Georgia Institute of Technology
School of Architecture

2013 Academic Program Review

Bachelor of Science in Architecture (129 semester credit hours)

Master of Science in Architecture (30 semester credit hours)

Doctor of Philosophy in Architecture (72 semester credit hours)

VISITING COMMITTEE

Michael Benedikt, Professor, University of Texas

Martin Fischer, Professor, Stanford University

Christine Theodoropoulos, Professor and Dean,
California Polytechnic State University (chair)

Georgia Institute of Technology
School of Architecture

Academic Program Review

21 April 2013

REPORT CONTENTS

1. Executive Summary

We considered the viability, productivity, intellectual vitality and quality of each program within the context of the school. Our review was based on the self-study report and meetings with student, faculty and staff constituent groups. We toured school facilities and reviewed selected student work, including undergraduate design projects, and summaries of research conducted by MS and PhD students.

With recently expanded and improved facilities, specialized studios and laboratories, a productive faculty, a new administrative structure and faculty governance procedures, the school is actively pursuing improvements to its academic programs. Although the school has not yet fully realized its strategic aim to bridge the gap between architectural research and design practice, there is enormous potential for symbiotic exchange between faculty and students involved in research and design activities. The school would benefit from a more inclusive approach to faculty governance and greater faculty diversity.

The pre-professional Bachelor of Science in Architecture program prepares students for graduate study and careers in the field of architecture, while also providing a broadly relevant general education. The program benefits from the close connection to the accredited Master of Architecture program. There is concern about fluctuating enrollments and the need for an enrollment development strategy. The program would benefit from improved communication with prospective and currently enrolled students, attention to a broader range of architectural design priorities, greater opportunities for interdisciplinary study and greater opportunities for undergraduates to gain research experience.

The post-professional Master of Science in Architecture program is well positioned to address the confluence of research and design in areas of concentration that are highly relevant to contemporary architectural practice. We recommend that the school develop a strategic plan that articulates how the program meets the needs and interests of prospective students, specific learning objectives for each area of concentration, and the program's relationship to the Master of Architecture and PhD programs. There may be benefits to both MS and PhD students if students seeking the PhD also earn the MS degree.

The PhD in Architecture program, one of the largest in the U.S., is highly regarded internationally. It provides exceptional opportunities for graduate students to work with distinguished faculty and its graduates are in high demand for faculty positions in schools of architecture. The program would benefit from more equitable availability of financial support for students across the various areas of concentration and a more structured approach to teaching research methods. Georgia Tech is exceptionally well positioned to blend design creativity with building performance research and relate technology-based research to a broader range of cultural perspectives that are essential to architectural practice.

2. The Program Review Process

The visiting team's review focused on the viability, productivity, intellectual vitality and quality of each program. We considered the means by which the school is assessing each program as documented in the *Academic Program Review Self-Study*. We also considered how the programs under review contribute to Georgia Tech's mission and the school's strategic aims.

Our review was based on the self-study report, documents available on the university website, and meetings with student, faculty and staff constituent groups. We toured school facilities and reviewed selected student work, including undergraduate design projects and summaries of research conducted by currently enrolled master's and PhD students.

Appendix 2 of this report includes a copy of the visit itinerary.

3. The School of Architecture

The self-study conducted by the school was thorough, with extensive quantitative metrics and thorough documentation of recent planning activity, faculty resources, and curriculum. It conveyed a commitment to program improvement through documented responsiveness to comments from former reviews.

Facilities
The school's recently expanded and renovated facilities, including furnishings, equipment, and instructional resources, provide a supportive environment for undergraduate and graduate architecture education. Specialized studios and laboratories promote research and design exploration.

Faculty and staff resources
The school has assembled a highly qualified and productive tenure-related faculty with an appropriate balance of practice and research experience. There is concern that compared to peer institutions, the number of women on the tenure-related faculty (2 out of 25) is low.

The school's professional staff is well qualified, with strong commitment to providing high quality support to instructional programs.

Administration
The new administrative structure with its potential to provide the school with greater autonomy, and increased opportunities to integrate faculty research into academic programs, appears to have energized program planning. The new *Faculty Governance School of Architecture Bylaws* defines the responsibilities of the faculty and the committee structure used to implement those responsibilities.

