

CONCISE CHRONICLE OF THE IFTOMM COMMISSION FOR STANDARDIZATION OF TERMINOLOGY (1969-2009)

Gerhard BÖGELSACK ⁽¹⁾, Antonius J. KLEIN BRETELER ⁽²⁾

⁽¹⁾ Technische Universität Ilmenau, Deutschland, gerhard.boegelsack@tu-ilmenau.de

⁽²⁾ Delft University of Technology, The Netherlands, a.j.kleinbreteler@tudelft.nl

ABSTRACT

About forty years ago the Permanent Commission for Standardization of Terminology in Mechanism and Machine Sciences (Commission A) was founded. Since then the Commission underwent a remarkable development, worked successfully and produced recognized terminological documents. The paper deals with this development. It is different from other publications which already reported on methodological and terminological problems in the commission work. Main issues here are chronological information about meetings (dates, places, topics) including informal meetings, development of membership, authors and titles of papers of the scientific seminars, survey of results, and photographs of members. First priority is to portray the individual members of the commission and to outline the activities. In the course of time from 1969 to 2009 more than ninety scientists from twenty-five countries were involved in projects of Commission A. Some of them already passed away. The paper should also contribute towards keeping alive the remembrance of them and at the same time bring memories of present members to the early years of Commission A.

Keywords: Machines, Mechanisms, Terminology, History, IFToMM.

1. INTRODUCTION

During the Inaugural Assembly of IFToMM on 27 September **1969** in Zakopane/Poland the first Executive Council of the Federation was elected: Acad. Prof. I.I. Artobolewskij /SU (President), Prof. F.R.E. Crossley /USA (Vice-President), Dr. M.S. Konstantinov /BG (Secretary General), Dr. W. Thomas /D (Treasurer), as Ordinary Members: Prof. J. Oderfeld/PL, Prof. B.M. Belgaumkar/IND, Prof. K. Hunt/AUS. Aside from four other Permanent Commissions the Executive Council established the Commission for Standardization of Terminology (Commission A) and designated Prof. D. Muster /USA to be Chairman and Prof. N.I. Levitzkij /SU to be Vice-Chairman.



I.I. Artobolewskij (†)



F.R.E. Crossley



M.S. Konstantinov (†)



J. Oderfeld (†)



D. Muster

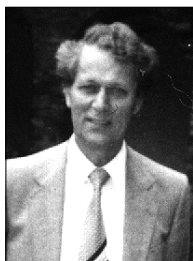
Describing the development of Commission A, in the following chapter participants in the meetings are mentioned only by citing their family name. Full names, titles, offices and countries are listed in Appendix I. Where the colleagues are mentioned for the first time, their homelands are indicated (using International Car Codes). Availability provided, personal photographs are inserted chronologically right near the meeting of first appearance of the person concerned. Unfortunately after scanning and editing some photo prints are not of sufficient quality. Programs of scientific seminars in context of the meetings are contained in Appendix II.

2. THE DEVELOPMENT OF COMMISSION A

In the first work programme for Commission A drafted in **1970**, *Muster* intended to contact the ISO Technical Committee TC 10/SC 4 in order to coordinate the mutual objectives, to win appropriate experts over collaboration in the commission, and to summon its constituent meeting on the occasion of the 3rd World Congress of TMM in Yugoslavia. The meeting was held on 18 September **1971** in Kupari near Dubrovnik/YU. Participants were *Bianchi/I*, *Bazjanac/YU*, *Bögelsack/DDR*, *Davies/GB*, *Keller/D*. Chairman *Muster* and Vice-chairman *Levitckij* could not be present, the meeting was chaired by *Davies*. Initial lists of terms used in TMM were submitted by *Davies* and *Bögelsack*, a provisional programme with responsibilities and a set of rules was established. During **1972** all member bodies of IFToMM have been asked to designate delegates for Commission A. The first body of members was made up by *Bazjanac*, *Bögelsack*, *Davies*, *Hain/D*, *Levitckij*, *Lowen/USA*, *Muster*, *Oderfeld*, *Rossi/I*.

1973, 1-3 September, Nieborów /PL, 1st Meeting. - Participants: *Bazjanac*, *Bögelsack*, *Davies*, *Lowen*, *Muster* (Chair), *Oderfeld*, *Rossi*, as guests: *Dietrich*, *Jakubowicz*, *Morecki*, *Oleđzki*, *Parszewski* /all PL.

Topics: ♦ Drafting of the scope: "Standardization of a terminology (including definitions) for the theory of machines and mechanisms, including terms concerned with the realization of motion in machines and its control, the associated problems in dynamics and kinematics, and machine components". ♦ Discussion of report given by *Lowen* on his participation in a meeting of ISO/TC10/SC4 "Schematic Representations of Kinematics" in Vilnius/LT (Febr 1973). ♦ Categorization of the field of TMM and nomination of responsible commission members: General (*Bögelsack*), Machine Components and Sub-Assemblies (*Davies*), Structural Analysis (*Hain*), Kinematic Analysis (*Bazjanac*), Dimensional Synthesis (*Levitckij*), Optimization (*Oderfeld*), Dynamics (*Lowen*), Man-Machine Systems (*Oderfeld*), Dynamic Measurements (*Rossi*), Machine Control Systems (*Levitckij*), Miscellaneous (*Muster*).



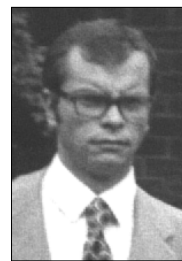
J. M. Prentis



Z. Parszewski



G. Bögelsack



A. Rossi



J. Magyar

1975, 25-29 June, Warsaw /PL, 2nd Meeting. - Participants: *Bögelsack*, *Magyar/H*, *Muster* (Chair), *Oderfeld*, *Parszewski*, *Prentis/UK*, as guests: *Crossley*, *Galletti/I*, *Jakubowicz/Pl*, *Koozekanani/USA*, *Morecki*, *Oleđzki*.

