

Drawing Conclusions

JIM SULLIVAN
Louisiana State University

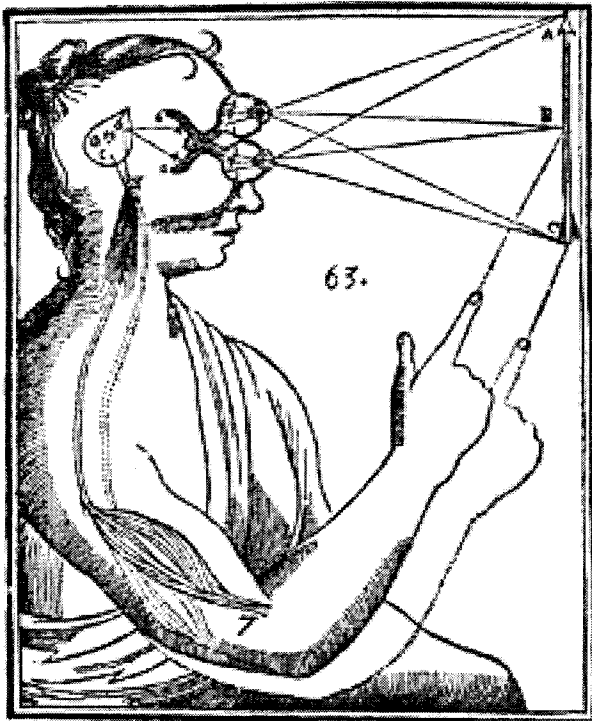


Diagram from the Traité des passions of René Descartes.

INTRODUCTION

Within contemporary education theory discussions tend to revolve around issues of cognition: that is our habits of thought or patterns of our thinking. The focus is not on content but rather on the particular ways different disciplines structure thought. In other words, education theory is more interested in

the architecture of a student's thinking rather than that student thinking about, let's say, architecture. While this interest in cognition is sometimes called a recent revolution in education theory, one finds it in John Dewey's *How We Think*, which was published in the early 1920's. There he describes "reflective" thinking (the forerunner of "critical thinking") as appropriate habits of thought for a functioning democracy. Implicit in his argument, and those of his most contemporary followers, is that thinking should be seen as a type of object with particular characteristics. Further, this object is malleable and one of the significant roles of education is to shape it. This paper is an attempt to bring this notion to bear on architectural education. Visual communication assumed an exchange, facilitated by some type of graphics, which moves largely in one direction: from author to viewer. In this schema, the author, having already determined what she has to say, speaks (graphically) and the viewer "hears" it, so to speak. In architecture, this manifest as a conclusion made about a particular design problem and drawing – using that term loosely – which present that conclusion. The architect has decided what needs to be "said" and the drawings "speak" for the architect. In this case, and in many others, visual communication is primarily concerned with presenting the product of thought (one's conclusion) rather than demonstrating the thinks itself (how one arrived at that conclusion). In what follows, an argument is made and an assignment proposed as to how orthographic projection may be structured such that it teaches not only discipline knowledge but also specific intellectual skills or habits known as Critical Thinking.

FOUNDATION COURSES AND GENERAL EDUCATION:

The content of foundation level course varies from those based in visual literacy to those based in technology, or from those based in formal ordering principles to those based in unrestrained artistic acts. Despite this apparent diversity, they are all conceived as teaching primarily disciple-specific knowledge. They are focused on preparing the ground for the study of

