Approved by the Regents May 15, 2014

PROMOTION RECOMMENDATION
The University of Michigan
A. Alfred Taubman College of Architecture and Urban Planning

Peter D. von Buelow, associate professor of architecture, with tenure, A. Alfred Taubman College of Architecture and Urban Planning, is recommended for promotion to 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, Stuttgart, Germany
M.S.	1991	University of Tennessee, Department of Civil Engineering
B.S.	1979	University of Tennessee, School of Architecture

Professional Record:

2009 – Present	Associate Professor of Architecture, A. Alfred Taubman College of Architecture and Urban Planning, University of Michigan
2001 – 2009	Assistant Professor of Architecture, A. Alfred 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

Summary of Evaluation:

Teaching: Professor von Buelow is an extraordinary teacher who has taken a creative and reflective approach to instruction in our architecture program, from undergraduate to doctoral levels, making him a valued educator in the college. He has taught both optional and required courses related to structures. This can be a difficult topic for many students to grasp, so it is noteworthy that his student ratings have been consistently high, both for the courses and the instructor. Students have recognized Professor von Buelow's extreme competence in his field that underlies his teaching and indicated that he exceeded expectations in terms of his knowledge of the subject matter. Students also find him to be extremely accessible and personable. They awarded him the Donna M. Salzer Award for Teaching Excellence in 2011.

Professor von Buelow has been effective in engaging students in the classroom in different ways. One of his goals has been to help students learn to satisfy their own curiosity or a larger goal rather than to please the teacher through rote learning. He has emphasized the use of physical models to help students understand how the mathematical theories translate into physical form. He has also developed several web-based learning systems which allowed students to pace their own learning, by receiving immediate feedback on their success with the current problem, or by refreshing the same problem with different data to help learning. These self-paced learning resources have become robust enough that the university included selections in its open educational resources website, Open.Michigan.

Research: Professor von Buelow has risen to international recognition in a new subfield that he has helped create at the meeting of architecture and structural engineering. His work has pioneered the role of structural form-finding in early architectural design stages by means of digital media.

Professor von Buelow's specific contribution is a process of design exploration using evolutionary computation. He has developed a discovery process that complements and applies processes of optimization in structural design for architecture. This process of interleaving exploration and optimization is a distinctly original contribution. ParaGen, Professor von Buelow's computational method for structural design exploration, has been very widely cited in the architecture discipline's recent turn toward generative computational methods.

Professor von Buelow's method is technically rigorous and amply published and citied within structural engineering circles, but its greater significance lies in its reception by wider circles of architecture's digital design research culture. Architecture's recent advances in digital methods have moved the discipline ahead very quickly to arrive at a stage where casual exploration in genetic algorithms has become understandable, desirable, and viable in the studio culture. This has radically expanded the impact and appreciation of Professor von Buelow's work.

Recent and Significant Publications:

von Buelow, P., "Techniques for More Productive Genetic Design: Exploration with GAs Using Non-Destructive Dynamic Populations," *Adaptive Architecture*, eds. Beesley, Khan and Stacey. Proceedings of the Association for Computer-Aided Design in Architecture International Conference, October 2013, Cambridge, Ontario, Canada.

von Buelow, P., "Improving Generative Design through Selective Breeding," *Beyond the Limits of Man*, eds J.B. Obrębski and R. Tarczewski. Proceedings of the International Association for Shell and Spatial Structures Symposium, September 2013, Wroclaw University of Technology, Poland.

von Buelow, P., "ParaGen: Performative Exploration of Generative Systems," *Journal of the International Association for Shell and Spatial Structures*. Vol. 53, No. 4, 2012, pg. 271-284.

Turrin, M., von Buelow, P., Kilian, A., Stouffs, R., "Performative Skins for Passive Climatic Comfort: A Parametric Design Process," *Automation in Construction*. Vol. 22, March 2012, pg. 36-50.

Turrin, M., von Buelow, P., Stouffs, R., "Design Explorations of Performance Driven Geometry in Architectural Design Using Parametric Modeling and Genetic Algorithms," *Advanced Engineering Informatics*, Elsevier, Vol. 25, Is. 4, Oct. 2011, Pages 656-675.

Service: For the larger academic community, Professor von Buelow has been a member of international conference committees, reviewing and judging papers and chairing sessions, especially for the International Association of Shell and Spatial Structures where he is a member of both the Working Group on Structural Morphology and the Review Committee for the Hangai Prize while serving as an article reviewer for the *International Journal of Space Structures*. He is also a member of the Scientific Committee of the bi-annual Design Modeling Symposium Berlin.

Professor von Buelow has served on review committees for *Built*, the *Journal of Architectural Education*, *Buildings*, and *Automation in Construction* and has been a reviewer for several book publishers including Cambridge University Press, Laurence King Publishing and John Wiley and Sons Publishers. At the university, he is currently serving as a faculty senator for the college and has also served on the University Rules Committee and as a reviewer for internal research grants through the Office of Research. He also actively serves the college on a variety of search, review and curriculum committees.

External Reviewers:
Reviewer A: "von Buelow has consistently pursued work in his core area of structural design and related computational design approaches using genetic algorithms, and since 2008 this work has not only been published more extensively internationally, but has also been widely cited across the board."

Reviewer B: "...Peter's work has been cited over sixty times, both nationally and internationally...The largest portion of these citations come from the field of structural design and analysis. This would indicate to me that Peter is seen as a significant contributor to research in this area. However, what I find far more significant is the number of citations in fields beyond structural design...from fields of building performance and evaluation, urban design, computational design methods and art. Being a contributor to multiple disciplines speaks well to the true significance and reach of Peter's research."

Reviewer C: "Peter von Buelow's work on evolutionary algorithms in structural design is very well known within the international scientific community of architectural engineering...I consider the integration of his evolutionary optimization algorithms in a computational design strategy as highly innovative and as architectural design research fulfilling international top standards."

Reviewer D: "...he is active in an important area of research and teaching in structural engineering and design...I find the quality of von Buelow's writing and design and software research...stimulating."

Reviewer E: "Professor von Buelow is an international leader in the use of structural optimization to explore and discover alternative designs...Peter's research has made groundbreaking new strides in structural optimization, by demonstrating the ways in which designers can use optimization to explore design spaces they would not have explored otherwise...We view him as the founder of the field of exploratory structural optimization."

Summary of Recommendation:
Professor von Buelow is a distinguished and productive scholar who has made significant contributions in the area of computational methods for structural design exploration. He is also an extraordinary teacher who has transformed how the college's structure courses are taught, and he is dedicated member of the college, university, and academic communities. It is with the support of the Taubman College Promotion and Tenure Committee and the Executive Committee that I recommend Peter D. von Buelow for promotion to professor of architecture, with tenure, A. Alfred Taubman College of Architecture and Urban Planning.

Monica Ponce de Leon
Dean and Eliel Saarien Collegiate Professor of Architecture and Urban Planning
A. Alfred Taubman College of Architecture and Urban Planning

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