

***IUTAM REPORT
ON
WORKING PARTIES***

(AND STANDING SCIENTIFIC COMMITTEES)

17 May 2008

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1. Introduction

Following the final assessment of IUTAM (31 May 2000) and discussion at the General Assembly in Chicago (29/30 August 2000), the Bureau was asked to prepare a report and recommendations on the establishment of Standing Scientific Committees for consideration by the General Assembly. The report and recommendations, as prepared by the Bureau, were then discussed at the General Assembly in Cambridge, UK (17/18 August 2002). In the report a distinction was made between Standing Scientific Committees (SSCs) and Working Parties (WPs). The General Assembly agreed that no such distinction should be made and that only WPs should be considered for the time being with similar terms of reference as the proposed SSCs but with a more severe monitoring by the Bureau and the General Assembly. The Bureau was asked to update the report based on this agreement.

2. Background

2.1 Working Parties established in Kyoto

Six Working Parties were established at the General Assembly in Kyoto (1996) with the following terms of reference:

- to make recommendations to the General Assembly regarding timely subjects for IUTAM Symposia;
- to make recommendations to the Congress Committee concerning representation of areas of work covered by the WP at future Congresses;
- to establish contact with the relevant Affiliated Organizations and with other international bodies involved in the area and to determine to what extent further active collaboration with these bodies may be desirable (e.g. through joint symposia);
- to consider the extent to which IUTAM is providing leadership in the area concerned;
- to identify the important growth areas of the field;
- to report to the General Assembly at least once in each four-year period with perhaps one interim report.

The following Working Parties (WPs) were then established:

WP1 Mechanics of Non-Newtonian Fluids (of special relevance to ICR)

WP2 Dynamical Systems (of special relevance to IAVSD)

WP3 Fracture Mechanics and Damage (of special relevance to ICF)

WP4 Mechanics of Materials (of special relevance to ICM)

WP5 Electromagnetic Processing (of special relevance to HYDROMAG)

WP6 Computational Mechanics (of special relevance to IACM)

These Working Parties provided brief interim reports at the 1998 General Assembly, and further reports for the 2000 General Assembly. The report from WP1 was particularly noted for the thoroughness with which it had approached the subject. All Working Parties had been active in promoting the development of proposals for IUTAM Symposia, some with more success than others.

2.2 Assessment Panel Recommendations (31 May 2000)

On the subject of SSCs, the Panel wrote as follows:

“there was strong support for the need to increase collaboration between IUTAM and its Affiliated Organizations, many of which have been established after the founding of IUTAM. The Panel believes that SSCs are in the best position to carry out this responsibility. Opportunities for collaboration occur in identifying important areas for symposia, determining a venue and programme, and developing resources for support, particularly in new areas. The Panel encourages the inclusion of members of Affiliated Organizations on SSCs to the maximum extent feasible.”

The Panel made the following specific recommendations:

- I) reconstitute existing Working Parties as SSCs;
- II) increase the number of SSCs to reflect important emerging fields;
- III) incorporate the Chairmen of the SSCs into the Congress Committee.

The final recommendation was based on a need perceived by the Panel to “strengthen the role of the Congress Committee”.

2.3 General Assembly Agreement (17/18 August 2002)

In the original report and recommendations, as prepared by the Bureau, SSCs were primarily meant to structure the overlapping activities between IUTAM on the one hand and some of its Affiliated Organizations and sister International Unions on the other. Moreover, the SSCs should report to the General Assembly at least once in each four-year period. WPs were meant to be more explorative and could evolve into SSCs after a four-year period. At its meeting in Cambridge, UK (17/18 August 2002) the General Assembly agreed to continue to consider only WPs. The SSCs proposed by the Bureau were accepted as new WPs, replacing the WPs established in Kyoto (1996). Additionally, 4 more new WPs were accepted on emerging fields. The terms of reference of the new WPs could be similar to those of the proposed SSCs (which themselves are similar to those of the WPs established in 1996). All WPs are required to report to the Bureau once every year and to report to the

General Assembly once every 2 years. Continuation of each WP is to be considered by the General Assembly at its bi-annual meeting.

3. WPs as a possible link with other Unions of the ICSU family

The subject of Theoretical and Applied Mechanics reaches out to fields that are primarily covered by other International Unions of the ICSU family. One of the principal objectives of ICSU is to “stimulate, design, coordinate or participate in the implementation of international interdisciplinary scientific programmes”, and it is currently placing some emphasis on this need for interdisciplinarity in areas for which it proposes to provide financial support in the future. It therefore makes sense that, in setting up WPs, we should bear in mind the possibility of building bridges with other International Unions with which we have overlapping interests. These include the following:

International Astronomical Union (IAU)
International Union of Biochemistry and Molecular Biology (IUBMB)
International Union of Biological Sciences (IUBS)
International Union of Pure and Applied Biophysics (IUPAB)
International Union of Pure and Applied Chemistry (IUPAC)
International Union of Food Science and Technology (IUFoST)
International Union of Geodesy and Geophysics (IUGG)
International Union of Geological Sciences (IUGS)
International Union of History and Philosophy of Science (IUHPS)
International Mathematical Union (IMU)
International Union of Pure and Applied Physics (IUPAP)
International Union for Physical and Engineering Sciences in Medicine (IUPESM)
International Union of Physiological Sciences
International Union of Soil Science (IUSS)

In setting up WPs which have contact with one or more of these Unions, we should invite the Unions concerned to each nominate one member of the WP. A particular responsibility of the WPs could then be to stimulate proposals for Symposia in the area common to both Unions, which could be jointly sponsored by IUTAM and the relevant Union.

4. Terms of Reference of WPs

The following terms of reference of WPs were agreed at the General Assembly in Cambridge, UK (2002):

- to make recommendations to the General Assembly regarding timely subjects for IUTAM Symposia;
- to make recommendations to the Congress Committee concerning representation of areas of work covered by the WP at future Congresses;
- to maintain contact with the relevant Affiliated Organizations and with relevant sister International Unions and to determine to what extent further

active collaboration with these bodies may be desirable (e.g. through joint symposia);

- to consider the extent to which IUTAM is providing leadership in the area concerned, and any action it should take to achieve this;
- to identify important growth areas of the field;
- to assist the Bureau and the General Assembly in discussions on Position Statements;
- to report annually to the Bureau and to the General Assembly bi-annually. The reports will be included in the IUTAM Report.

5. WPs established in Cambridge, UK

If the main purpose of WPs is to ensure that IUTAM maintains serious scientific contact both with its Affiliated Organizations and with its sister International Unions, then the field covered by any WP should have an interdisciplinary character. This was clearly the case with at least four of the working parties (WP1, WP2, WP5 and WP6) established in Kyoto, less clearly so for WP3 and WP4, whose scope lay more centrally within the field of mechanics. It is perhaps arguable that 'Fracture Mechanics and Damage' is a branch of 'Mechanics of Materials' and, hence, these two Working Parties will now be combined within one new WP 'Mechanics of Materials'.

Subject to this, let the six Working Parties, established in Kyoto, evolve into the first five new WPs, with the following modified titles:

- WP1 Non-Newtonian Fluid Mechanics and Rheology
- WP2 Dynamical Systems and Mechatronics
- WP3 Mechanics of Materials
- WP4 Materials Processing
- WP5 Computational Fluid and Solid Mechanics

Additionally, in Cambridge, UK, the General Assembly agreed on the formation of Working Parties on the following subjects (potential links with other International Unions are indicated in parentheses):

- WP6 Biomechanics (IUPAP, IUBMB, IUBS, IUPESM, IUPS)
- WP7 Nano- and Micro-Scale Phenomena in Mechanics (IUPAP, IUMS)
- WP8 Geophysical and Environmental Mechanics (IUGG, IUGS, IUSS)
- WP9 Education in Mechanics and Capacity Building (IUHPS, IMU)

Appendix A: General Composition and Rules of Procedure of WPs

1. In principle, the number of members of a WP will not exceed five, including a Chairman and representatives of Affiliated Organizations and sister International Unions as appropriate.
2. In principle, the Chairman of each WP will be appointed for a four-year period with an exceptional extension of two years. The principle of rolling chairmanship within the members of each WP is highly recommended.
3. The duration of membership of a WP will not exceed eight years, at least in principle.
4. The Chairman of a WP will normally initiate communication by e-mail as soon as reasonably possible after appointment, and will seek the views of members of the WP concerning any matter within its Terms of Reference.
5. It is expected that each WP will normally communicate by e-mail, but will also meet when natural opportunities present themselves, e.g. at IUTAM Symposia within the relevant field, and at ICTAMs
6. Each year the Secretary-General will invite a written Report from the Chairman of a WP for consideration at the annual Bureau meeting and inclusion in the IUTAM Report. Bi-annually, the WP Reports will additionally be considered at the meeting of the General Assembly.

Appendix B: Current membership of IUTAM Working Parties

WP1: Non-Newtonian Fluid Mechanics and Rheology

Chair: Prof. L.G. Leal, Santa Barbara (CA), USA, member GA,
representative of ICR

email: lgl20@engineering.ucsb.edu

Additional members:

Prof. D. Boger, Melbourne, Australia,

email: dvboger@unimelb.edu.au

Prof. R. Keunings, Louvain-La-Neuve, Belgium,

email: rk@mema.ucl.ac.be

Prof. J.R.A. Pearson, Cambridge, UK, observer GA

email: pearson@cambridge.scr.slb.com

WP2: Dynamical Systems and Mechatronics

Chair: Prof. F. Pfeiffer, Munich, Germany, observer GA

email: pfeiffer@amm.mw.tum.de

Additional members:

Prof. F.L. Chernousko, Moscow, Russia, member SP

email: chern@ipmnet.ru

Prof. R.S. Sharp, London, UK, observer GA

email: robin.sharp@ic.ac.uk

Prof. M. Tomizuka, Berkeley (CA), USA,

email: tomizuka@me.berkeley.edu

Prof. H.Y. Yabuno, Tsukuba, Japan

email: yabuno@esys.tsukuba.ac.jp

WP3: Mechanics of Materials

Chair: Prof. C.T. Herakovich, Charlottesville (VA), USA, member GA

email: herak@virginia.edu

Additional members:

Prof. O. Allix, Cachan, France,

email: allix@lmt.ens-cachan.fr

Prof. T. Inoue, Fukuyama, Hiroshima, Japan,

email: inoue@fume.fukuyama-u.ac.jp

Prof. S. Kyriakides, Austin (TX), USA,

email: skk@mail.utexas.edu

Prof. Y. Li, Xi'an, China

email: liyulong@nwpu.edu.cn

WP4: Materials Processing

Chair: Prof. R.M. McMeeking, Santa Barbara, CA, USA, observer GA
email: rmcm@engineering.ucsb.edu

Additional members:

Prof. S. Asai, Nagoya, Japan,
email: asai@tokai.jst-plaza.jp

Prof. Y. Brechet, Saint Martin, France
email: ybrechet@ltpcm.inpg.fr

Prof. R. Moreau, Grenoble, France, observer GA,
representative of HYDROMAG,
email: rene.moreau@polycnrs-gre.fr

Prof. A. Thess, Ilmenau, Germany
email: thess@tu-ilmenau.de

Prof. C.L. Tucker, III, Urbana, IL, USA
email: ctucker@illinois.edu

*WP5: Computational Fluid and Solid Mechanics
(this WP acts as link between IUTAM and IACM)*

Chair: Prof. P. Ladevèze, Cachan, France, member CC,
email: ladeveze@lmt.ens-cachan.fr

Additional members:

Prof. E.R. de Arantes e Oliveira, Lisbon, Portugal, observer GA,
representative in IACM

email: arantes@civil.ist.utl.pt

Prof. J. Fish, Troy (NY), USA,
email: fishj@rpi.edu

Prof. S. Idelsohn, Santa Fe, Argentina, member GA,
email: rnsergio@arcrade.edu.ar

Prof. J.T. Oden, Austin (TX), USA, observer GA, representative of IACM
email: oden@ticam.utexas.edu

Prof. M.W. Yuan, Beijing, China,
email: yuanmw@pku.edu.cn

WP6: Biomechanics

Chair: Prof. G.A. Holzapfel, Stockholm, Sweden, observer GA
email: gh@half.kth.se

Additional members:

Prof. D. Barthès-Biesel, Compiègne, France
email: dbb@utc.fr

Prof. J.E. Bechtold, Minneapolis (MN), USA
email: bechto1@attglobal.net

Prof. R. Ogden, Glasgow, UK
email: rwo@maths.gla.ac.uk

Prof. K. Tanishita, Yokohama, Japan
email: tanishita@sd.keio.ac.jp

WP7: Nano- and Micro-Scale Phenomena in Mechanics
Chair: Prof. W. Yang, Beijing, China, member GA
email: yw-dem@tsinghua.edu.cn

Additional members:

Prof. F. Ellyin, Alberta, Canada, member GA and CC
email: Fernand.Ellyin@ualberta.ca

Prof. Y. Huang, Urbana (IL), USA
email: huang9@ux1.cso.uiuc.edu.

Dr. G. Weir, Lower Hut, New Zealand
email: g.weir@irl.cri.nz

WP8: Geophysical and Environmental Mechanics
Chair: Prof. P. Linden, La Jolla (CA), USA, observer GA
email: pflinden@ucsd.edu

Additional members:

Prof. H. Le Treut, Paris, France
email: letreut@lmd.ens.fr

Prof. Prof. J.W. Rudnicki, Evanston (IL), USA
email: jwrudn@northwestern.edu

Prof. J. Srinivasan, Bangalore, India
email: jayes@caos.iisc.ernet.in

Dr. L.P. Thomas, Tandil, Argentina
email: lthomas@exa.unicen.edu.ar

WP9: Education in Mechanics and Capacity Building
Chair: Prof. H. Aref, Blacksburg (VA), USA, member GA and XCCC
email: haref@vt.edu

Additional members:

Prof. L. Bevilacqua, Rio de Janeiro, Brazil
email: bevi@Incc.br

Dr. I. Gledhill, Pretoria, South Africa
email: igledhil@csir.co.za

Prof. H. Hu, Nanjing, China
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Prof. K.R. Sreenivasan, Trieste, Italy
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