The Two-Part "Finish": Integration in the Pre-Professional Curriculum

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INTRODUCTION

The diversity of approaches to providing a professional degree in architecture creates a complex matrix with each option containing a subset of "finish". The undergraduate pre-professional architectural studies program coupled with a two year masters degree in architecture has an implied two-part "finish". The first "finish" can be used to bring closure to the undergraduate studies and can set the stage for the second "finish" of the masters program. It is the relationship between these two "finishes" that is the subject of this paper. In order to more fully understand this relationship, it is necessary to establish some sense of context in the general field of architectural education in which these two "finishes" are placed.

UNDERSTANDING THE EDUCATIONAL MATRIX

Diversity of programs, approaches, students, faculty, and locations has become the hallmark of architectural education. This condition has been and should be applauded by educators, professionals, and the public. With this diversity comes the challenge of understanding and communicating the optimal circumstances for any one individual student. We find ourselves in a discourse with prospective students of all ages and backgrounds on the merits of differing complex educational possibilities. Within this matrix the beginning and the end can sometimes be explained. The nature of the middle is at times difficult to define.

THE NUMBERS GAME

The studio is the "place"(1) of architecture and again we find consistent support for this condition. The approach to the studio experience is where we find variation. The time spent in the studio setting varies with each of the three principle professional degree approaches. Of the three, there is still simplicity in the five-year bachelor professional program. Moving from the skills building activities to a greater understanding of the design process and the nature of design, many students then complete the studio experience with an individual comprehensive studio project.

There is also simplicity in the three-year master's program. The student completes a four-year bachelor's degree in a wide variety of subjects and then concentrates on the studio experience during the master's program. The number of years in the studio with these degrees is normally five for the Bachelor's degree and three for the Master's degree. The total number of years in university is five for the Bachelor's and seven for the Master's. This disparity of time in the studio environment and years in university is compounded with the crushing load of degree-required courses in architectural theory and history, structures, technology, environmental topics, and professional practice. The debate of the advantages of the two programs is centered on student maturity versus lack of design studio time.

We find ourselves in the middle ground of the four-year pre-professional degree with a two-year professional master's degree. The tally is then six years of university to complete the professional degree. What is the number of years of studio experience? Again, we find disparity in numbers arranging from all six years in a studio environment to as low as four years. To this point, we have only examined the numbers of years of studio experience, but what of the far more critical subject of the content of this experience.(2) Furthermore, in this middle ground of the four plus two, we must examine not only the single last closure experience similar to five and seven years programs above, but also both the closure of the pre-professional experience and its relationship to the professional degree experience.

THE PRE-PROFESSIONAL PROGRAM

The pre-professional curriculum is normally based on a firm liberal arts program and contains, in varying degrees, many of the criteria required for professional accreditation. In many cases, the first studios are directed toward building skills in the beginning student's use of design tools. These studios are normally based on visual perception as the essential element to the cognitive process(3). By the second year, many studio activities have evolved into design activities that can be termed process development.(4) The studio provides an environment which connects the "thinking" and "doing" with "reflection".(5) In the third and fourth years, the majority of programs continue the individual's development in a project based studio and may include study abroad opportunities and/or a studio emphasis on urban design.

The task of liberal arts on the other hand is to develop a "balanced, whole person."(6) This entails connection of "the intellect with manual competence... A genuinely liberal education will also connect the head and hands."(7) The focus on the liberal arts together with specific student performance criteria is a mainstay of National Architectural Accrediting Board criteria for accreditation.(8) This balance between the studio time and lecture courses and between the liberal arts and specific performance criteria is made more complex by the National Council of Architectural Registration Boards own education standard.(9) Challenged with the responsibility to provide a standardized registration examination and to deliver a comprehensive professional intern development program, the NCARB has by necessity established an educational standard stating both course content and credit hours required. This standard is then used for evaluating individuals for licensing who have not completed a professional degree at an accredited program.

