

## PROMOTION RECOMMENDATION

The University of Michigan

A. Alfred Taubman College of Architecture and Urban Planning

Peter D. von Buelow, assistant professor of architecture, A. Alfred Taubman College of Architecture and Urban Planning, is recommended for promotion to associate professor of architecture, with tenure, A. Alfred Taubman College of Architecture and Urban Planning.

### Academic Degrees:

Ph.D.	2007	University of Stuttgart, Institute of Lightweight Structures and Conceptual Design
M.S. Civ. Eng.	1991	University of Tennessee
B.Arch.	1979	University of Tennessee

### Academic Record:

2001-Present	Assistant Professor of Architecture, Taubman College of Architecture and Urban Planning, University of Michigan
1994-1996	Associate Professor of Architecture, School of Architecture, University of Tennessee
1982-1994	Assistant Professor of Architecture, School of Architecture, University of Tennessee

### Professional Record:

2001	RFR, Stuttgart, Germany
1998-2000	Office of Swibert Greiner, Oberaichen, Germany
1997-1998	Sonderkonstruktionen und Leichtbau GmbH, Oberaichen, Germany
1980	Office of Robert Kennedy, Knoxville, Tennessee
1978	Office of Jörg Anders, Bonn, Germany
1977	Freie und Hasestadt Hamburg Baubehörde, Hamburg, Germany

### Summary of Evaluation:

Teaching: Every year Professor von Buelow teaches all the required structural technology core courses as well as half the elective courses. This is of great consequence because, while design is at the center of the discipline of architecture, structural technology is a significant area of scholarship in the field with extensive NAAB accreditation requirements. In addition, Professor von Buelow has taught the research practicum and area seminar for the building technology concentration of the Doctoral Program in Architecture. While at Taubman College, Professor von Buelow has taught over 2200 students; few if any, other members of the faculty have had such a total over the same period of years.

Professor Von Buelow's unique cross-disciplinary education and experience make him extremely well suited for the teaching of structures in an architecture program and distinguish him among structural specialists at American architecture schools. Professor Von Buelow is both a registered

architect and an engineer in Germany and has extensive professional experience. He is one of a few teaching in an American university to have worked directly with both Frei Otto and Werner Sobek, and the work he completed at Stuttgart adds significant credentials to our architecture faculty.

Among architecture students, Professor von Buelow is able to open minds to the nature and creative potential of engineering thinking. This makes him especially skilled as a teacher. He has developed innovative teaching methods that integrate technology into the classroom, fundamentally transforming architectural pedagogy and the learning experience.

Professor Von Buelow's development of teaching software surpasses the ordinary with the supporting role for on-line media in his classes evolving over several years. It represents considerable intellectual capital in the teaching of technical topics within the architecture curriculum. It has the advantage of combining individual and group-based learning in a spirit of exploration, rather than one fixed on just getting the intended answer. This turns technical learning into much more of a participatory experience, conducive to trial and error, and geared to an individual level of readiness. He calls this active engagement by students "working mode." These on-line teaching methods are completely Professor von Buelow's innovation and are not to be found in any other architecture school.

Research: Professor von Buelow's research has centered on the exploration of architectural form guided by structural behavior, a fundamental design issue that has received little attention outside of architectural history. He has focused on genetic algorithms as the means of informing architectural design with structural performance, placing his work at the forefront of an important new field – evolutionary design. To that end, Professor von Buelow's work bridges three areas of study: structural technology, architectural design and computation. This interdisciplinary approach is much needed at this time in the field of architecture. While in the last twenty years digital technology has dramatically transformed the field in the area of visualization, it has done little to advance how buildings are constructed.