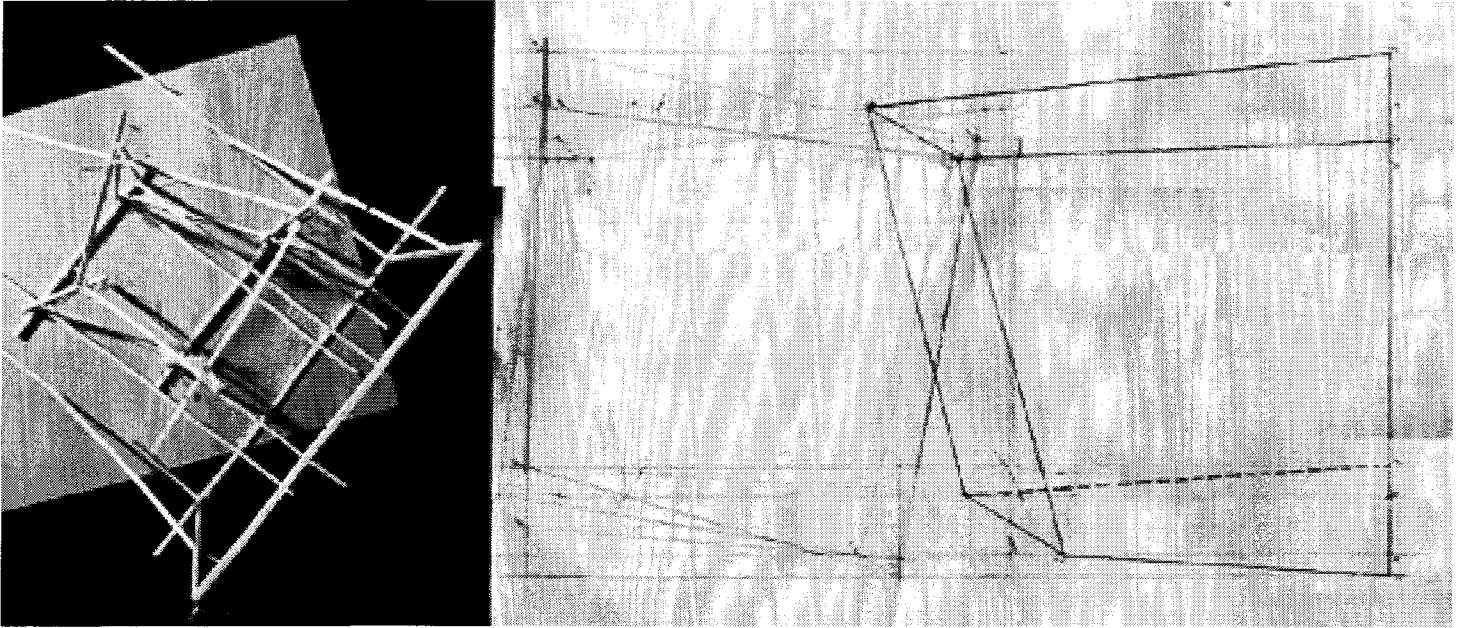


Fig. 1. Measured model and drawn conclusion: plan and projected elevation. (B. Babb)

Architecture in particular or “testing for talent” in Architecture. This is most certainly the case within traditional professional programs, but it is also so in both professional programs with art-based foundation course and in pre-professional programs. In both these cases, course fit into one of two categories: those course that are specifically about architecture, and those courses that are non-architecture but are believed to have salient disciplinary overlap.

Architecture is not alone in the use of this model of foundation course. Most disciplines within most colleges and universities structure their foundation courses in this way. Typically, these colleges and universities have core or general education

curricula to ensure that student receive a “well-rounded” education. These curricula require students to take foundation level course in a variety of subject matters. More often than not, these courses, despite being “general education,” continue to follow the model of discipline-specific content, or some watered-down version of this. In these cases, the vision of general education is one in which the student has a small amount of basic knowledge of numerous disciplines. Architecture curricula typically fit into this model by offering either a “non-major” course that attempts to education students about some aspect of Architecture or allows students to enroll in history survey courses to accomplish the same.