Topics: ♦ Relationship with ISO: Agreement with ISO/TC10/SC4; Consideration of documents developed by ISO/TC108 (Terminology for Balancing Technology ISO 1925-1973, Vibration and Shock Vocabulary ISO 2041-1975 and Bio-Dynamics); Liaison with ISO/TC45 Gears seemed to be desirable. ♦ Development of the terminology: Enlargement and renumbering of categories (additional categories "Classification of Motions and Mechanisms" and "Computer Aided Design"); Examination of listed definitions in all sections; Procedure of reviewing the definitions and appointment of reviewers. ♦ Preparation of a compiled draft.

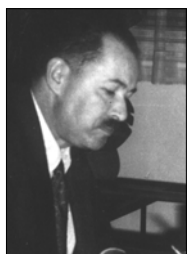
1976, 25-30 October, Oberhof /DDR, 3rd Meeting. - Participants: *Antonescu/RO*, *Bögelsack* (Chair), *Gierse/D*, *Manolescu/RO*, *Morecki*, *Oravský/CS*, *Rossi*, *Živković/YU*, as guests: *A. Bock* (Honorary Member of IFToMM), *Hammerschmidt*, *Lehnecke*, *Luck*, *Müller*, *Stephan*



A. Bock (†)



N. I. Manolescu (†)



A. Morecki (†)



V. Oravský



F. J. Gierse

Topics: ♦ Agreement upon definitions; ♦ Establishment of sub-commission "Dynamics of Machines"; ♦ Preparation of distribution of the third draft.

1977, 18 June, Bucharest /RO, Informal Meeting (during SYROM'77). - Participants: *Bögelsack, Konstantinov* /BG, *Oravský, Prentis*, as guest: *Maros* /RO.



Ž. Živković



P. Antonescu



I. Sályi (†)

1978, 19-23 Sept, Genova /I, 4th Meeting. - Participants: *Bögelsack* (Chair), *Galletti, Gierse* /D, *Nițescu*/RO, *Oravský, Rossi, Sályi*/H.

Topics: ♦ Discussion on comments on the second draft given by *Bock, Crossley, Erney, Manolescu, Oderfeld, Oravský, Rees Jones* /GB; ♦ Formulation of general rules: proportionality of chapters in extent and level; alphabetical index; definitions only according to their physical or other essence; no formulas; no units; no sketches; no definition of self-explanatory terms.

Topics: ♦ Discussion on comments on the second draft given by *Bock, Crossley, Erney, Manolescu, Oderfeld, Oravský, Rees Jones* /GB; ♦ Formulation of general rules: proportionality of chapters in extent and level; alphabetical index; definitions only according to their physical or other essence; no formulas; no units; no sketches; no definition of self-explanatory terms.

1980, 28 May-3 June, Miskolc /H, 5th Meeting. - Participants: *Bögelsack* (Chair), *Gierse, Magyar, Morecki, Oravský, Prentis, Rossi, Sályi, Živković*, as guests: *Filemon, Király, Terplán* /all H.

Topics: ♦ Discussion on the third draft of the "Terminology in TMM (written comments given by *Crossley, Maros, Oderfeld, Parszewski*) and revision; ♦ Change of classification: Structure of Machines and Mechanisms; Kinematics of Mechanisms; Dynamics of Machines and Mechanisms; Machine Control and Measurements; Special operations and Methods; General Terms Used in TMM; ♦ Scientific Seminar, according to an initiative of *Sályi*, (see App. II).

1981, 5 July, Bucharest/RO, Informal Meeting (during SYROM'81). - Participants: *Antonescu, Bögelsack, Konstantinov, Manolescu, Prentis*.

1982, 8-13 September, Cambridge/GB, 6th Meeting. - Participants: *Bögelsack* (Chair), *Gierse, Manolescu, Parszewski, Prentis*.

Topics: ♦ Fourth draft [6] distributed to all National IFToMM Committees; ♦ New members of Commission A: *Novotný* /CS and *I. Roman* /RO; ♦ Requirement for a representative of France; ♦ Reappointment of the chairman for a second term.

1983, 20 December, New Delhi /IND, Informal Meeting (during 6th World Congress TMM). - Participants: *Bögelsack, Konstantinov, Manolescu, Morecki, Oderfeld, Prentis, Sarkissyan* /SU, *Živković*, as new members: *Dominguez Abascal* /E, *Hong Youjing* /RC.

1984, 19-25 September, Braşov/RO, 7th Meeting. - Participants: *Antonescu, Bögelsack* (Chair), *Manolescu, Oravský, Prentis, Sályi, Stengel* (in place of *Gierse*), as guests: *Dudița, Kovács, Voinea* /all RO.

Topics: ♦ Publication of the fifth draft in the IFToMM Journal [7]; ♦ Stringent rules in defining terms (proposed by *Oravský*); ♦ Establishment of a sub-commission "Robots and Manipulators"; ♦ Presentation of the first draft of German version of the Terminology, considering [8] and [9].

1985, 7 July, Bucharest/RO, Informal Meeting (during SYROM'85). - Participants: *Antonescu, Bögelsack, Konstantinov, Manolescu, Oravský*.

Topics: ♦ Agreement with *Konstantinov* on a re-edition of the five-language dictionary for TMM [10] on behalf of the 20th anniversary of the first World Congress.

1986, 26 Aug-1 Sept, Siegen/D, 8th Meeting. - Participants: *Bögelsack, Gierse* (Chair), *Manolescu, Morecki, Muster, Oravský, Prentis, Rossi, Sályi, Živković*, as guests: *Rössner*/DDR, *Socha*/D.