It is by necessity that we have needed to explore the background information to better focus on this terminal studio "finish" in the pre-professional program. By definition, the pre-professional program is a completed bachelor's degree. Many individuals completing this degree do not go on to complete a professional degree in architecture. By it nature, the degree is well suited to provide a general education for a wide range of related fields. Graduates are suitable for employment in construction, management, commerce, and for entry into related degree programs such as environmental studies, fine arts, and education. Furthermore, it must be recognized that the degree may be terminal for individuals going on to work directly in the field of architecture and in some cases becoming registered architects. The pre-professional degree is normally accepted by NCARB as the entry level for the internship program. Many individuals choose to gain practice experience before continuing with a professional degree. The 2003 Internship and Careers survey co-developed by the AIA National Associates Committee and ArchVoices indicated the following:(10) (Author's Bold and Italics)

Education:

1. Which of these degrees have you earned (if any)? B.Arch 52%, M.Arch 27%, ***Pre-professional undergraduate degree BA, BS, BED 26%*** Other 20%

1a. If you've earned a B.Arch or M.Arch, at what point did you obtain your first professional architectural job? ***Prior to entering: B.Arch or M.Arch 15%,*** During B.Arch or M.Arch program: 42%, After earning B.Arch or M.Arch: 40%

2a. If not currently in school, do you plan to someday return to school for one or more additional degrees? ***Yes ...what degree(s)?: 39%,*** *M.Arch: 12%,* MBA: 7%, doctorate (unspecified): 3%, masters (unspecified): 2%, other: 8%

Of the interns completing the survey 26% have completed the pre-professional degree. About one third of those or 39% planning for additional degrees will be completing an M.Arch. This indicates less than one-half of the interns holding a pre-professional degree employed in architecture intend to complete a professional degree. Market conditions, the opportunity for advancement in architectural offices, personal and family demands all may influence an individual's decision to return to study. Lastly, it should be noted that up to 19 jurisdictions accept the four-year degree in architectural studies as meeting the educational requirement for licensing, with some additional requirement for experience.

A GREATER RESPONSIBILITY

To the above pallet of considerations, we must add a hue of a different color. Ernest Boyer and Lee Mitgang in *Building Community: A new future for architectural education and practice* state, "architects and architecture educators [should] assume a leadership role in preserving the environment and the planet's resources. It is this priority, we are convinced, that could have the most far-reaching implications about the way schools, and the profession itself, conduct themselves in the next century."(11) This greater responsibility is not yet universally founded in the core of architectural education and practice.(12) The key to this expanded dimension of architecture is one of context. "Sustainable architecture requires, by its nature, looking at the connections in design problems, studying the community context of buildings, and seeking comprehensive solutions."(13) Further, the importance of integrated design process has become the focus of many of the leaders in the movement to introduce sustainable design into architectural education and practice.(14) The studio should then engage the student in the community and the culture, not separate and withdraw the student. Social interchange and enlightenment with the ability to act hands on are fundamental to the student's understanding. The focus should be on interaction with the

community, the use of models and mock-ups, actual construction, and integration of the design process.

THE "FINAL" PRE-PROFESSIONAL STUDIO

We have now placed the "final" pre-professional studio in a context that demands a very high quality experience. Even more demanding may be the preparation the continuing student requires for the professional degree program. There are a number of approaches as to how this final studio can be constructed. The tempo of the studio can be one of a number of individual projects with an emphasis on the repeated process. Or the studio can focus on the integration of all aspects of design into one project. The studio activity can be a capstone course built on the total experience of the pre-professional curriculum or a completely new experience introducing new theory. In any of these cases, the studio can *assume some of the responsibility for providing professional preparation for entry into internship.*

One case study of this approach is the senior design studio in the Department of Architecture and Interior Design pre-professional program at Southern Illinois University. This practice-based studio works directly with a client/user progressing through pre-design, design, and documentation. Field trips, visiting specialist, and on-campus collaborators are utilized. The emphasis of the course is integration.(15) As a capstone studio, the course places major emphases on the curriculum's focus on sustainable design.(16) From the beginning studios, students have an awareness of the issues of sustainability and ecological design.(17) In the fall of the fourth year, students complete an energy and systems course. The intention of the course is to bridge sustainable design from a lecture/lab into spring design studio.(18) This relationship with sustainable design requires an interdisciplinary approach with an integrated design process in the "final" studio experience.

