

Autonomy and the Culture of Reuse

A culture of reuse has emerged to respond to this increasingly common scenario, through the adaptive reuse of entire pieces of architecture to the implementation of non-architectural objects into building forms. So the question is raised: should function follow form now?

The idea that a building's form is contingent on its intended function, or 'form follows function', became a foundational principle of 20th century architecture. In 1896, Louis Sullivan wrote, "form ever follows function, and this is the law. Where function does not change, form does not change."¹ But what happens when a building is no longer needed for its intended purpose? A culture of reuse has emerged to respond to this increasingly common scenario, through the adaptive reuse of entire pieces of architecture to the implementation of non-architectural objects into building forms. So the question is raised: should function follow form now? Michael Hays describes the advantage of autonomous forms for reuse, noting the availability of their parts and processes to be recombined.²

This argument for autonomy requires an alternative to the design thinking process. A typical design process which begins with function, develops a rational thought, and ends with function, is purely static and tends to produce a linear and predictable outcome. However, if the design process begins without function in mind, but with figurative inspiration, and traverses a pathway of discovery to arrive at a different place, then an active process is born. This alternative process has inherent motion and generates active forms from a nonlinear path. This methodology of utilizing autonomous forms to influence unique outcomes has the potential to influence a generation of new designers.

Therefore, figurative form is needed to broaden student perspective. Within the boundary of Architecture, tectonic (functional) form lies entirely within the enclosure, while figurative (metaphoric) form opens potential. In reality, buildings are functional places, but they can only be inspirational if they come from a place of true exploration. This concept was explored through a studio project which investigated the outcome of function following form.

In this two-part project, students were challenged to first create a matrix for autonomous form generation and expression, utilizing at least one found form or material in order to 'discover' a new function. In the second part, students were asked to apply their forms to a new function, this time a more complex set of constraints, requiring greater manipulation and transformation. The following is a brief description of the projects and their outcomes.

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PROJECT BRIEF _PART A

As our culture strives to create things of lasting value and usefulness, we as designers must encourage students to become masters in the art of transformation. In our exploration of reinvention, “function follows form” was our mantra. Students were challenged to generate autonomous forms through virtual and physical studies, utilizing at least one found form or material in order to speculate a new use. Not only did function follow form, but students were challenged to move beyond a simple reapplication, and to transform the selection into an entirely new object. The pathway in this case was three chosen words.

DESIGN PROCESS

Students began by selecting a found object and evaluating it using these five categories:

- 1) VOLUME; its shape must be able to be explained in model form.
- 2) TEXTURE; what is the object’s surface quality?
- 3) SCALE; could this object be reimagined at a vastly different scale?
- 4) DYNAMICS; it must have characteristics which offer some point of interest to work with.
- 5) FLEXIBILITY; it must be able to be manipulated through physical means.

Students selected three operational words from the list provided to guide their conceptual form exploration. They applied their chosen operations to their objects. Students were encouraged to develop the project in a non-linear manner, considering how to interpret and apply each word, and how the words could interact, while performing secondary operations.

As students worked through various studies, they were encouraged to speculate new functional uses, which should derive from the unique forms created (Function Follows Form). What might the new object look like in its new application(s)? Could it be applied at various scales for entirely different uses?

Figure 1: Moussavi. Farshid(2009). The Function of Form: 12

OBJECTIVES

The learning objectives for Part A included development of a nonlinear design thinking process that supports unpredictable outcomes, application of abstract principles to the development of a conceptual yet functional object, and developing proficiency in working with complex geometric forms. We also focused on expanding digital design skills, utilizing tools such as 3D modeling software, a laser cutter, 3D scanner, and 3D printer.

OUTCOME

Students were able to generate a variety of unique forms, with speculated applications ranging from jewelry pieces to space stations. While the production of forms relied on the chosen words, without the functional requirements, students freely explored the forms and the transformative process allowed them to consider multiple options. After some development, students produced the actual forms in large physical models. The more simplistic operational studies tended to be more successful in the actual built form, as well as in Part B of the project, instead of becoming overly complex and less effective as visual forms.

Process was the most valuable element of the project; not only did the autonomy from preset functional constraints allow them more freedom of exploration, but they also were able to focus more on the relationship between virtual and actual forms. The physical manifestation allowed for a comparison of the original and the transformed object, making it clear that the original form didn't really matter; many successful studies were generated through random objects chosen as a starting point. What was important was the creativity employed in transforming the objects. Students expressed that they felt the project was successful in allowing them to exercise their imagination and potentially develop that capability for future explorations and real projects.