Topics: ♦ Chairmanship (*Gierse* acted as Chairman, a new chairman was not yet appointed by the EC); ♦ *H. Socha* was invited to join the commission as a new member; ♦ Discussion on the fifth draft and the German version; ♦ Setting up of a sub-commission "Symbols"; ♦ Scientific Lectures (see App. II).

1987, 21 Sept, Sevilla/E, Informal Meeting (9th Meeting during VII. World Congress TMM).

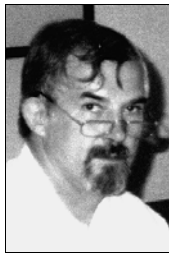
Participants: *Bögelsack, Davies, Prentis, Manolescu, Morecki, Oderfeld, Parszewski*/AUS, *Živković*, as guests: *Cveticanin*/YU, *Leinonen*/SF, *Liu*/RC, *Minkov*/BG, *Pust*/ČSSR, *Rankers*/NL, *Yin*/RC.

Topics: ♦ New members *J.P.Lallemand* /F and *Yin Hong-Liang* /RC welcomed; ♦ Second draft of German adaptation published [11]; ♦ Russian version prepared by *Sarkissyan*; ♦ French version prepared by *Lallemand*;

◆ Chinese, Dutch and Romanian versions published; ◆ Intention to publish the complete four language Terminology with Pergamon Press and as CD ROM; ◆ Consideration of [12] in sub-commission on Symbols.

1988, 20-28 June, Niš/YU, 10th Meeting. - Participants: *Bögelsack, Jakoby* /D (in place of *Gierse*), *Lallemand/F, Leinonen, Manolescu, Matsushima/J, Morecki, Oravský, Prentis* (Chair), *Sályi, Socha, Yin, Živković*, as guests: *Tielsch/D* and *Pantelić/YU*.

Topics: ◆ Discussion of the German adaptation of "Terminology"; ◆ French version completed; ◆ Introduction of the first draft of "Terminology in Robotics" [13]; ◆ Comprehensive review of "Graphical Symbols"; ◆ Scientific Lectures (see App. II).



T. Leinonen



J. P. Lallemand



K. Matsushima



H.-L. Yin



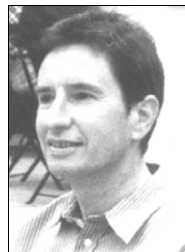
H. Socha

1989, 27-31 August, Smolenice near Bratislava /CS, 11th Meeting. - Participants: *Bögelsack, Dominguez Abascal, Jakoby, Lallemand, Leinonen, Manolescu, Morecki, Novotný, Oravský, Prentis* (Chair), *Sályi, Socha*, as guests: *Benda CS, Luck/DDR, Seireg/USA*.

Topics: ◆ Terminology in French and Russian formally received; ◆ Updating of the sixth draft; ◆ Agreement on format details (numbering of terms, use of italics and asterisks, separate indexes, juxtaposition of the four languages); ◆ New chapter "Robotics" received, agreed and translated into German and French; ◆ Publication of "Symbols" independently of the Terminology; ◆ Romanian vocabulary for TMM published (English, German, Romanian) [14]; ◆ Request for successor of late *H. Rankers* /NL and proposal to invite *G. Kunad* /DDR to join Commission A; ◆ Scientific Lectures (see App. II).



J. Novotný (†)



A. J. Klein Breteler



J. Jacoby



G. Kunad (†)



T. Ionescu

1990, 17-22 June, Oulu/SF, 12th Meeting. - Participants: *Bögelsack, Jacoby* (in place of *Gierse*), *Klein Breteler* /NL, *Kunad* /DDR, *Lallemand, Leinonen, Matsushima, Morecki, Novotný, Oravský, Prentis* (Chair), *Rossi, Sályi, Socha*.

Topics: ◆ Adoption of final version of the four-language Terminology; ◆ Financial support for publication (contact with editor *T. Shoup*); ◆ Assignment of chapters to responsible commission members: Structure of Machines and Mechanisms (*Gierse*), Kinematics (*Kunad*), Dynamics (*Oravský*), Machine Control and Measurement (*Rossi*), Robotics (*Lallemand*); ◆ Removal of sub-commission "Symbols".

1991, 28 Aug, Prague/CS, 13th Meeting (during VIII. World Congress TMM). - Participants: *Bögelsack, Klein Breteler, Kunad, Lallemand, Leinonen* (Chair), *Manolescu, Morecki, Novotný, Oravský, Rossi, Sarkissyan, Shoup/USA*.

Topics: ◆ Honour and thanks to Past-Chairman *Prentis* for his tremendous work in editing the publication of the "Terminology" [15].

1992, 29 June-3 July, Poitiers/France, 14th Meeting. - Participants: *Bögelsack, Jacoby* (representing *Gierse*), *Klein Breteler, Ionescu, Kunad, Lallemand, Leinonen* (Chair), *Manolescu, Matsushima, Morecki, Novotný, Oravský, Rossi, Sályi, Socha, Prentis*.

Topics: ◆ Thanks from the Executive Council to Commission A; ◆ Welcome to *T. Ionescu* as a new member;

- ◆ Discussion on individual chapters of the "Terminology";
- ◆ Setting up a new sub-commission "Symbols";
- ◆ Revision of the scope in Constitution By Laws;
- ◆ Scientific Lectures (see App. II).

1994, 28 June-2 July, Delft /NL, 15th Meeting. - Participants: *Bögelsack, Gierse, Ionescu, Klein Breteler, Lallemand, Leinonen* (Chair), *Morecki, Novotný, Rossi, Sályi, Socha*.