Although the governance process as described in the document seems appropriate, its implementation can be improved.

- We recommend that the school use a more inclusive approach to faculty participation in curricular development and the determination of teaching assignments. Tenure-track may benefit from increased opportunities to assume leadership roles within the curriculum and, in some cases, greater autonomy to determine the content and instructional approach for the courses they teach.

- Adjunct faculty and students are interested in participating in curriculum development and can make valuable contributions to program development. The bylaws and their implementation can be more inclusive to take advantage of the perspectives of all participants.

Summary assessment
There is enormous potential for symbiotic exchange between faculty and students involved in research and design activities, but the school has not fully realized its strategic aim to bridge the gap between architectural research and design practice.

- We recommend that the school develop more vigorous efforts to expose students in the pre-professional bachelor's and professional master's programs to the research activities of the PhD and MS students.

4. The Bachelor of Science in Architecture Program

Identity of the Undergraduate Program
The school has a dedicated undergraduate faculty who care about the success and well being of students. Students appear to be confident, and involved in shaping their education.

Recent faculty discussions concerning the future of the program's identity have questioned the relevance of an undergraduate program that is primarily pre-professional.

- We recommend retaining the program's long-standing pre-professional identity. This would be in the best interest of students who intend to become architects and can still provide a broadly relevant general education that prepares students for other careers or graduate study in allied disciplines.

The website does not communicate passionately, clearly and optimistically about the excitement of the academic program and the profession that can reach

today's prospective undergraduates.

- We recommend adding a guide to the school's programs that explains their value.

Enrollment and Graduation Rates
Undergraduate admission is competitive. Graduates attain admission to highly selective graduate programs, with the greatest number of students who pursue graduate study electing to continue their professional studies in the Master of Architecture program at Georgia Tech.

There are concerns about declining undergraduate enrollment, which appears to be dropping more significantly than the enrollment at peer institutions such as the University of Texas at Austin and the University of Oregon.

- We recommend that the school work closely with university admissions to develop a marketing and enrollment development strategy that is specific to the architecture major.

Although student retention is high with sustained 6-year graduation rates over the last decade between 75 and 85 percent, the 4-year graduation rate is consistently below 50%. This seems somewhat low given the high level of academic preparation that is characteristic of the program's entering students. We were unable to determine the cause. Time spent away from school in internships, time added to participate in study abroad programs, and student difficulty with academic workloads may be contributing factors.

Curriculum and Learning Outcomes
Upper division undergraduates attain design abilities that are commensurate with expectations for graduate students beginning architectural study in the M.Arch. program. This validates the school's approach to selective vertical enrollments that create a robust menu of studio options.

Students are exposed to contemporary trends in architectural construction and develop the ability to investigate complex geometries. They develop a high level of digital and physical modeling competency. Some of the student work appears to focus on the tectonic characteristics of building enclosures without balanced development of other aspects of architectural design such as spatial ordering and site planning.

There is concern that the undergraduate program may be somewhat insular and could benefit from taking advantage of curricular opportunities at the university.

- We recommend pursuing curricular connections between the architecture program and engineering programs that would benefit students by exposing them to allied fields and provide greater opportunity for

interdisciplinary collaboration.

- We recommend developing an undergraduate minor in the field of architecture. It has the potential to enhance the experience of architecture students by giving them opportunities to interact with students from other fields, and give students from other majors insight into the discipline of architecture.

Students are interested in study abroad opportunities. There is some concern about the impact of the closure of the Paris program. Although there may be a cause and effect relationship between discontinuing the Paris program and reduced demand for study abroad programs, this appears to be a temporary effect.

- We recommend that the school improve communication to students about currently available international study opportunities and new study abroad programs planned for the near future.

The Role of the Research Mission in Undergraduate Education
There is exciting potential for undergraduate participation in research activities, but the school does not clearly address how faculty and graduate student research benefits the undergraduate program. Several members of the research faculty function as graduate faculty only with little connection to the undergraduate experience.

- We recommend that the school consider developing an undergraduate research assistantship program.