It is the intention of the course that students work with real projects that are in the planning or early development stages. In a number of cases, the demand that the client/user group is available to work with the students requires the project to be located on or near the campus. The use of phases similar to an office process furthers the connection to normal practice. Reviews include representatives from the client/user group and the professional community. The project is selected and a draft program developed before the spring studio begins. This is to ensure students have time beyond programming to have an experience that calls on their previous lecture and studio subjects and allows for interaction with other disciplines on and off campus.

The project schedule is broken into two parts coinciding with the mid-term break. The first part includes the pre-design studies of program and site analysis often requiring program expansion or revision and a master planning and site selection process. (*Fig. 1*) Meeting with the client/users, other related disciplines, planning authorities, and administrators takes place. This work is a team effort as is the construction of a major context model to be used by all three sections of the studio. The students then proceed individually to develop a concept for the project and, after a review with the client/users, a schematic design. (*Fig. 2*)

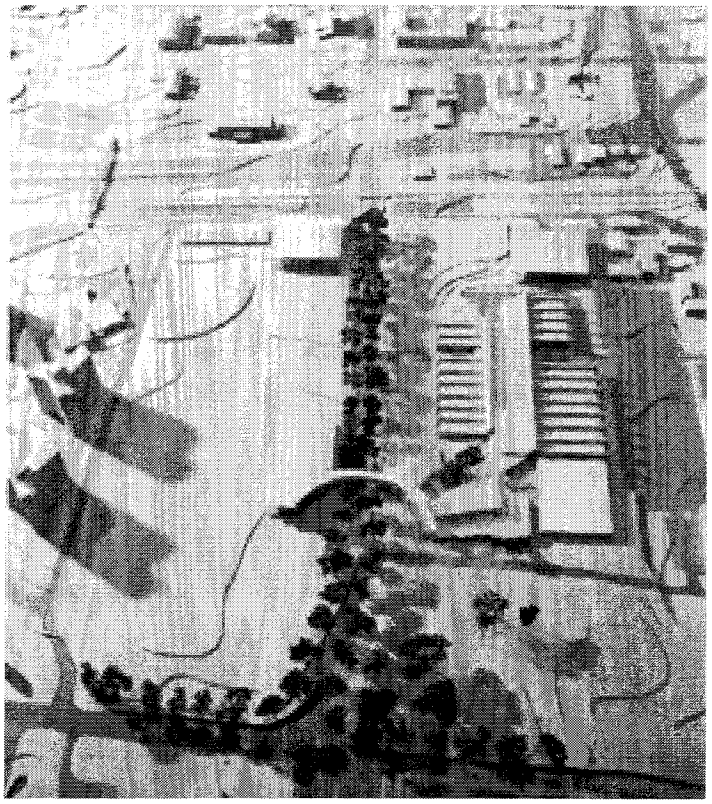

Fig. 1. Pre-design Phase – Program and site analysis, master planning.

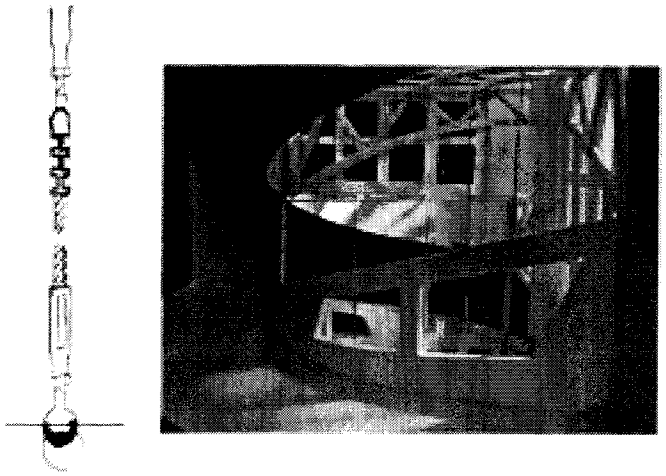

Fig. 2. Concept and Schematic Phase – Massing model.