Topics: ◆ Progress of work on "Symbols"; ◆ Discussion on Dynamics (submitted by *Oravský*) and Robotics (submitted by *Lallemand*); ◆ Scientific Seminar (see App. II) [16].

1995, 31 August, Milan /I, 16th Meeting (during IX. World Congress). - Participants: *Bögelsack, Ionescu, Klein Breteler, Kunad, Lallemand, Leinonen* (Chair), *Levitskiy /RUS, Midha /USA, Morecki, Novotný, Oravský, Plakhtin /RUS, Rossi, Schaeffer* (representing *Gierse*), *Hong-Sen Yan /RC, Živković*.

Topics: ◆ Draft on symbols distributed, comments given by *Mashford* and *Bögelsack*.

1996, 21-25 June, Warsaw /PL, 17th Meeting. - Participants: *Antonescu, Bögelsack, Ionescu, Klein Breteler, Lallemand, Leinonen* (Chair), *Matsushima, Morecki, Novotný, Oravský, Plakhtin, Rossi, Sályi, Schaeffer* (representing *Gierse*), *Socha*.

Topics: ◆- New terms in Dynamics and Robotics; ◆ Draft "Symbols" ready for publication; ◆ Scientific Lectures (see App. II) [17].

1998, 28 June-3 July, Brno/CZ, 18th Meeting. - Participants: *Bögelsack, Ionescu* (Chair), *Klein Breteler, Lallemand, Leinonen, Levitskiy, Morecki, Novotný, Oravský, Plakhtin, Segl'a, Stammers, Socha, Toločka/LT*, as guest: *Pust/CZ*.

Topics: ◆ Publication on Symbols in *Mech. Mach. Theory* [18]; ◆ New list of terms in Robotics (*Lallemand*) discussed and accepted; ◆ Standard ISO 701 "International Gear Notation" (*Leinonen*); ◆ Paper "Additional and Modified Terminology on TMM" (*Plakhtin*); ◆ List of terms on "Nonlinear Oscillations" (*Pust*); ◆ Terms and definitions on "Models" (*Klein Breteler, Socha*); ◆ Revised chapter "Dynamics" (*Oravský*); ◆ Interpretation of the IFToMM Terminology in Czech language (*Novotný*); ◆ Restructuring

of sub-commissions: Structure and Kinematics; Dynamics and Acoustics; ◆ Robotics, Machine Control and Measurements; Compliant Mechanisms; Mechatronics; Biomechanisms; ◆ Setting up of sub-commission "New ordering system" (*Klein Breteler*); ◆ Establishment of sub-commissions "Reliability" and "Transportation Machinery" temporarily postponed; ◆ Guidelines for the work in and with the sub-commissions (*Ionescu*); ◆ Scientific Lectures (see App. II) [19].



V. Plakhtin



C. Stammers



R. T. Toločka



S. Segl'a

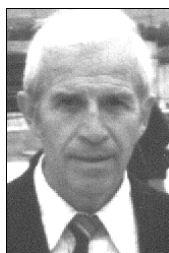
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1999, 22 June, Oulu/SF, Working Meeting (during X. World Congress). - Participants: *Antonescu, Bögelsack, Hervé, Ionescu* (Chair), *Klein Breteler, Leinonen, Levitskiy, Morecki, Novotný, Oravský, Shoup, Stammers, Hong-Sen Yan*, as guests: *Avdai /MNG, Davidson /USA, Martinea /RO, Pust*.

Topics: ◆ IFToMM EC approved new members of Comm.A: *Hervé /F, Stammers /GB, Toločka /LT*; ◆ Discussion on "systems" and "models" drawn up by *Klein Breteler*; ◆ Drafts on "biomechanics" set up by *Morecki, Stammers* and *Bögelsack*; ◆ New terms in "Dynamics" and "Rotor Dynamics" (*Oravský*); ◆ TC "Nonlinear Oscillations" (*Pust*) offered a list of terms and definitions; ◆- Profound discussion on the "New Ordering System"; ◆ Discussion on suggestions submitted by *Angeles, Plakhtin, Peisach, Leinonen, Goldfarb, Davidson* postponed to the 19th Meeting.

2000, 25-30 June, Kaunas /LT, 19th Meeting. - Participants: *Bögelsack, Ionescu* (Chair), *Klein Breteler, Lallemand, Leinonen, Novotný, Oravský, Sályi, Segl'a, Stammers, Toločka*, as guests: *Biró /H, Goldfarb /USA, Peisach /RUS, Starzhinsky /BY*.

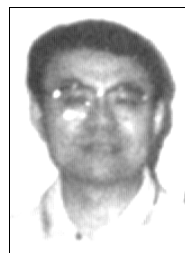
Topics: ◆ Preparation of



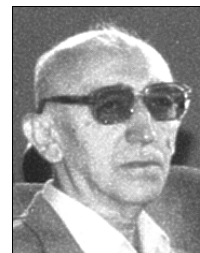
V. Starzhinsky



I. Biró



M. Horie



E. E. Peisach (†)

edition of the entirely revised, updated and completed four-language Terminology by *Ionescu* and the language editors *Stammers* (English), *Lallemand* (French), *Bögelsack* (German), *Plakhtin* (Russian); ♦ Addition of new supplement chapters: Dynamics, Rotor Dynamics and Measurement, Vibration and Nonlinear Oscillations, Stability, System and Model, Robotics, Biomechanics, Gearing, Mechatronics; ♦ Proposals on the new ordering system presented by *Klein Breteler*; ♦ Cooperation with IFToMM TCs: "Nonlinear Oscillations", "Gearing and Transmission", "Mechatronics", "Robots and Manipulators", "Reliability"; ♦ Scientific Seminar (see App. II) [20].

