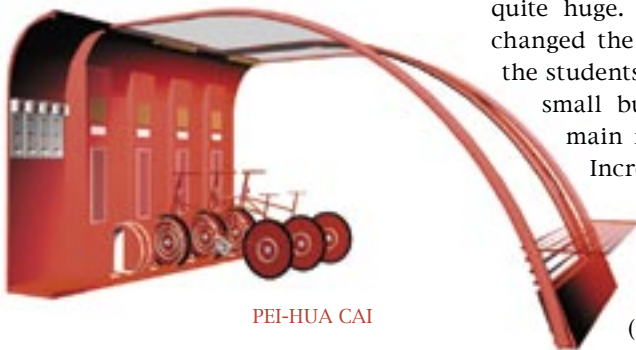


# Learning How to Give Meanings to Geometrical Objects in 3D Virtual Space

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Figure 1



PEI-HUA CAI

When students complete their fundamental design at their freshman year of Tamkang University, their small-scale building designs at the sophomore year, and medium-scale building designs at the junior year, they can join different design studios depending on their interests at the senior year. The “Information Technology in Architecture” studio is one of the nine design studios in our senior year. The major purpose of the “IT in Architecture” design studio is to utilize 3D computer-aided drafting software to help students experience the designed space directly through the whole design process.

With the computer graphics software available today, it is not difficult to form different shapes on the screen. However, when combining those shapes and augmenting them with textures, we start to realize the idea of “designing.” It is quite interesting and it is also a challenge for students to learn how to combine 3D geometric objects together in the virtual space and to give semantic meanings to those objects.

The volume of buildings we designed previously in this design studio were

quite huge. More recently we have changed the scale of the assignments the students have to design to several small buildings. There are five main reasons for doing so: (1)

Increase the students’ abilities to design different forms.

(2) Learn how to apply the meaning of design to different geometric forms.

(3) It is easier to attempt a smaller scale design.

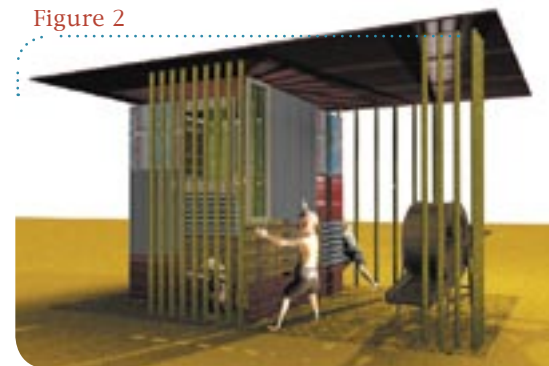
(4) Explore the association between small-scale works. (5) Small scale urban design is an important aspect that a senior student must explore.

The “IT in Architecture” design studio had seven students in Fall 2004. The assignment of the studio was “e-Boxes”. The original thought of this assignment was to let students find an English keyword starting with “E” that expresses his attitude towards Taipei city. Then, he were to insert at least six different e-Boxes into a site in Taipei City in a manner consistent with the meaning of the keyword selected. The purpose of inserting those boxes into the urban space was to turn the monotonous city into a more pleasant space. Beyond this task, we hope that students can start to learn how to observe urban phenomena, to discover their views towards the city, and to be able to elaborate on the urban conditions of this information era. At the end of their designs, students had to come up with titles for their projects. Some of the topics students selected were: Red Cross on the street (Figure 1), on the way back from school (Figure 2), virtual and real computer

stores, escape from the city, facilities of relaxation in the office, six ways to observe the Taipei 101 building, and looking for the Christmas trees.

We did several warm-up design exercises before the “e-Boxes” assignment. The entire assignment took about two months. During the last 3-4 weeks, most students have already decided on a topic and are working hard to finish their design directly in **form-Z**. Teachers who participated in the design evaluation were satisfied with the students’ performances. At the same time, students were also quite proud of their work. These results have shown that the difficulty of this scale of projects was just right.

Figure 2



YANG-HANG YANG

This year at 2005, besides continuing the operation of **form-Z**, we also asked students to transform their 3D works into 2D drawings. With the assistance of laser cutter and CNC technology, we can layout all the components of the 3D designed objects into a 1:1 ratio. The following two articles written by Ms. Chen and Mr. Lee, two students from my design studio, describe their works and lesson learned.