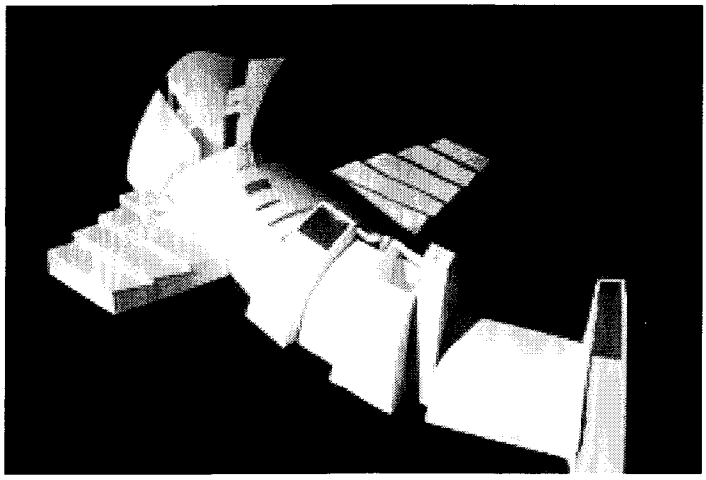

Fig. 3. Design Development Phase – Large scale model study.

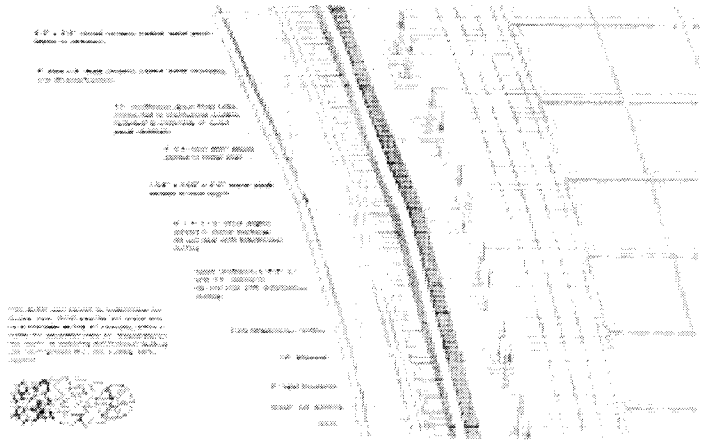

Fig. 4. Design Development Phase – Structural and envelope integration.

Two additional activities are scheduled early in the first half of the course. A field trip to similar projects is utilized to convey a full sense of the scope of the project. In many cases, the architects offices evolved in these projects are visited. Meeting with the users of these buildings is an important part of these trips. Further, key consultants for the project type are invited to campus to speak to the students and visit the studio.

The second part of the schedule is intensive as the design development phase focuses on the integration of the building technologies and systems. The selection of materials and design of the building elements are studied in large-scale models and drawings. (*Fig. 3*) The course is closely linked to the curriculum's final structural design course that is taken concurrently. The students prepare a layout of their building's structural system and then size and design key structural members as part of the structural course. The structural system is closely coordinated with the building envelope. (*Fig. 4*) The close relationship between this integration process and the development of a sustainable design is fully explored by the students. Passive and active heating and cooling systems are integrated

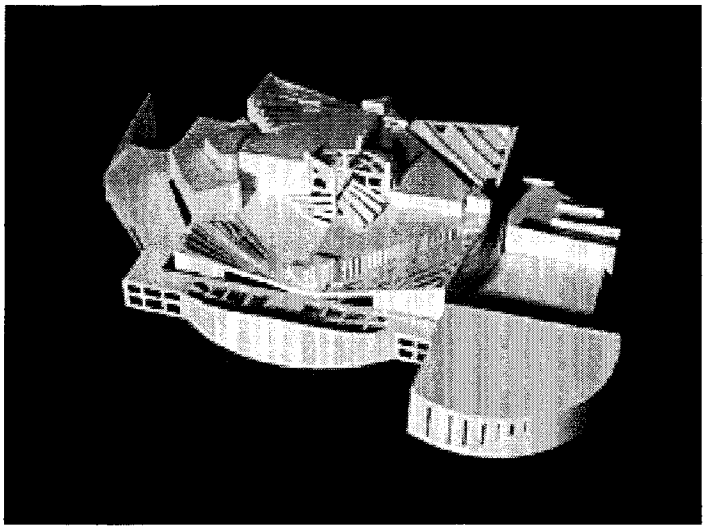

Fig. 5. Design Development Phase – Active and passive heating and cooling systems.