2002, 25-29 June, Mezôtúr/H, 20th Meeting. - Participants: *Biró, Horie, Ionescu* (Chair) *Klein Breteler, Leinonen, Novotný, Oravský, Plakhtin, Remond, Segla, Stammers, Starzhinsky, Toločka*, as guest: *E. Filemon*. Topics: ♦ *M. Horie* /J and *D. Remond* /F welcomed as new members; ♦ On the occasion of the 30th anniversary of foundation of Commission A were awarded "Distinguished Member Diplomas" to *Novotný, Oravský, Bögelsack*, and Diplomas, as well, to the other members; ♦ New Terminology released for publication (basic chapters in four languages, supplement chapters temporarily in English only); ♦ Preparation of the digital version of the new Terminology (by *Klein Breteler*); ♦ "Some additional proposals for elaboration of terms and definitions" and "Improved and new definitions for the new edition of IFToMM vocabulary" presented by *Oravský*; ♦ New draft on "Mechatronics" presented by *Toločka*; ♦ Scientific Seminar (see App. II) [21].

2004 Tianjin /CN, Informal Meeting, 2 April, (during XI. World Congress). - Participants: *Antonescu, P., Corves* /D, *Ionescu* (Chair), *Klein Breteler, Leinonen*, as guests: *Antonescu, O., Lovasz, Perju* /all RO. Topics: ♦ Report by *Ionescu* on the publication of "Terminology for the Mechanism and Machine Science" in Mech. Mach. Theory 38(2003) [21]; ♦ Presentation by *Klein Breteler* of the digital INTERNET version of the Terminology "IFToMM Online Dictionaries" [22].

2005, 27 June – 2 July, Bardejov Spa/SK, 21th Meeting. - Participants: *Antonescu, Biró, Bögelsack, Ionescu* (Chair), *Kane/BY, Klein Breteler, Leinonen, Plakhtin, Remond, Segla, Stammers, Starzhinsky, Toločka*, invited as guests: *Antonescu O., Corves, Peisach*. Topics: ♦ Reports of subcommissions; ♦ Nomination of the Robotic Machine Control and Measurement Sub-commission Chairman, Subcommissions and their members, proposals of the PC Chairman and secretary for the 2006-2009 period etc.; ♦ Problems of cooperation with IFToMM PCS/TC and with other institutions; ♦ New printed edition of IFToMM Terminology, New electronic edition; ♦ Reports of the English, French, German and Russian editors (ch. 7-13 and Index); ♦ Discussions of other issues and problems (Prof. *Remond*, Prof. *Luck* and Prof. *Peisach* proposals); ♦ Scientific Seminar (see App. II) [23].



Marc Kane



Burkhard Corves

Didier Remond

Torsten Brix

2007, 20 June, Besançon/F, Informal Meeting (during XII. World Congress). – Participants: *Bögelsack, Corves, Ionescu, Klein Breteler* (Chair), *Leinonen, Remond, Shoup, Starzhinsky*, as guest: *Döring/D*. Topics: ♦ New native English member ♦ Electronic dictionary on-line at website hosted by TU Delft ♦ Copyright of terminology settled with Elsevier publisher. ♦ Subcommissions for „basics“ in the Kinematics and the Dynamics chapters. ♦ Discussion on work flow supported by a database ♦ Report on translations of terminology into Chinese and Czech language.

2008, 30 June – 4 July, Lyon/France, 22th Meeting. - Participants: *Antonescu P., Biró, Bögelsack, Corves, Ionescu, Kane, Klein Breteler* (Chair), *Novotny, Plakhtin, Remond, Segla, Starzhinsky, Toločka*, as guests: *Antonescu O., Brix/D, Döring*. Topics: ♦ *Shoup* (USA) and *Bögelsack* (Germany) resign their membership of Commission A. *Bögelsack* remains honorary member of the commission. *Brix/D* is nominated as a new commissions member. The chairman (*Klein Breteler*) is available for a second term (2010-2013); ♦ The electronic dictionary (four languages Chapters 0-13) has been posted on a website of TU Delft; ♦ The official list of versions of the Dictionary is proposed; ♦ The result of work group „Basics“ in Kinematics has been accepted with some modifications; ♦ The report of work group „Basics“ in Dynamics has been considered and need to be continued; ♦ The report of work group „gearing“ has been considered, resulting into recommendations for a restructure with sub-chapters, improvement of definitions, adhere to other sources like the ISO and DIN-Standards; ♦ Some new Chapters have been propo-

sed – and considered with different profundity „Quality“, „Micro mechanisms“, „Transportation Machinery“; ♦ Several problems such as Commission’s work flow, Data base version in future, Translations to other Languages and Relation to ISO-Standards are considered; ♦ Scientific Seminar (App. II) [24].

3. CONCLUSIONS

During four decades the IFToMM Commission for Standardization of Terminology has proved to be a very responsible and efficiently working scientific committee. Although the summarizing diagram (Fig.1) shows rather stable participation in the meetings it should not be overlooked that the essential work on definitions and drafts had to be done at home, voluntarily, and with a lot of good will. The results are recognized in the field of MMS, nevertheless, they should enjoy broader distribution and application. Publication through Internet was an important step to easier accessibility.

Beside the more analytical task of internationally unifying definitions in established fields of mechanism and machine science (MMS) is desirable to accompany and to control the terminology in rapidly developing fields [3], e.g. mechatronics, micro- and nanomechanisms, compliant mechanisms, biomechanisms. The area of responsibility of the terminological commission never seems to be limited.

