

# Symposia

Stephen Juhasz and Peter Eberhard

## A. Summary

Between 1949 and 1985 a total of 139 symposia were held in 91 cities in 25 countries. The frequency increased from one per year to about eight per year. From 1986 to 2015 239 symposia were held in 135 cities and 37 countries. This means that 1949 to 2015 in total the impressive number of 378 symposia were held in 41 countries. The total number of registrants was about 29,000. The lowest number of registrants was 23 and the highest 239. The greatest number of countries represented at a symposium was 27.

Most of the symposia publish proceedings. The majority of the published proceedings are in book form (281 of 378, i.e. 75 %). A smaller fraction (62, i.e. 16 %) were published in a special issue of a scientific journal or serial title. Only 10 symposia (2.6 %) had no proceedings at all and 9 are not yet available. Although just started very recently, the *Procedia IUTAM* series contains already 16 (4.2 %) proceedings. The symposia, unlike the congresses, were meetings of specialists and by invitation only, although in recent years these have frequently been just a formality.

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S. Juhasz (1913–2013)  
Southwest Research Institute, San Antonio, USA

P. Eberhard (\*1966)  
University of Stuttgart, Stuttgart, Germany

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## **B. Origin**

### **1. Concept**

The word *symposium*, according to the *Oxford English Dictionary, A New English Dictionary* (Clarendon Press, 1970), has two meanings: (1) “a drinking party: a convivial meeting for drinking, conversation, and intellectual entertainment: properly among the ancient Greeks...” and (2) “a meeting or conference for discussion of some subject or; hence, a collection of opinions delivered, or a series of articles contributed by a number of persons on some special topic.” The latter meaning arose indirectly out of the former from the celebrity of Plato’s famous record of the discussion (and the drinking) at a remarkable ‘symposium’ in which Socrates played a leading part.

It appears that the first symposium discussing a scientific subject was held far more than 100 years ago, “... for the liberal discussion of the Copernican system.” Since then, the word *symposium* has been used increasingly to describe important scientific discussion meetings.

### **2. IUTAM Symposia**

The predecessor of the IUTAM Congress was the Innsbruck Conference on Applied Mechanics, held in 1922. The conference was organized mostly on the initiative of Theodore von Karman, who envisioned bringing together in a hotel in Innsbruck a small group of specialists in the mechanics of fluids. The number of participants was under thirty, and as the meeting was held in a hotel, there were no “outside, local” participants. The majority of the participants had a family guest. This meeting was, however, not called a symposium. Nearly 30 years later, when von Karman was the chairman of AGARD in Paris, he initiated the first IUTAM Symposium in 1949. There, after 25 years of the quadrennial congress, the original concept of the symposium was introduced to allow the newly formed International Union to be much more continuously active than quadrennial congresses could permit.

## **C. Frequency**

During their first ten years (1949–1959), symposia were relatively infrequent, about five being held during each four-year interval between congresses. Between 1960 and 1972, however, the number of symposia held between congresses was at a much higher level, namely twelve. The number of symposia then increased: between 1972 and 1978, to four or five per annum, and thereafter, as a result of a new policy firmly adopted by the General Assembly, to an average of eight

symposia yearly. During the three-year period 1982 to 1984, as many symposia were held as had been held during the 14-year period from 1949 to 1963. The highest number of symposia held in one year was 14 in 1997. It appears that interest in organizing and participating in symposia was increasing, and the main limiting factors are finances and quality of proposals. In recent years the situation changed somehow since the General Assembly receives less proposals and the competition with other scientific societies which organize conference series is increasing. However, still only high-quality proposals are accepted which promise interesting discussions about challenging fields of mechanics.

## **D. Participation**

### **1. Policies**

The early meetings were essentially closed, similar to the Innsbruck conference in 1922. This policy seems to have held for quite a while, and young scientists who had not demonstrated significant activity in the field were not invited, even if they expressed interest and were locally recognized. The Bureau of IUTAM was concerned to ensure a high level of excellence for the discussion through a policy of attendance by invitation only.

Nowadays, the symposia have opened up. Two factors have contributed to this trend: first, though symposium participation is by invitation, promising young applied mechanics, whose professors are recognized authorities, stand a good chance of being invited to participate on their professors' recommendations. The second is the greater participation of the "locals." This means that if a meeting is held at a university, then the junior faculty and graduate students may be present at the meeting. Discussions with IUTAM and symposium participants indicate that the trend is toward further relaxing the closed atmosphere of symposia and today participation is not restrictive anymore. More limiting is the maximum number of talks which can be admitted without introducing parallel sessions.

### **2. Fully Open, Fully Closed, and Middle-of-the-Road Meetings**

A fully open symposium has the disadvantage that a "concentration" of experts is absent and, therefore, a high-level discussion would be impossible. A fully closed meeting, on the other hand, would create bad blood and would, in fact, create an "invisible college." The current middle-of-the-road kind of system may be able to balance the two extremes satisfactorily. An added plus to such a system is the possibility of giving financial aid to some bright newcomers who are geographically

remote from the location of the symposium. Since many years IUTAM is offering grants to the organizers to support participation of young scientists who can otherwise not attend.

## E. What and Where

### 1. Subjects and Approval of Proposals

A subject heading list was used to classify the subjects of the past 378 symposia held between 1949 and 2015.