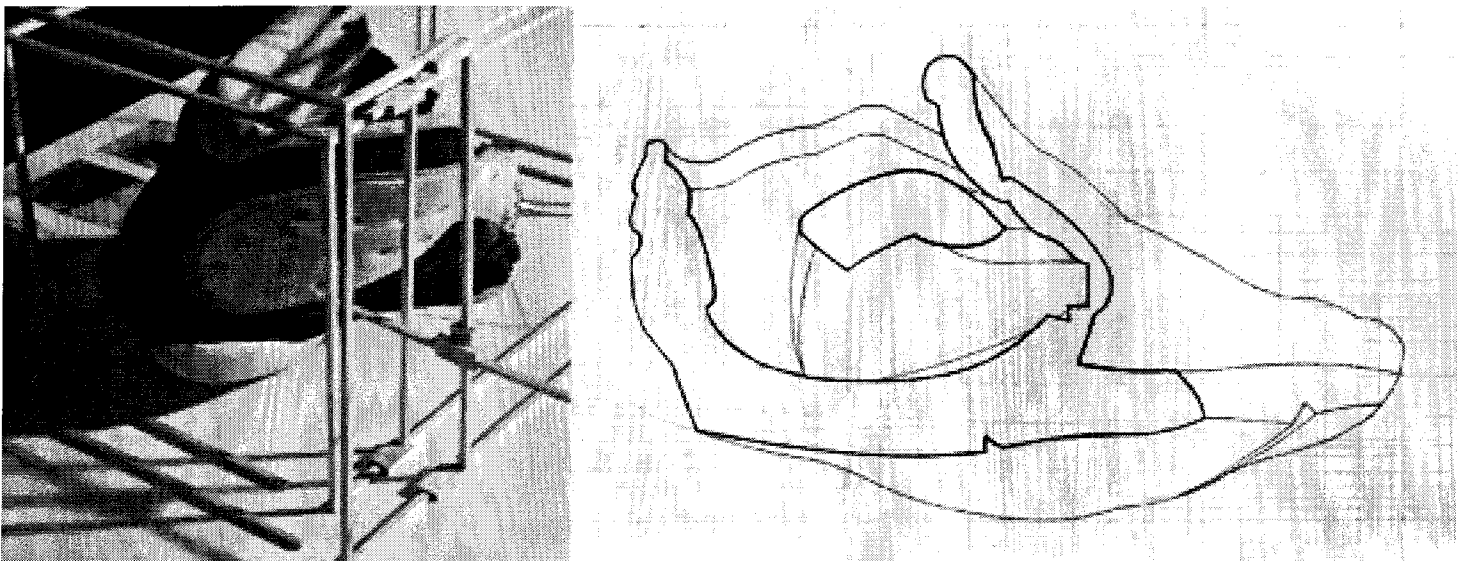


Fig. 2. measured shoe and drawn conclusion: section (B. May).