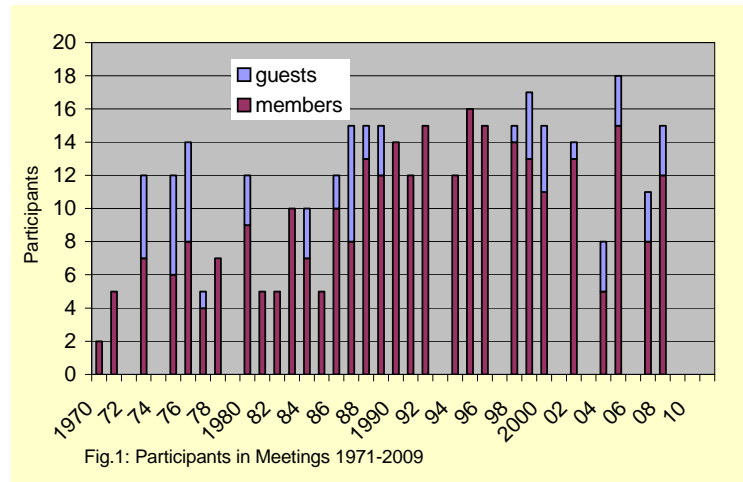


Fig.1: Participants in Meetings 1971-2009

Acknowledgement

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- [30] Peisach, E.E.: On Terminology for the Theory of Mechanisms and Machines. *Theory of Mechanisms and Machines*, St.-Petersburg State University, Vol.2, No.2(4), 2004, pp. 80-94; <http://tmm.spbstu.ru>.

Appendix I: MEMBERS, GUESTS AND INVITED EXPERTS OF COMMISSION A

Members:

Antonescu, Păun, Prof. Dr., Politehnica University of Bucharest, Romania
Bazjanac, D.(†), Prof. Dr. University of Zagreb, Yugoslavia
Biró, István, Prof. Dr., Agricultural Engineering Faculty, Mezőtúr, Hungary
Bögelsack, Gerhard, Prof. Dr.-Ing. Dr.h.c., Techn. Universität Ilmenau, Germany
Brix, Torsten, Dr., Technische University Ilmenau
Corves, Burchard, Prof. Dr., Technische Hochschule Aachen, Germany
Davies, Trevor H., Prof. Dr., University of Loughborough, UK
Dominguez Abascal, Jaime, Dr., E.T.S.I.I. Sevilla, Spain
Gierse, Franz Josef, Prof. Dr.-Ing., Universität Siegen, Germany
Gronowicz, Antoni, Prof. Dr., Technical University of Wrocław, Poland
Hain, Kurt (†), Dr., Landtechn. Versuchsanstalt Braunschweig, Germany
Hervé, Jacques M., Prof. Dr., École Centrale Paris, France
Hong Youjing, M. Sc.Techn., Chinese Mech. Eng. Society Beijing, P.R.China
Horie, Mikio, Prof. Dr., Tokio Institute of Technology, Japan
Ionescu, Theodor, Dr. Eng., Romanian State Passenger Railways, Romania
Kane, Mark, Prof. Dr., Belarus National Technical University, Belarus
Klein Breteler, Antonius J., Prof. Dr., Delft University of Technology, The Netherlands
Konstantinov, Michael, S. (†) Prof. Dr., Technical University Sofia, Bulgaria
Kunad, Günther (†), Prof. Dr.-Ing., Technische Universität Magdeburg, Germany
Lallemand, Jean-Paul, Prof. Dr., Université de Poitiers, France
Leinonen, Tatu, Prof. Dr., University of Oulu, Finland
Levitskij, N.I., Prof. Dr., Moscow, Soviet Union
Levitskiy Dmitri N., Prof. Dr., Gubkin State Academy of Oil & Gas Moscow, Russia
Liu, Tyng, Prof. Dr., National Taiwan University, China-Taipei
Lowen, Gerry G., City University of New York, USA
Magyar, Prof. Dr., Technical University of Budapest, Hungary
Manolescu, Nicolae I.(†), Prof. Dr., Universitatea Politehnica București, Romania
Mashford, Kerry, J., Ph. D., UK
Matsushima, Kozo, Prof., Toin University of Yokohama, Japan
Midha, Ashok, Prof. Dr., Purdue University West Lafayette, USA
Morecki, Adam, (†) Prof. Dr., Politechnika Warszawska, Poland
Muster, Douglas, Prof., University of Houston, Texas, USA
Novotný, Jiří (†), Prof. Dr., Technical University of Brno, Czechoslovakia
Oderfeld, Jan, Prof. Dr. (†), Politechnika Warszawska, Poland
Oravský, Vladimír, Dr. Eng., Slovak Academy of Sciences Bratislava, Czechoslovakia
Parszewski, Zdzisław, University of Melbourne, Australia
Pavlovic, Nenad T., Dr.-Ing., Faculty of Mechanical Engineering Nis, Serbia
Peisach, Eduard E. (†), Prof. Dr., University of Technology and Design, St. Petersburg, Russia
Pennock, Gordon R., School of Mechanical Engineering Purdue University, USA
Plakhtin, Vladimir, Prof. Dr., Moscow State Open University Moscow, Russia
Prentis, James Martin, Prof. Dr., University of Cambridge, UK
Rankers, Helmut, (†) Prof. Dr.-Ing., Delft University of Technology, The Netherlands
Rémond, Didier, Prof. Dr., Institut National des Sciences Appliquées de Lyon, France
Rossi, Aldo, Prof., Università di Padova, Italy
Sályi, István, (†) Prof. Dr., Technical University Miskolc, Hungary
Sarkissyan, Juri L., Prof., Yerevan Polytechnic Institute, Armenia
Segl'a, Stefan, Prof. Dr., Technical University of Košice, Slovakia
Shoup, Terry E., Prof. Dr., Santa Clara University, USA
Socha, Hans, Dr.-Ing., Firma W. Schlafhorst AG & Co. Mönchengladbach, Germany
Stammers, Charles W., Prof. Dr., University of Bath, United Kingdom
Starzhinsky, Viktor E., Prof. Dr., National Academy of Sciences of Belarus Gomel, Belarus
Toločka, Rymantas T., Prof. Dr., Kaunas University of Technology, Lithuania
Voinea, Radu P., Academ. Prof. Dr., Universitatea Politehnica București, Romania
Wojnarowski, Jozef, Prof. Dr., Silesian Technical University Gliwice, Poland
Yan, Hong-Sen, Prof., National Cheng Kung University Tainan, China-Taiwan
Yin, Hong-Liang, Prof. Dr., Shanghai University of Technology, P.R.China
Zhaohui, Lan, Prof. Dr., Fuzhou University, P.R.China
Živković, Života, Prof. Dr., Univerzitet u Nišu, Yugoslavia

