

**American Society of Civil Engineers
Structural Engineering Institute
Technical Committee on Optimal Structural Design**

**Un-Approved Meeting Minutes
2009 ASCE-SEI Structures Congress
Renaissance Austin Hotel - Frio Room
Austin, Texas
Wednesday, April 29, 2009; 3:00 – 5:30 pm**

Members in Attendance

Chris Foley (Chair)	Marquette University	chris.foley@marquette.edu
Colby C. Swan (AE-JSE)	University of Iowa	colby-swan@uiowa.edu
Arzhang Alimoradi (Secretary)	John A. Martin/USC	arzhang@members.asce.org
Jamie Guest	Johns Hopkins University	jkguest@jhu.edu
Anne Raich	Lafayette College	raicha@lafayette.edu
Keith Mueller	Teng and Associates	muellerkm@teng.com
Michael Gustafson	Tekla	Michael.gustafson@tekla.com

Visitors (and Friends)

Abhinav Gupta	North Carolina State University	agupta1@eos.ncsu.edu
Shahram Pezeshk	Chair: TAC-Analysis and Computation	spezeshk@memphis.edu
Salam Rahmatalla	University of Iowa	salam-rahmatalla@uiowa.edu
Perry S. Green	Steel Joist Institute	
H Rolfe Jennings II	CMC Americas	

The meeting was called to order at 3:10 PM by the Chair (Prof. Foley).

1. Introductions (Members, Friends, Guests) and welcoming of new members

Members and guests provided a short introduction to the Committee.

2. Review and approval of Minutes from 2008 Meeting in Vancouver, BC, Canada

Copies of the last year minutes were distributed and approved without amendment (Comments are still accepted within a couple of weeks and prior to distribution of this draft.) There was no new business resulting from the previous minutes.

3. Review and Update of Membership Roster

Committee is generally healthy with its membership size. A 10-20 member committee is considered healthy. Five members' term is expiring in 2009; Chair expressed ASCE's preference for committees with an active core group and recommended that committee members approach their ASCE colleagues with interest in structural optimization to consider joining the Committee.

- election/confirmation of new OSD Chair

This year Prof. Christopher Foley's term as Chair of OSD Committee will expire, he can join the committee again next year as friend. Keeping a technical Committee in an excellent shape requires a lot of effort and the Committee wishes to express sincere gratitude to Prof. Foley for

his extraordinary job as Chair. The Committee hopes that Prof. Foley continues his support of its activities after his term as friend of the Committee.

Recommendation of Prof. Colby Swan (University of Iowa) as incoming chair of the committee was discussed. Prof. Swan's term as AE of JSE will expire in summer of 2008. Prof. Swan's nomination was confirmed by the committee.

- election/confirmation of new OSD Secretary/OSD web master
Chair Foley, discussed recommendation of Prof. Jamie Guest (Johns Hopkins University) as new OSD secretary and web master. Prof. Foley requested incoming web master to also take charge with the structural optimization wiki (<http://structuraloptimization.wikispaces.com/>). Arzhang Alimoradi expressed desire in helping web master in updating OSD website and moderating the wiki pages. Prof. Guest's nomination as secretary was confirmed by the committee.

- election/confirmation of new Associate Editor of JSE
Chair Foley discussed recommendation of Dr. Arzhang Alimoradi (John A. Martin & Associates/USC) as new Associate Editor for Journal of Structural Engineering. Dr. Alimoradi's nomination was confirmed by the committee. The Chair will pass along the name and contact information of the new AE to Professor Sashi Kunnath of UC Davis so that the transition to new AE can take place. The Committee would like to express its sincere thanks to Professor Colby Swan for his excellent service as AE for the Journal of Structural Engineering.

- discussion of potential new members
Arzhang Alimoradi discussed benefits of using a bibliographic database in finding the most heavily published colleagues in the area for invitation to join the Committee. He requested opinion by Committee members on invitation of the following individuals to the OSD Committee:

W. Achtziger (Topology Optimization)
M. Aschheim (Optimization of Concrete Structures)
G. P. Cimmellaro (Optimization of Dynamic Response)
S. Degertekin (Nature-based Optimization)
T. Hagishita (Optimization of Steel Structures)
O. Hasançebi (Nature-based Optimization)
T. Haukaas (Optimization under Uncertainty)
X. Huang (Topology Optimization)
A. Kaveh (Optimization of Plastic and Limit Capacity)
N. Lagaros (Optimization of Seismic Response)
M. Ohsaki (Optimization of Seismic Response)
M. Saka (Nature-based Optimization)
G. I. Schuëller (Optimization under Uncertainty)
M. V. Sivaselvan (Optimization in Lagrangian mechanics)

Prof. Foley reminded committee members that individuals who may be invited to the Committee should be first a member of ASCE in good standing.

New members:

Prof. Makoto Ohsaki (of Kyoto University) has expressed interest in becoming a member. The Chair will contact Prof. Ohsaki and encourage him to apply for committee membership. Dr. Qian Wang of Kal Krishnan Consulting Services, Inc. has been approved as a new member of the

Committee. The Chair reminded committee members that their membership has a six-year term and that participation in annual Committee meetings is encouraged.

4. Associate Editor's Report - Swan

Prof. Colby Swan outlined the papers that he has handled during the year preceding the Austin meeting. There were a total of 23 papers (18 unique) handled by OSD-AE from May 2008 through April 2009. A breakdown of these manuscripts is given below:

- 8 papers are presently in review without decisions.
- 7 papers have been reviewed and major revisions were recommended
- 5 papers have been rejected
- 3 papers have been accepted.