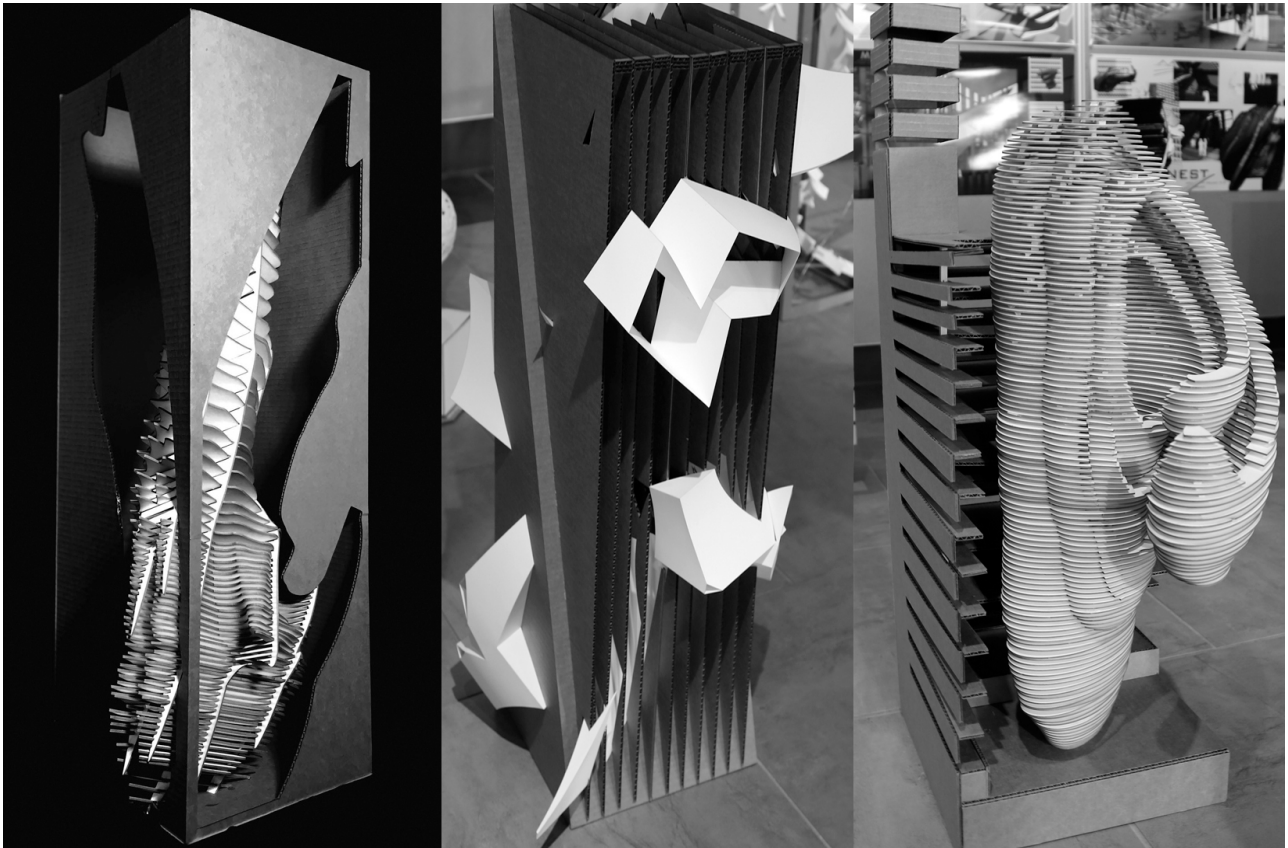


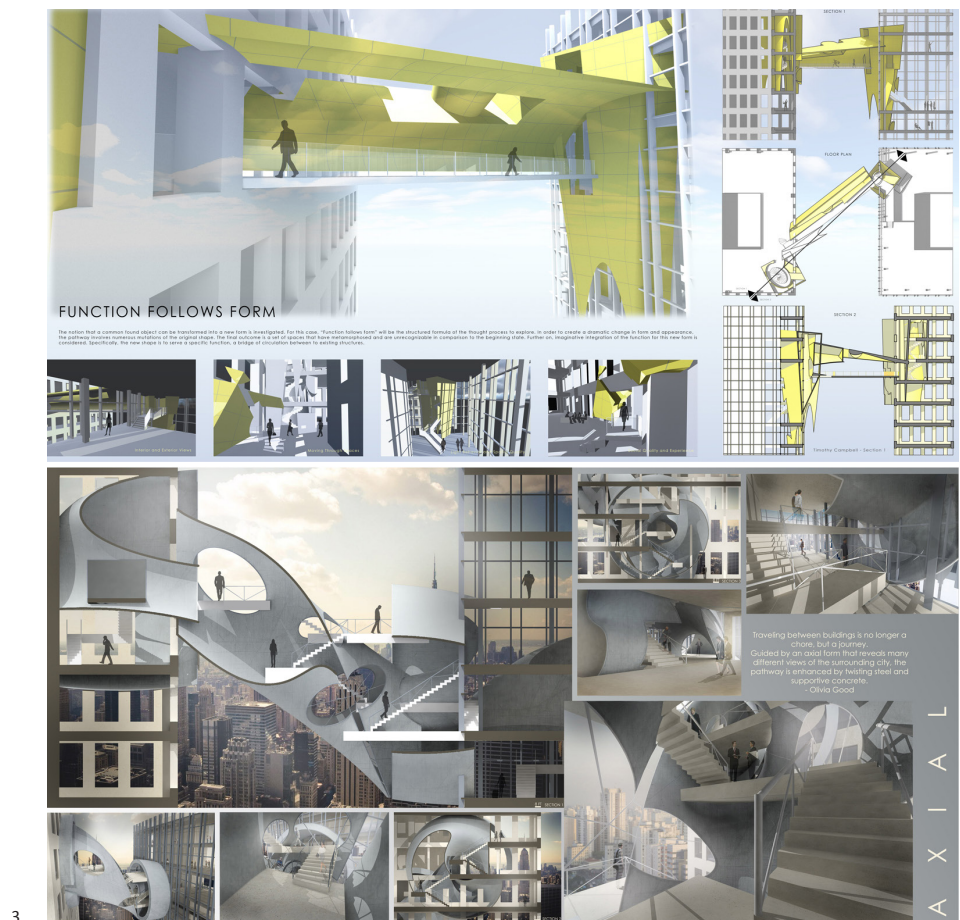
Figure 2: Student Work by *Olivia Hupy, Stephanie Contreras, and Tayler Perzel.*