Guests and Invited Experts:

Antonescu, Ovidiu, Eng., Politehnica University of Bucharest, Romania
Avdai, Chilhaakav, Prof. Dr., Mongolian Technical University, Mongolia
Benda, Oldrich, Academ. Prof. Dr., Slovak Academy of Sciences, Czechoslovakia
Bock, Arthur (†), Prof. Dipl.-Ing. Dr.-Ing. E.h., Techn. Universität. Ilmenau, Germany
Crossley, F. R. Erskine, Prof. Dr., University of Massachusetts Amherst, USA
Cveticanin/YU
Davidson, Joseph, Prof. Dr., Arizona State University /USA
Dietrich, Marek, Prof. Dr., Warsaw Technical University, Poland
Dudița, Florea, Prof. Dr., University of Brașov, Romania
Filemon, Erzsébet, Prof. Dr. Technical University Budapest, Hungary
Galletti, Carlo, Dr., Università di Genova, Italy
Goldman, Paul, Dr. Eng., Bently Rotordynamics Corporation, Minden, USA.
Hammerschmidt, Christian, Dr.- Ing., Techn. Hochsch. Karl-Marx-Stadt, Germany
Jacobi, Jürgen, Dr.-Ing., Universität Siegen, Germany
Jakubowicz, Antoni, Silesian Technical University Gliwice, Poland
Kędzior, Krzysztof, Dr., Warsaw Technical University, Poland
Király, Prof. Dr., Technical University Miskolc, Hungary
Koozekanani, Prof., Ohio University, USA
Kovács, Prof. Dr., University of Timișoara, Romania
Lehnecke, H.-H., Dipl.-Ing., Amt für Standardisierung Berlin, Germany
Lovasz, Erwin Christian, Prof. Dr., Politehnica University of Bucharest, Romania
Luck, Kurt, Prof. Dr., Technische Universität Dresden, Germany
Maros, Prof. Dr., University of Sibiu, Romania
Martineac, Aurel, Prof. Dr., Politehnica University of Bucharest, Romania
Minkov, Dr., Technical University Sofia, Bulgaria
Müller, Jörg (†), Prof. Dr., Universität Rostock, Germany
Nițescu, Dr., Politehnica University of Bucharest, Romania
Olędzki, Andrzej (†), Prof. Dr., Warsaw Technical University, Poland
Pantelić, Todor (†), Prof. Dr., University of Belgrade, Yugoslavia
Perju, Dan, Prof. Dr., University of Timișoara, Romania
Pust, Ladislav, Academ. Prof. Dr., Institute of Thermomechanics Prague, ČSSR
Rössner, Wolfgang (†), Prof. Dr., Technische Hochschule Magdeburg, Germany
Schaeffer, Thomas, Dr.-Ing., Universität Siegen, Germany
Seireg, Ali, Prof. Dr., University of Wisconsin, USA
Stengel, H., Dr.-Ing., Universität Siegen, Germany
Stephan, Wolfgang, Dr.-Ing., Technische Hochschule Magdeburg, Germany
Terplán, Zéno (†), Academ. Prof. Dr., Technical University Miskolc, Hungary
Tielsch, Werner, Prof., Dr., Ruhruniversität Bochum, Germany

Appendix II: SCIENTIFIC SEMINARS DURING MEETINGS OF COMMISSION A

1980 Miskolc

Terplán, Z.: Introduction.

Sályi, I.: Terminological problems reflected by several examples.

Bögelsack, G.: On terminological work on TMM in GDR and in connection with IFToMM.

Morecki, A.: On the study of the standardization of terminology in interdiscipl. sciences.

Erney, G.: On the situation of national terminology in gearing.

Oravský, V.: On some possible continuation of work of the IFToMM Commission A.

Drahos, L.: On the situation of hungarian terminology for TMM.

1986 Siegen

Morecki, A.: Anthropomorphic manipulators and walking machines (mechanics, control, simulation).

Bögelsack, G.: On the development of industrial robots in precision engineering - problems and experiences.

Sályi, I.: Comments on the matrix formalism for spatial mechanisms.

Rossi, A.: The integration of modelling and simulation programs in the field of mechanism design.

Živković, Ž.: Criteria for selection of a mechanism with dwell motion.

Oravský, V.: Recent Advances in Dynamics of Rotating Machine Aggregates.

1988 Niš

Manolescu, N. I.: History of the original methods used in the synthesis of planar kinematic chains with different degrees of liberty.

Morecki, A.: Practical experiences with robot applications in Poland in 1985-1987.

1989 Smolenice

Sályi, I.: Computer Application on Teaching TMM in Miskolc.

Leinonen, T.: On the Common Language in Mechatronics.

Manolescu, N. I.: Planar Initial Jointed Kinematic Chains and their Application.

Morecki, A.: Elastic Manipulators.

1992 Poitiers

Bögelsack, G.: Mechanisms in macro- and micro-bionics, a challenge even to terminology.

Klein Breteler, A.J.: Computer aided design of mechanisms.

Leinonen, T.E.: On the mechanical engineering education in Finland and the U.S.A.