Arzhang Alimoradi discussed a recent assessment of a set of 20 technical journals in the area of structural engineering and optimization. The OSD reviewed this listing and expressed some concerns with regard to the Journal of Structural Engineering's impact factor. The Chair stressed the importance of timely reviews as time to print is one of the important metrics that defines the impact factor.

The Chair also discussed the opportunity for the Committee to forward manuscripts (and its authors) to the Editor for award consideration.

5. Report on Planning for the 2010 Structures Congress and 19th Analysis and Computation Specialty Conference in Orlando, Florida

Prof. Chris Foley is Co-Chair of the 19th A&C Specialty Conference along with OSD member's Asghar Bhatti and Shahram Pezeshk. The Chair explained that next year's congress and A&C will be held for the first time as a joint event with the American Institute of Steel Construction in Orlando, Florida on May 12-14, 2010.

The chair outlined the important deadlines for the conference. The deadline for abstract submission is June 10, 2009. The final camera-ready papers are due by January 20, 2010. The 19th A&C will include manuscript review by the steering committee prior to acceptance.

The Chair encouraged submission of session and manuscript abstracts by OSD committee members. The chair emphasized the importance of organizing sessions as the 19th A&C is to have a full concurrent track of 10 sessions. The A&C TAC expects the OSD committee to sponsor two sessions to help fill out the track.

The committee discussed the issue of the session proposal due date preceding the date of the congress by a significant amount. The committee felt that ASCE-SEI might review deadlines and attempt to push the publication-ready paper deadline as far back as possible to encourage authors to submit papers.

Prof. Foley has been in contact with OSD member John Peronto of Thornton-Tomasetti. John is formulating a session proposal tentatively entitled "Optimization in Geometrically Complex Structures".

Arzhang Alimoradi discussed the idea of having a session proposal on benchmark problems in structural optimization. The session will encourage academicians to tackle larger scale problems and will persuade practitioners to adopt available techniques in structural optimization for their designs. The session, in general, will be a proof of concept and will showcase the application of structural optimization. It will discuss:

- I. Past: The role of benchmark problems in advancement of structural optimization knowledge and techniques; and in quantification and evaluation of optimization methods. What purpose do they serve? How many of them are established? What structural systems do they represent? What search space dimensions are normally covered (number of variables?) What types and how many objective functions/constraints do they typically represent? How old are these benchmarks?
- II. Present: practical needs of today, dimensions of modern engineering optimization problems, new generation of benchmarks, design beyond cost, strength, and stiffness, and new design philosophies.
- III. Future: Where are we heading to and what challenges are we facing?

Prof. Foley suggested consideration of a speaker for practical issues. He also suggested that one session could formalize the problem and poses some new benchmarks; then a few years later participants could come back to see how they have performed with regards to the new benchmarks. Prof. Foley advised that abstracts should be appealing and the proposal should be formulated tightly.

Action Item:

Arzhang to formulate a proposal, circulate it to committee members particularly Profs. Raich, Gupta and Mr. Gustafson for their participation and input, and contact five potential contributors.

6. Review of OSD Product Tracking Sheet

Contribution of OSD committee to Analysis & Computation TAC was reviewed. Product tracking sheet is used by the A&C TAC to keep track of committee activities. Committee members are reminded to keep Chair of the committee informed about their activities.

7. Review of ASCE-SEI Special Projects Opportunities – Foley

Every year, around early March, Technical Activities Division sends request for proposals. Supplemental funding is available for about \$3'000-\$8'000 for white papers, special projects, and report. Committee members should submit their proposal to Prof. Shahram Pezeshk.

Last year, no proposal was submitted for the A&C TAC.

Action Item:

Dr. Arzhang Alimoradi and Prof. Christopher Foley would like to write a proposal for funding an annual competition for the best student paper on Emerging Computing Technologies in Structural Engineering, as a joint effort between the Optimal Structural Design and Emerging Computing Technology Committees of the A&C TAC. The competition will be announced to undergraduate and graduate students of structural engineering annually, the best paper will be selected by a team of judges from both committees for a nominal award and a plaque of recognition. The top three

nominees will be invited to present their work in front of the Emerging Computing Technology Committee during the annual meetings and will be invited for membership in the committee.

8. Technical Presentations

Three presentations were made on some of the current work by committee members and their students:

Presentation 1: Professor James Guest – Johns Hopkins University
Advances in Topology Optimization

Prof. Guest reviewed his work on topology optimization in continuum mechanics, its challenges, and some of the recent advancements to address these challenges.

Presentation 2: Prof. Anne Raich – Lafayette College
Integrating User Preferences into Conceptual Design Search and Optimization

Prof. Raich reviewed her work on conceptual optimal design of trusses using GA and design decision making for structural configurations using a Kohonen neural network.

Presentation 3: Prof. Chris Foley – Marquette University
Structural Optimization Using Commercial Software via an API

Prof. Foley reviewed recent work by his graduate students at Marquette University in successfully using commercial structural analysis software for the problem of design optimization of structural systems.

These presentations were very well received. There were brief discussions with presenters after each talk.

9. Items for Discussion and Other Business

The OSD Web-Site (<http://www.eng.mu.edu/foleyc/asce-osd/>) transition and the Structural Optimization Wiki were briefly discussed.

Action item:

The idea of publishing special OSD-organized journal issues outside ASCE (e.g. “Structural and Multidisciplinary Optimization”) is to be discussed amongst OSD members. Prof. Guest informed the committee that quick review process and fast publication of research articles by some journals may encourage younger faculty to seek publishing their work outside ASCE.

The meeting was adjourned at 5:45 pm.

Respectively Submitted,



Arzhang Alimoradi, Ph.D., P.E.
Secretary – Technical Committee on Optimal Structural Design
May 3, 2009