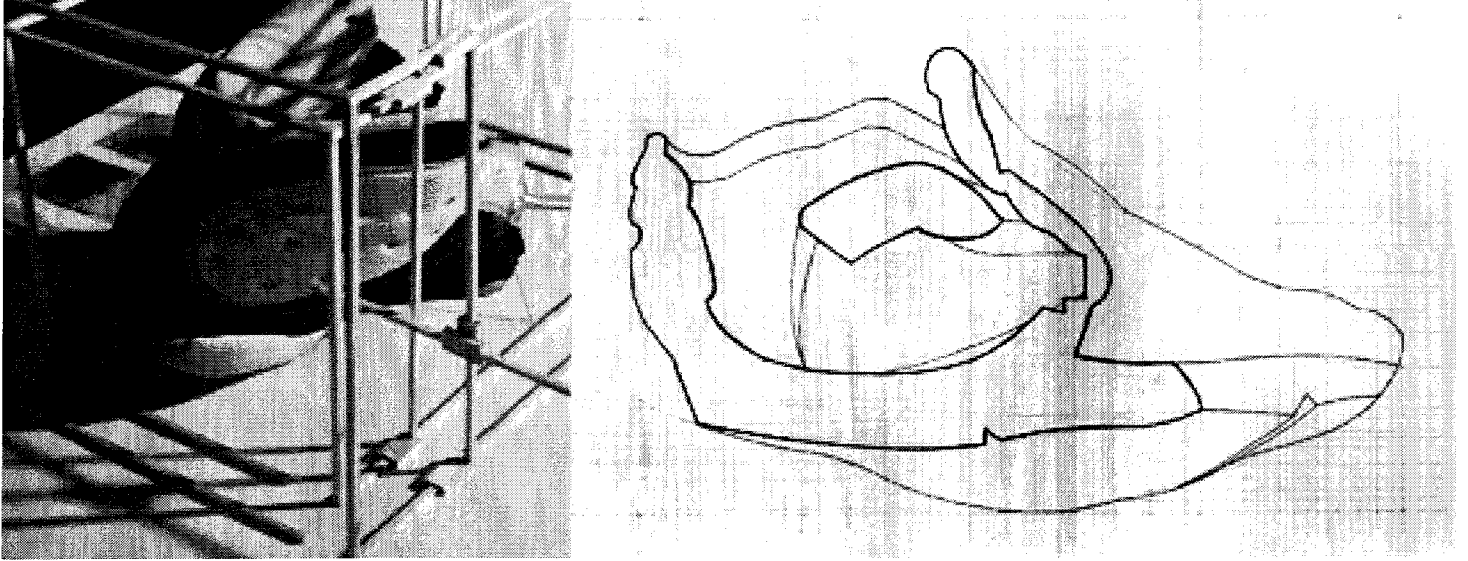


Fig. 3. Measured shoe and drawn conclusion: elevation. (M. Jones).

An alternative model for core or general education found in some colleges and universities is one in which each course must teach, along with its traditional content, specific but broad-based intellectual skills typically referred to as “critical thinking.” This model exists within large research universities as well as smaller liberal arts colleges. Architecture curricula, like many other disciplines, typically fit into this model in one of two ways: by offering the same courses as in the former model but with more writing assignments or by being associated with arts programs which are viewed as “other” and thereby relieved of teaching critical thinking. (1) Drawing, when conceived of as proposed here, leads to foundation level courses, when focused on representation and visual communication, to fit differently and more productively into this alternate model.

CRITICAL THINKING

For some time, critical thinking has been a buzz word within education; perhaps to its detriment, as its overuse has led to skepticism by some and enthusiastic misuse by others. In any case, this is largely due to a lack of understanding of what it actually means or entails. Critical thinking, as defined by Edward Glaser (2), calls for the “a persistent effort to examine any belief or supposed form of knowledge in the light of evidence that supports it and the further conclusions to which it tends.” (3) It also calls for one to be “disposed to consider in a thoughtful way the problems the problems and subjects that come into within one’s range of experience.”(4) Up to this point, Glaser largely follows John Dewey who writes about what he calls “reflective thinking” in *How We Think*. According to Dewey, one must hold simultaneously contradictory dispositions: open and receptive to new and different thing but also skeptical of them.(5) This dual stance positions one to be willing to accept new ideas but only after investigating the

supposed evidence or reasons why that idea should be held. To these dispositions, Glaser adds specific intellectual skills particular to methods of logical inquiry and reasoning. Among these are the ability to recognize problems; find workable means for meeting those problems; gather pertinent information; use language with accuracy, clarity and discrimination; appraise evidence; and draw warranted conclusions. When made aware that these dispositions and skills constitute critical thinking, those educators that were skeptical tend to be less so, while those that were overly enthusiastic also tend to be less so. This last point is of some importance as it indicates the difficulty of teaching critical thinking given its many components. Indeed, it is unlikely that any one course teaches critical thinking, but rather teaches aspects of critical thinking.