5. The Master of Science in Architecture Program

The MS in Architecture degree is a post-professional program designed for students who wish to acquire advanced practice or research ability in one of the three fields associated with the school's research laboratories: digital design and fabrication, high performance buildings, and health and design. With a distinguished research faculty and active PhD level research in these areas, Georgia Tech is well positioned to provide high quality educational experiences in high demand areas of concentration.

Enrollment, Admissions and Recruiting
The program currently has relatively few students and does not yet have the critical mass needed to form an independent learning community. The school intends to increase enrollment, but we question the viability of the school's goal to use this program as an income producer. Post professional and non-professional master's programs in the field of architecture typically have small

enrollments and competition for the best students is tied to providing financial support.

With the program open to applicants with professional degrees in architecture and related fields as well as applicants with baccalaureate degrees in non-design fields, admissions criteria, as published on the school's website and in the MS Handbook, seem overly flexible and do not clearly communicate the level of preparation expected for program applicants. Although broad accessibility may be desirable to increase numbers of potential students, it may not be an effective method to attract highly qualified students seeking a professional immersion experience.

- We recommend that the school develop a strategic plan for the program that clarifies the program identity with respect to the needs and interests of prospective students. For example, if the goal is to attract active practitioners, a low-residency program with a distance-learning component may be most effective.

Curriculum
The MS program is uniquely situated at the intersection between the school's design and research agendas. There is great potential for the program to stimulate dialog about the role of design as a means to advance practice-based research and the role of research in design practice.

We commend the precision and carefulness of student research, however, there is a certain routineness of the science and unsurprising results that may be of marginal interest to design professionals.

- The school needs to articulate the uniqueness of the program experience in relation to the talents and resources available at Georgia Tech, clarify program goals, and identify specific learning objectives for each area of concentration.

- We also recommend that the school find ways to promote greater connection and collaboration between students in the MS and PhD programs with students in the Master of Architecture programs. It will help provide MS students with more opportunities for interaction with graduate student peers. It will also further the school's aim "to increasingly anticipate design implications in the formulation of research questions."

6. The Doctor of Philosophy in Architecture Program

The recent creation of a distinct PhD program in the field of architecture creates a more visible link between the school's research programs and the long-

standing reputation of its professional programs. It also advances the discipline of architecture nationally by increasing the visibility of what may be the largest PhD program in architecture in the U.S.

The program is highly regarded internationally and its graduates have launched programs at other institutions in the U.S and abroad. Schools of architecture look to Georgia Tech when hiring faculty in the research areas supported by the program.

<u>Enrollment, Financial Support, and Degree Completion Time</u>
Admissions criteria for the PhD programs seem overly flexible and do not clearly communicate the level of preparation expected for program applicants.

PhD faculty who conduct externally funded research in the areas of design computing, health and design, and building performance obtain financial support for the PhD students they advise and are effective at recruiting students to the program. PhD students pursuing other subject areas have fewer opportunities for financial support and some faculty are reluctant to advise PhD students if they cannot provide funding.

- We recommend that the school find ways to improve the equity of financial support available to students across the areas of concentration. This may help equalize the distribution of students across concentration areas and promote greater intellectual diversity within the PhD program.

There is some concern that few students are completing the PhD within the normal 4 to 5 year time frame. Although we were unable to determine the reasons for this, unevenness in the preparation for graduate study of admitted students, and inefficiencies in the process used by students to develop their research project are potential factors.

<u>Curriculum</u>
The modularized Introduction to Architectural Research courses are valuable discussions of domains of knowledge within the discipline of architecture that introduce students to the topics and approaches used by the PhD faculty, but they do not constitute a formal research design course with a structured discussion of research methods. Although the school reports that research design pertaining to specific subject areas is addressed in advanced coursework, there appear to be gaps in the research methods curriculum that limit the ability of some students to make efficient progress in the development of their independent research work. To compensate, students look elsewhere in the Institute for this information, or acquire it independently which adds to their time in the program.

- We recommend adding a required research design course to the PhD

curriculum that ensures all students understand the full range of research methods that support the development of new knowledge in the field of architecture.

Of the eight summaries of current PhD student research in the annual report of the school, five of the research projects could have been carried out just as proficiently in an engineering school, two related the work to architectural concepts, and one was motivated by architectural design. At Georgia Tech, there is enormous potential to establish innovative architectural research agendas that is not being fully realized. The school may be missing opportunities to create an educational experience that blends design creativity with building performance research.