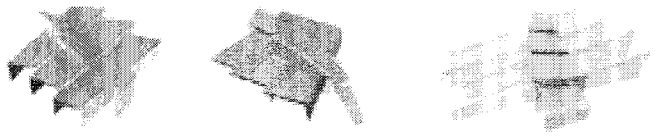

Fig. 6. Design Development Phase – Ground source cooling with earth tubes.

with the use of daylighting and attention is given to room and task lighting and building acoustics. (*Fig. 5 & 6*)
The final phase of the studio is the documentation of the design intent and utilizes an 11" X 17" project report.(19) This report size allows for the quarter reduction of larger drawing sheets and the incorporation of earlier design work into a final comprehensive design report. Photography of study models, use of early design sketches, diagrams of the concepts, and digital drawings are all called upon to convey the design intent.(*Fig. 7 & 8*)The final presentation of the studio work is comprised of a display of the reports, models, and selected larger boards that fully express the student exploration of the project. The various individuals involved in the project from outside the studio are invited to review the material during the final week on campus.

COURSE AND PROGRAM EVALUATION

It is the intention of this "finish" of the pre-professional course to provide the student with a greater set of options for graduate work and professional development. By instilling part of the requirement for professional practice preparation. the course allows the student a wider range of future possibilities. The architecture program is evaluated at the close of each year by an assessment tool focused on this course. As a capstone course,

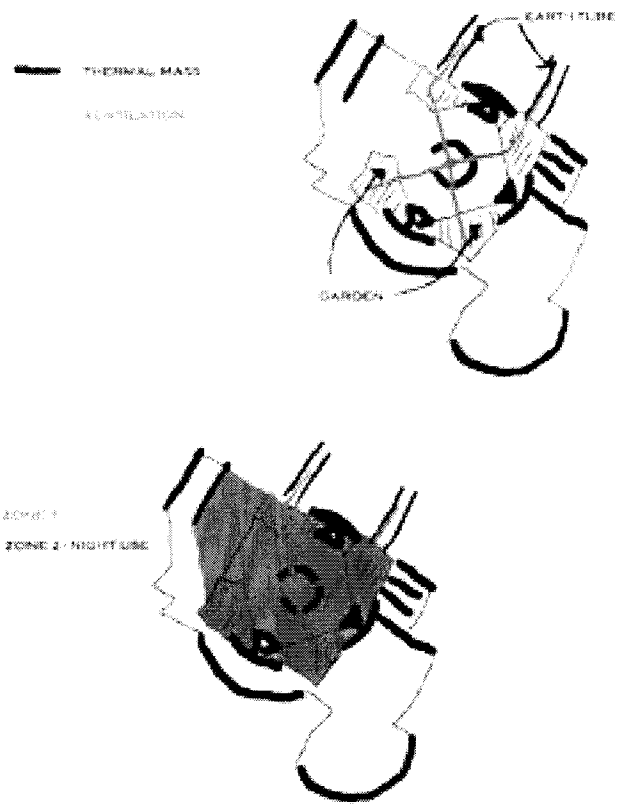

Fig. 7. Documentation Phase – Comprehensive integrated design.

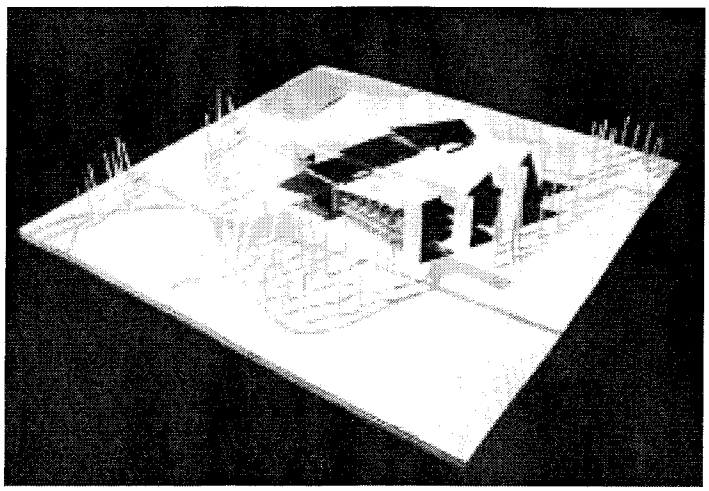

Fig. 8. Documentation Phase – Systems design approach.