Within any architectural curriculum, there are many opportunities to teach aspects of critical thinking. In fact, it is likely that many do so already. One could even say that architectural education does not neglects critical thinking, but rather that it does not know to what extent it teaches it. One example is descriptive geometry, which, as it will describe below, teaches skill such as how to gather pertinent information; use language with accuracy, clarity and discrimination; appraise evidence; and draw warranted conclusions. Not surprisingly, this project is modeled here for foundation level studios or representation courses. (6) Descriptive geometry or at least some orthographic projections are typically part of, implicitly or explicitly, of foundation coursework. There are, however, other reasons to consider imbedding critical thinking into first or second year courses. National trends indicate that students see the largest growth in critical thinking disposition and skills during the first years of college. (7) This creates a momentum to take advantage of. Also, most freshman writing courses focus on critical thinking disposition and skills. Those courses teach them through writing. Drawing Conclusions teaches many of those

same skills through drawing measured orthographic projections. An opportunity exists to synchronize, in a way, courses for a more cohesive educational experience.

PROJECT: DRAWING CONCLUSIONS

Drawing Conclusions asks the student to accurately measure an object and draw a conclusion in the form of an orthographic projection about its size and shape. Its objective is, aside from the tenants of orthographic projection and line work, to teach students to demonstrate reasons as to why they believe something is as they believe it to be. The project is structured in three parts. The first involves the measuring of the object; in the cases shown here shoes and cube-like forms. The second involves transferring those measurements to paper and, from them, construct an orthographic projection of the object. The student's work must evidence their process so that another student (here is the third part) is able to trace back from the drawing to object to verify that the drawn conclusion is sound. The first part requires the student to gather pertinent information, typically by constructing a measuring devise – some type of consistent frame that is placed in a known relationship to the object (Figures 1-3). The second part requires the student to appraise this information and, from it, draw a warranted conclusion about the objects true size and shape (Figures 4-6). The student must then articulate that conclusion in the form of an orthographic projection, using, the tenants of that language (to use that term with some flexibility) accuracy, clarity and discrimination. The third part asks the student to assume the dual position called for by Dewey – to be at once open to this conclusion but skeptical of this conclusion – and review the evidence given to determine the validity of that conclusion. With these three parts, Drawing Conclusions attempts to address the a chief objective of critical thinking: that one have reasons for one's beliefs and actions which are drawing from warranted conclusions based on appraised evidence.

CONCLUSION

Drawing Conclusions is only one example of the many ways broad-based critical thinking skills may be explicitly taught with architectural curricula. Investigating other projects or even

entire course content which does this may pay dividends for schools. First, more and more, universities and colleges are seeing these skills as important components to education, by making explicit those skills already taught would place many programs in leadership positions. Second, programs would be better situated to participate within the university community as program prepared to discuss broad educational issues rather than as an anomalous professional program to be ostracized or quarantined. Third, drawing, both technical and otherwise, could be presented to the university community as teaching thinking skills in much the same way as writing; giving its course, possibly, the status within the university similar to writing, or – if not that – to change its current remote status from simply a talent-based without learned intellectual content. Finally, critical thinking skill should be taught or, if taught, taught more explicitly because it will produce students more capable of negotiating today's diverse, pluralistic, and often contradictory society by providing a firm but adaptable intellectual apparatus.

NOTES

- ¹ Much of these descriptions are drawn from personal and antidotal evidence as well as a general review of program and course description. Significant work is still to be done to understand in more detail how programs as well as colleges and universities deal with these issues.
- ² Edward Glaser's (of Watson-Glaser renown) text, *An Experiment in the Development of Critical Thinking*, is used here. See pages 5 and 6 for a description of the disposition called for by and specific intellectual abilities that fall under the broader term critical thinking.
- ³ *ibid*
- ⁴ *ibid*
- ⁵ See pages 9
- ⁶ These projects were first taught in second year undergraduate studio and first year graduate studio at Louisiana State University but will now be part of that school's first year studio.
- ⁷ William Perry's seminal text *Forms of Intellectual and Ethical Development in the College Years* offers a fascinating model for student growth.

REFERENCED WORKS

- Dewey, John: *How We Think*, Prometheus Books, Amherst, NY, 1991.
- Glaser, John: *An Experiment in the Development of Critical Thinking*, Teachers College, Columbia University, New York, NY, 1941.
- Thomson, Anne: *Critical Reasoning*, Routledge Press, New York, NY, 1996.