While the relevance of research findings to designers and the relevance of design insights to researchers are perennial issues, we miss evidence of transmission of the poetic, humanistic sensibilities we know motivate PhD faculty and students. Such sensibilities could form a new bridge between thoughtful designers and researchers. There are opportunities for discourse, not intended for publication in technical journals, which can encourage students to engage a broader range of cultural perspectives in their work.

Increased collaboration between students in the PhD program with students in other graduate programs within the school and at the university can promote greater interdisciplinary engagement and more meaningful relationships with peers. Both the PhD and MS programs can benefit from strategic linkage.

- We recommend granting students enrolled in the PhD program the MS degree after they complete their qualifying paper. This will recognize progress in the PhD program; increase MS students understanding of emerging research; improve dialog between the master's and PhD level students; encourage more active discussion of research implications for architectural practice; and serve to increase the number of MS students thereby strengthening that program's critical mass.

Appendix 1: Visiting Committee Biographies

Michael Benedikt, Professor, University of Texas at Austin

Michael Benedikt holds the Hal Box Chair in Urbanism and is the Director of UT Austin's Center for American Architecture and Design. His books include *For an Architecture of Reality*, *Deconstructing the Kimbell*, *Cyberspace: First Steps*, *Value and Value 2*, and *Shelter: The 2000 Raoul Wallenberg Lecture*. He is also executive editor of the book-series CENTER: Architecture and Design in America. He has published and lectured extensively in the U.S. and abroad on architectural practice, design theory and research, computing, art, and ethics. He was named Distinguished Professor by the Association of Collegiate Schools of Architecture and holds a Master of Environmental Design degree from Yale University and Bachelor of Architecture Degree from University of the Witwatersrand in South Africa.

Martin Fischer, Professor of Civil and Environmental Engineering, Stanford University

Martin Fischer is Director of the Center for Integrated Facility Engineering (CIFE), an industry-sponsored, academic research center that investigates virtual design and construction. He is known globally for his work and leadership in developing virtual 4D modeling (time plus 3D) methods to improve project planning, enhance facility life-cycle performance, increase the productivity of project teams, and further the sustainability of the built environment. He is the recipient of a National Science Foundation Career Award, a Senior Fellow of the Design Futures Council, and a foreign member of the Royal Swedish Academy of Engineering Sciences. Dr Fischer holds a PhD in Civil Engineering and a MS in Industrial Engineering from Stanford University, and a Diploma in Civil Engineering from the Swiss Federal Institute of Technology in Lausanne, Switzerland. (He previously served as a reviewer of the PhD Program in the College of Architecture at Georgia Institute of Technology.)

Christine Theodoropoulos, Professor and Dean, California Polytechnic State University

Christine Theodoropoulos, dean of the College of Architecture and Environmental Design, researches the integration between architectural and structural design practice. Recent projects include interdisciplinary collaborations with researchers, architects, engineers and industry specialists that address the role of structural systems in sustainable design. Theodoropoulos has held leadership positions on the National Architectural Accreditation Board, the Association of Collegiate Schools of Architecture, the National Board of the American Institute of Architecture Students and served as president of the Building Technology Educators Society. She has served as a juror and program author for national student design competitions and an external reviewer for architecture programs throughout the country. She holds a Master of Architecture degree from Yale University and a Bachelor of Civil Engineering degree from Princeton University.

Appendix 2: Visit Itinerary

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Academic Program Review
School of Architecture
Georgia Institute of Technology
Atlanta, Georgia 30332

March 10 – 12, 2013

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College Point of Contact: George Johnston, Chair, School of Architecture
George.Johnston@coa.gatech.edu,
(404) 457-4589 (mobile)

OBJECTIVES OF THE ACADEMIC PROGRAM REVIEW VISIT
1) Meet with students, faculty, staff, and school leaders and inspect facilities in order to supplement and validate the contents of the written self-study
2) Confer as a review committee to share observations and to frame a strategic evaluation of the School's trajectory with regard to the efficacy of the degree programs under review
3) Convey preliminary findings and recommendations to university leadership during an exit interview with a formal report to follow within three weeks