Professor Von Buelow has made two unique contributions to the field: first to place evolutionary computation within the broader context of architectural culture; and second to develop evolutionary computing tools (software) that use genetic algorithms which allow architects to explore structural solutions throughout the design process. This is unlike previous practices where structural solutions were developed *a priori* or *a posteriori* to architectural design. Thus, while in the field of structural technology computation is currently being used to find the "best solution," Professor Von Buelow's application of genetic algorithms allows computing to expand the realm of possibilities and facilitates more input by the designer during the actual computational process.

Professor Von Buelow points to the evolution of his software in order to make it more accessible as the next step in his research. He is currently exploring a merger between his genetic optimization techniques and parametric generative form techniques already available, e.g. Bentley Systems Generative Components.

### Recent and Significant Publications:

- 2008 von Buelow, P. "Advantages of Evolutionary computation used for Exploration in the Creative Design Process" in *Journal of Integrated Systems, Design, and Process Science*. Vol. 11, No. 3, September 2007.
- 2008 von Buelow, P. "Suitability of Genetic Based Exploration in the Creative Design Process" in *Digital Creativity*. Routledge, Vol.19, No.1, pp.51-61, 2008.
- 2004 Synnes, K. & von Buelow, P. "A Tree for a House: designing for *super-mobility* by means of digital craft" in *Journal of Architectural Education*. eds. Cavanagh, Ted and Allen, Edward. Vol. 57. Issue 1. 2004.
- 2002 von Buelow, P. "Using Evolutionary Algorithms to Aid Designers of Architectural Structures" in *Creative Evolutionary Systems*, ed. Bentley, P. and Corne, D. Morgan Kaufmann, 2002.

### External Reviewers:

Reviewer A: "His research is certainly near the leading edge of an important new field – Evolutionary Design...."

Reviewer B: "The computational sophistication and relevance of von Buelow's work is undisputed among experts."

Reviewer C: "...there are too few building technology faculty within architecture programs who are focused on making technical information relevant in the early stages of architectural design.... Dr. von Buelow's work makes a significant contribution in this area, with his focus on evolutionary structural algorithms."

Reviewer D: "In this respect, his accomplishments reflect far more breadth than would be anticipated from a tenure applicant in engineering at a similar stage of their career."

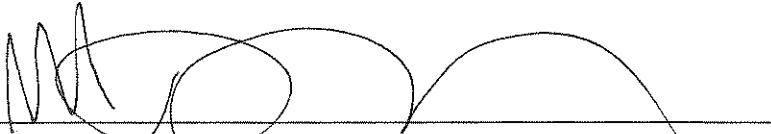
Reviewer E: "Professor Von Bülow [sic] has redefined the manner in which computers and digital media are utilized by students and architects. Through his work he has been instrumental in developing a new model of computer-based design generation and research: a model that takes advantage of the capabilities of the technology without demeaning the design process or trivializing the new technology."

Reviewer F: "I can't think of anyone teaching structures in an architecture program in America who has this candidate's combination of high-level practice, theoretical rigor, hands-on construction, and sensitivity to design."

Reviewer G: "Von Buelow is one of [a] number of structural engineers who have come to the USA from the "German (Stuttgart) school of Frei Otto, Leonhardt – Schlaich, and Werner Sobek....[These] are in demand as teachers, and you are fortunate to have one attached to your college."

Summary of Recommendation:

An architect and structural engineer, whose area of scholarship is at the leading edge of an important new field within the discipline of architecture, Professor Von Buelow is also an extraordinary teacher whose unique instructional methodologies make him one of the most valued instructors in the college. His research bridges structural technology, architectural design, and computation, an interdisciplinary approach needed at this time in the field of architecture. Professor Von Buelow's prowess as an educator and his hybrid approach to scholarship and practice within a professional school are highly valued and merit his promotion. The Executive Committee and I are unanimous in recommending his promotion to associate professor of architecture, with tenure, A. Alfred Taubman College of Architecture and Urban Planning.



Monica Ponce de León, Dean and Eliel Saarinen Professor  
of Architecture and Urban Planning  
A. Alfred Taubman College of Architecture and Urban Planning

May 2009