it is possible to utilize the outputs from the studio to evaluate the architectural program. The assessment is intended for internal university use and is subject to review at the college level. The evaluation procedure is comprised of an invited review team made up of professionals and faculty from other departments of architecture. In many cases, these individuals are also serving on the department's architectural advisory board and, therefore, have a working knowledge of the department and the program. The assessment form is based on selected parts of the NAAB student performance criteria and includes four levels of completeness that are judged in the student's project documentation. Although the students are not part of this assessment, the process still reinforces the course objective of developing an awareness in the students of how important is it to document all aspects of the design intent. Each year the department chair and faculty review the results of the assessment and report on actions to be taken to address shortcomings.

CONNECTION TO THE GRADUATE PROGRAM

This approach of the pre-professional "finish" is to lay the groundwork for students entering graduate professional degree programs to have the opportunity to engage in a wide variety of options offered by these programs. The student can choose to complete a professional degree in a traditional design studio setting, a special issue design thesis, or move into research. As all students of the SIUC program must currently complete their professional degree elsewhere, they have the opportunity to explore programs that offer emphasis in areas of specialization of interest to them. They may also choose programs that conclude the master's degree with continued emphases in the traditional design studio.

OPPORTUNITY FOR RESEARCH

The four-year pre-professional with the two-year professional master's degree was conceived for a number of reasons. It was seen as a solution to the problem that the five-year professional bachelor program required a full year more of study and in many cases up to 165 credit hours to complete. For budget purposes, many universities were very critical of any program that required more than four years and 120 credit hours to complete a bachelor's degree. Furthermore, these programs did not allow for students to engage in normal research activities carried out in most programs on campus beyond the fourth year of study. At the university level, it was felt that departments of architecture were not engaged in research activities consistent with other programs.

By establishing the four plus two approach, programs could normalize their curriculum and research with other units on campus, take advantage of higher funding available to master's programs, offer their students graduate teaching and research assistantships, and apply for graduate level grants. Many of these objectives can only be met if the individual student at the master's level is available to participate in research activities. If it is seen as necessary that a program only offer a more traditional "final" design studio or thesis, then it is difficult for these programs to fully engage in research at the graduate level.

In structuring the two-part "finish" approach at SIUC, it is intended that students of the program would be prepared at the NAAB student performance criteria level to move into advanced specialization and research in their final year of graduate study. It is not to say that this specialization could not be in the design or urban design areas, only that graduate work in these areas would go beyond the level necessary for meeting the student NAAB performance criteria.

CONCLUSION

The four-year pre-professional degree with a two-year professional masters degree falls in the middle ground of architectural education. This two-staged process contains two degrees and a two-part "finish". The "finish" of the first part may be as critical as the "finish" of the second. With a quarter of the architectural interns in a recent survey having completed only a pre-professional degree and less than half of these interns stating their intent to complete a professional master's degree, the first part "finish" may be the last one for a number of interns. This implies a responsibility for the pre-professional "finish" and degree to provide preparation for entry into internship.

More importantly, the first part "finish" is a platform for building the professional masters degree. Students spring from this platform into a compressed program that can explore a very wide range of topics. The student in the master's program has the advantage of greater maturity and in many cases some practice experience and/or travel. The two-year professional master's degree has the opportunity to provide for an enriched architectural research program. This in-depth research is only possible if the incoming student has completed a comprehensive pre-professional education. The first "finish" is a critical part of this pre-professional program. This first educational experience needs to complete the NAAB student performance criteria to a level that allows time and opportunity for the students and faculty in the master's program to move into area beyond the NAAB criteria.