PROJECT BRIEF_PART B

Autonomy to Tectonic Expression

As the second part of this design project, students were challenged to again re-envision their objects, this time creating a complex circulation system to include a stair and ramp. Their objects were to inspire the formal and functional outcome of the proposed circulation elements. Students faced the challenge of now integrating functionality and safety while designing meaningful and inspirational spaces.

The project connected two hypothetical and hyper-dense urban spaces. Inspired by the hyper-vertical built environments of the future, the site was a space between existing towers requiring a horizontal formal gesture to create a space for gathering and passing between structures. Because the proposed site disconnected the continuous vertical path of egress for the two towers, students were required to redirect the paths of egress to meet building code requirements. The proposed space occupied multiple floors to create space for gathering, views, and the interaction of light. The linkage also required the addition of ADA ramps and a grand staircase for the user. The designed space served as a linkage, a space for informal meetings, people watching, and small gatherings.



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OBJECTIVES:

The learning objectives for the second part were similar, but expanded to include functional integration of their forms through managing multiple patterns of use and circulation, responding to various site forces and contingencies, incorporating structural systems, and developing the ability to work in a team.

Figure 3: Student Work by Tim Campbell and Olivia Good.

DESIGN METHODOLOGY:

The first step was for students to implement their team's autonomous forms into the site, considering the various characteristics of their final objects, and evaluating them with the list of characteristics given in 1A. Students looked at attributes of their new forms that could be useful in developing the new application. The implementation was flexible; students were allowed to utilize entire forms or certain parts. The transformation required interaction between both concepts in order for teams to successfully redesign their forms as new circulation systems. Compromise and negotiation was key.

Students were required to clearly define how their architectural form of project 1A was applied: how it became the structural system, treads, risers, skin system, or how it influenced the overall volume or quality of the spaces. In this step, they developed the design and expressed the form in order to communicate the idea of discovering the new function from the autonomous form. Material qualities were expressed only abstractly, as simply opaque or transparent / translucent materials. However, this still offered the opportunity to consider light, views, and textures. As a final step, students developed various diagrams, sections, and images to convey the final design proposal.

OUTCOME

In Part B, the contingency of a given functional requirement was met with different approaches from students. Two opposing methodologies seemed to emerge: those who continued the 'function follows form' position required in Part A, and those who reverted to the more traditional 'form follows function' approach. Those who continued with the 'function follows form' mantle utilized their new forms generated in Part A in their entirety as a large formal gesture, taking a spatial or structural application approach. The opposite approach focused on functional considerations, putting form aside and then reapplying it in smaller gestures. While this was also valid, it seemed to produce less exciting spatial conditions. The more successful projects continued our original premise and focused on truly utilizing the forms to generate less predictable and more exciting spaces.

CONCLUSION

While the forms generated through the project were admittedly contingent on the words selected from the matrix, they had no relationship to a preconceived function. The students' design process was shifted from a static functional exercise to a pathway of discovering new possibilities; from tectonic contingencies to the autonomy possible in figurative form making. The idea of autonomy may seem contradictory in an increasingly interconnected world, but the infinite flexibility and reinvention of autonomous forms have become a necessity to be engaged.

ENDNOTES

1. Sullivan, Louis H.(1896). "The Tall Office Building Artistically Considered". Lippincott's Magazine (March 1896): 403–409.
2. Hays, K. Michael(1984). "Critical Architecture: Between Culture and Form". *Perspecta*, Vol. 21 (1984):14-29.
3. Moussavi, Farshid(2009). *The Function of Form*. ACTAR, Harvard Graduate School of Design (October 10, 2009): 12.