and infinite 3D space in the white or black background makes my mind more open and free than when I work with an analog model. Also, every element does not have to be connected each other in the digital model. This zero gravity world in **form•Z** helps me to soften my designs for the physical world. Moreover, switching analog and digital media back and forth help me to extract the essences of the project. The other thing I learned was the ability of digital media as a tool for design and not just a presentation tool. Experimenting digitally also allows for the possibility of more serendipitous accidents that are useful in the design development stages of a project. In this project, the digital vocabulary models came up even better than what I imagined. There are many more possibilities when you are working digitally to complement the physical model development.