Manolescu, N. I.: Sur la synthèse structurale des CCpames (Chaînes Cinématiques planes avec articulations multiples et éléments simples) avec $L3 = 7$ d.d.I., utilisant les chaînes cinématiques planes initiales.

Morecki, A.: Present state of research, application and technic in robotics.

Novotný, J.: Dynamical modelling of a machine.

Oravský, V.: On conception and consequences of a dynamic characteristic in the theory of machine aggregates.

Rossi, A.: A global approach during gross and fine motion for task planning of industrial robots.

Sályi, I.: A fundamental remark on the principle of moment of momentum

1994 Delft

Uitterdijk, S.: A lifetime analysis for cam mechanisms

Rankers, A.M.: SAM, a mechanism analysis program based on the finite element approach

Morecki, A.: Selected problems of quadruped walking machines

Novotný, J.: Singularity and multiplicity in the analysis of spatial linkages

Rossi, A.: Pneumatic actuators driven by proportional valves

Bögelsack, G.: Compliant mechanisms - structures for miniaturization and terminology

1996 Warsaw

Bögelsack, G.: On technological and terminological progress in TMM.

Matsushima, K.: Fuzzy evaluation of stiffness of tissue by means of micro-manipulators.

Morecki, A.: Micromechanisms and microwalking robots.

Novotný, J.: Kinematical analysis of a spatial four link mechanism RCCC based on Assur groups.

Oravský, V. and Lopaška, L.: Some new possibilities of increasing of energy transmission efficiency in rotating systems.

Rossi, A., Caracciolo, R., Gasparetto, A. et al.: Mechatronic system for conformal radiotherapy.

1998 Brno

Bögelsack, G.: On Structural Classification of Biological and Technical Joints.

Klein Breteler, A. J.: Mechanisms for Container Handling

Morecki, A.: Walking Machines - Past, Present and Future

Oravský, V.: Promising Applications of Electrorheological Fluids in Technical Devices

Plakhtin, V.: Additional and Modified Terminology on Machines and Mechanisms Theory

2000 Kaunas

Ionescu, Th.: Past, present and future in TMM Terminology.

Peisach, E.: On terminology for the theory of mechanisms.

Starzhinsky, V. E., Berestnev, O. V. and others: Compilation of glossary of international terms in gear design, manufacture and serviceability - concepts and contents.

Novotný, J.: Analysis of spatial constrained systems with higher pairs.

Toločka, R. and Bansevicius, R.: Modern history and terminology of intelligent mechanisms and smart structures.

Klein Breteler, A. J.: On the representation of a disc cam by a chain of arcs.

Bögelsack, G.: On fluidmechanical compliant actuators.

Kondratas, A.: Planar mechanisms with flexible links.

Ostaševičius, V.: Control of modes of the vibro-impact system links

2002 Mezötúr

Bögelsack, G.: Biomechanics of motion and TMM - Terminological aspects (commentaries on the first terminological draft).

Klein Breteler, A. J.: Automatic (un-)locking of twist-locks at maritime containers.

Novotný, J.: Computer aided kinematical analysis of plane linkages and its application.

Segl'a, S., Homisin, J. and Kalker-Kalkman, C.: Optimization of torsional system with self-regulated pneumatic clutches.

Leinonen, T. and Lu Yi: Computer simulation of approximate dimensional synthesis with Stephenson six-bar linkage.

Horie, M.: Flexural hinge, large-deflective elastic hinge, large-deflective hinge and their applications for micro-mechanisms.

2005 Bardjev Spa

Bögelsack G. Concise chronicle of the IFToMM Commission for standardization of terminology.

Ionescu Th. IFToMM Terminology: 1998-2005.

Lu Yi., Leinonen T. Computer-aided geometric and analytic solving workspace, velocity, and acceleration of 3-UPU parallel manipulator

Starzhinsky V.E., Ossipenko S.A. Preparation of initial date for construction of 3-D model for straight bevel plastic gear

Segla S. Balancing of robots carrying payloads of different weights

Peisach E. Assemblies of linkages: theoretical grounds, terminology

Antonescu P., Antonescu O. and Minalache D. Geometrical and kinematical synthesis of mechanisms used for opening/closing windows on car side doors

Kane M.M. Experience of standardization of designing of technological processes of manufacturing of cylindrical gears. Terminological aspects

Novotny J. Five link group as a supporting element

Klein Breteler A.J. On the development of an electronic dictionary for IFToMM

Biro I. Kinematical investigation of human knee joint

Horie M. Micro/nano mechanisms

2008 Lyon

Klein-Breteler A.J. Standards in computer aided analysis and synthesis of mechanisms

Novotny J. Pressurizer VVER-400 joint supports

Toločka R.T. Adaptive mechanics for mechatronics

Peisach E. On assur groups, baranov trusses, grubler chains, planar linkages and on their structural (number) synthesis

Segla S. Passive and semi-active vehicle suspensions with non traditional configurations

Biro I., Csizmadia B.M. and Katona G. Determination of instantaneous axis of rotation of tibia and its role in the kinematical investigation of human knee joint

Antonescu O., Antonescu P. Analysis, synthesis and simulation of parallel manipulators. Analysis, synthesis and design of orientation mechanisms (wrist)

Starzhinsky V.E., Basinyuk V. and Mardosevich E. Multipower path planetary eccentric drives

Kane M., Starzhinsky V. Quality factors of machines and their components. Role of quality factors in provision of machine service properties

Shilko S.V., Starzhinsky V.E. and Wakista W.W. The mechanism of vertebral column mobility decreasing due to spinal neurotrauma

Corves B., Brix T., Kloppenburg J. Mechanism theory and mechanism models at the institute of mechanism theory and machine dynamics, RWTH Aachen University