The spring senior design studio in the Department of Architecture and Interior Design pre-professional program at Southern Illinois University is designed to provide a capstone studio emphasizing all aspects of integration on one project completed over the term. The architectural program is committed to integrating sustainable design throughout the curriculum and the final studio is, in part, focused on the issues of sustainability. Early and complete integration of all aspects of sustainability in the project definition and conceptualization is critical to achieving a sustainable design. This commitment entails a multi-disciplinary approach. Project selection, field trips, invited speakers, guests to the studio and review sessions, and interaction with others on campus and in the community support this approach.

The student of the pre-professional program has a need to reach a "finish" in many ways as profound as the professional degree "finish". For many, this "finish" will be the conclusion of their formal educational experience. The comprehensive integration, development, and documentation of all aspects of a final design project can provide the student with a sense of accomplishment that concludes their undergraduate program.

NOTES

[1] Ernest Boyer and Lee Mitgang, *Building Community: A new future for architectural education and practice* (Princeton: The Carnegie Foundation For The Advancement Of Teaching 1996), p. 85.

[2] See Susan Molesky, "What is the Nature of Teaching?" *Imagining Realms Remaking Worlds. Proceedings of the 2002 Western Region ACSA Conference* (San Luis Obispo: The Department of Architecture, 2002), pp.219-223 and Thomas Fowler, IV, "Tactic and Deliberate Systems: A Seven Component Analog and Digital Framework for Informing the Design Studio Process" *Imagining Realms Remaking Worlds. Proceedings of the 2002 Western Region ACSA Conference* (San Luis Obispo: The Department of Architecture, 2002) pp. 225-229 for two differing views.

[3] Francis Ching with Steve Juroszek, *Design Drawing* (New York: Van Nostrand Reinhold, 1998), pp. 1-12.

[4] Jonathan Block Fredman, *Creation In Space: fundamentals of architecture* (Dubuque, Iowa: Kendall/Hunt Publishing, 1989).

[5] Jonathan Block Fredman, p. 13.

[6] David Orr, *Ecological Literacy: Education and the Transition to a Postmodern World* (Albany, New York: State University of New York Press, 1992), p. 101.

[7] Ernest Boyer and Lee Mitgang, p. 101.

[8] National Architectural Accrediting Board, (1998). *1998 Guide to Student Performance Criteria* National Architectural Accrediting Board, Washington, D.C.

[9] National Council of Architectural Registration Boards (2000). *NCARB Education Standard* National Council of Architectural Registration Boards Mission Statement, Washington, D.C.

[10] AIA National Associates Committee. "2003 Internship and Careers Survey," http://www.aia.org/Institute/associates/2003surey.asp

[11] Ernest Boyer and Lee Mitgang, p. 43.

[12] James Wright, "Introducing sustainability into the architecture curriculum in the United States," *International Journal of Sustainability in Higher Education* 4 no.2, (2003): 100-105.

[13] Ernest Boyer and Lee Mitgang, p. 46.

[14] Dr. Ray Cole, University of British Columbia listed the integrated design process as the most important subject on sustainability to now be addressed in architectural education and practice in his lecture in June 2003 at the *Design Faculty Summit – II Making Tech Cool*, British Columbia Institute of Technology.

[15] See Leonard Bachman, *Integrated Buildings: The Systems Basis of Architecture* (Hoboken, New Jersey: John Wiley, 2003) and Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and twentieth Century Architecture* (Cambridge, MA: MIT Press, 1995) for the subject of integration as it is applied in the course.

[16] See James Wright, "Architectural Studies – Sustainable Design Curriculum Development and Outreach," *Conference Proceeding: Greening of the Campus IV: Moving to the Mainstream*, (Muncie, IN: Ball State University, 2001), pp.106-110 for a more complete description of the program.

[17] See James Wright, "The Introduction of Sustainable Design into the Beginning Student's Design Curriculum," *Proceedings of the 17th National Conference on the Beginning Design Student*, (San Juan, Puerto Rico: 2000) for an abstract of some of the methods employed in the beginning studios. The full text of the paper is available from the author.

[18] James Wright. "Bridging Sustainability to the Studio Setting," *Imagining Realms Remaking Worlds. Proceedings of the 2002 Western Region ACSA Conference.* (San Luis Obispo: The Department of Architecture. 2002). pp.161-164.

[19] See Harold Linton. *Portfolio Design* (New York: W.W. Norton. 2000) as a reference in the design and layout of the project reports.