Sunday, March 10, 2013
7:00 pm	Check in at Georgia Tech Hotel
7:15 pm	Meet in lobby of Georgia Tech Hotel to be picked up by George Johnston to travel to dinner
7:30 pm	Dinner: Overview of Visit and Charge to the Visiting Review Committee

Restaurant: **Briza**, 866 West Peachtree Street, Renaissance Hotel, Phone: 678-412-2402

Visiting Committee
Christine Theodoropoulos, Dean, California Polytechnic State University –Committee Chair
Michael Benedikt, Professor, University of Texas
Martin Fischer, Professor, Stanford University

Georgia Institute of Technology
George B. Johnston, Chair, School of Architecture
Steven French, Associate Dean for Research
John Peponis, Associate Chair, School of Architecture
Michael Gamble, Associate Chair, School of Architecture

Monday, March 11, 2013
7:30 am	Breakfast at Georgia Tech Hotel
8:15 am	Transportation to the School of Architecture provided by George Johnston
8:30 am	Meeting with key staff-Suite 223, Dean's Conf. Rm., East Architecture Bldg.

Eric Trevena, Lucie Andre, Brenda Pereira

9:00 am	Break
9:15 am	Meet with Undergraduate Faculty - Suite 223, Dean's Conf. Rm., East Architecture Bldg.

Ann Gerondelis, Benjamin Flowers, Laura Hollengreen, Jude LeBlanc, Alice Vialard, Harris Dimitropoulos, Fred Pearsall, Tim Harrison

10:00 am	Tour of Instructional Facilities with Michael Gamble
10:30 am	Break
10:45 am	Meet with Research Faculty - Suite 223, Dean's Conf. Rm., East Architecture Bldg.

Ellen Dunham-Jones, Sonit Bafna, Godfried Augenbroe, Craig Zimring, Economou

11:30 am	Tour of Research Facilities (Hinman Building) with Charles Rudolph and Doug Allen

12:00 pm	Lunch with Tenure Track Faculty-Suite 223, Dean's Conference Room, East Architecture Building
	Tristan Al-Haddad, Gernot Riether, Jason Brown
1:30 pm	Meet with Part-time Faculty - Suite 223, Dean's Conference Rm., East Architecture Building
	Volkan Alkanoglu, Jennifer Bonner, Jack Pyburn, David Yocum, Lauren Hickman, Judy Gordon
2:00 pm	Meet with Undergraduate Student Leaders- Suite 223, Dean's Conf. Rm., East Architecture Bldg.
	William McCommon, Brianna Rindge, Jessie Hughes, Ashley Rodriguez
2:45 pm	Break
3:00 pm	Meet with MS and Ph.D. Students- Suite 223, Dean's Conf. Rm., East Architecture Bldg.
	Katie Johnson, Roya Rezaee, Hoyoung Kim, Matthew Swarts, and others
4:00 pm	Discussion by Review Committee only - Suite 223, Dean's Conf. Rm., East Architecture Bldg.
4:30 pm	Wrap-up Meeting with School Director- Suite 223, Dean's Conf. Rm., East Architecture Bldg.
	George Johnston
5:00 pm	Adjourn – Committee Members return to hotel
	Transportation provided by George Johnston
6:30 pm	Dinner at Georgia Tech Hotel – External Review Committee only

Tuesday, March 12, 2013

8:00 am	Breakfast at Georgia Tech Hotel
9:15 am	Take Taxi to School of Architecture
9:30 am	External Review Committee Report Preparation- Suite 223, Dean's Conf. Rm., East Architecture Bldg.
11:30 am	External Review Committee Lunch-Suite 223, Dean's Conf. Rm., East Architecture Bldg.
1:00 pm	External Review Committee Exit Report-French Conference Room, French Building
	Rafael Bras, Provost and Vice President for Academic Affairs (Tentative)
	Colin Potts, Vice Provost for Undergraduate Education
	Leslie Sharp, Assistant Vice Provost for Graduate Education and Faculty Affairs
	George B. Johnston, Chair, School of Architecture
	Steven French, Associate Dean for Research, School of Architecture
	John Peponis, Associate Chair, School of Architecture
	Michael Gamble, Associate Chair, School of Architecture
2:30 pm	Adjournment