Foundations and basic methods in mechanics	M	20
Vibration, dynamics, control	D	53
Mechanics of solids	S	95
Mechanics of fluids	F	121
Thermal sciences	T	9
Earth sciences	G	10
Energy systems and environment	E	6
Biosciences	B	10
Other	O	8
Fluid structure interaction	FS	3
Materials	MA	16
Micro-Nanomechanics	MN	12
Computational methods	CM	11
Optimization	OP	5
Total		378

The majority of the symposia have been discipline-oriented. Some of the subjects of the symposia have been quite broad, such as Optical Methods in Mechanics of Solids, and others have been very narrow, such as Behavior of Dense Media Under High Dynamic Pressures. There has not been a drastic change in emphasis. The emphasis on cosmical gas dynamics, which was great during the first twenty-four symposia, has disappeared. There has been practically no change of emphasis on dynamics, mechanics of solids, and mechanics of fluids. A typical mission-oriented symposium was the 1975 symposium on Dynamics of Vehicles on Roads and Railway Tracks. Continuation symposia have appeared a few times; Creep in Structures symposia have been held every ten years since 1960. Although there is some justification to repeat a symposium a few years later because of the rapid developments in the field, the disadvantage of this practice is that as the number of symposia is limited, e.g., by financial resources, some fields not previously covered might be neglected or excluded.

Initiation of a possible symposium is usually by one or several persons from the same institution. This is brought to the attention of the Bureau of IUTAM or using a webpage to the attention of the Secretary-General, which in turn, submit the proposal for prescreening to one of two panels. One deals with mechanics of solids only, the other with fluid mechanics. Proposals dealing with both, Fluids and Solides, are evaluated by both panels. The panels then meet in person or discuss by email, and their recommendation is submitted finally to the General Assembly. The committees classify the subjects of the proposals as alpha, beta, and gamma type. The first one is affirmative recommendation, the third is unconditional rejection, and the second is an intermediate designation. Recommendations are made every second year for discussions by the General Assembly. These meetings usually last two days. The first day, recommendations are made. There might also be a discussion during the first day. The final decisions are made on the second day. Usually, only a small fraction of the recommendations by the panels are changed by the General Assembly.

The locations, scientific committees, and time, though already recommended by the proposer and possibly discussed by the committee and/or General Assembly, are worked out in detail by the Bureau of IUTAM. In the past, this was purely the prerogative of the Bureau, but this was gradually changing and the organizers prepare all these decisions today.

It might be of interest to look into fields in which there is worldwide activity that have never been proposed yet are still in the area of applied mechanics, though there is not a heavy enough concentration that might trigger the submission of a proposal.

It occasionally happens that a proposal is made by an individual who is not adequately experienced in the field and thus does not have the necessary standing or who may not be capable of organizing a good meeting, though the proposed subject is a popular one. In such rare cases, another initiator is found, and to show appreciation for the original initiator's effort, he is made a co-chairman, or some other compensatory solution is found.

## **2. Locations**

IUTAM symposia have been held on each continent at least once. 41 is the total number of countries where one or more symposia were held. The greatest number have been in Europe, where a total of 241 out of 378 symposia were held. The second highest concentration is in America with 67 and then Asia with 57, Australia with 10 and Africa with 3. Strangely, symposia have never been held in some technically developed countries, such as Argentina, Korea, Iran, or Finland.

## **F. Participants**

### **1. Geographic Breakdown**

It might also be worth looking at symposium locations from the point of view of whether they have been in larger cities or resorts. Examples of resorts are 1950, Pallanza, Italy; 1962, Celerina, Switzerland; 1972, Bad Herrenalb, Germany.

The lowest number of countries represented at a symposium occurred in Bangalore/India and Paris/France in 2014, when delegates from only 4 countries participated. The highest number of countries represented was 27 in 1972 at Karlsruhe/Germany. There were two reasons for this: (1) it was jointly sponsored by IUTAM and the International Association of Hydraulics Research, and (2) European countries are relatively small, close together, thus travel is easy. Based on 368 symposia where the participants' countries were listed, the average number of countries represented at a symposium was about 14. This, of course, is high enough to lend an international flavor to the meeting.

### **2. Numerical Breakdown**

The figures in this part of the study were taken from the IUTAM reports rather than from the proceedings. Thus, it is not known whether the figures include some "locals" or not; it is, however, assumed that in the majority of the cases, they do not. The lowest number of listed participants was 23. The highest number was 239 in 1979 at Karlsruhe. The difference is due to the topic, the attractivity of the place, the reputation of the organizers but also due to the policy of the organizers. Some are very restrictive in sending out invitations; others have more an "open house" style. In total about 29,000 participants have been reported which means that in average about 76 participants attended a specific symposium.

The pattern of participation throughout the years is so random that no trend can be forecast. A smaller meeting has certain advantages. Also, it should be remembered that some of the larger symposia (in terms of the number of participants) are identical to many international congresses held prior to the 1950s.

## **G. Proceedings**

### **1. General**

The symposia proceedings mainly fall into two categories: books and special issues of journals. It is interesting to note that the number of symposia published in book form is about 4.6 times larger than the number published in journals. There have

been a total of 359 symposia published, 10 symposia had no proceedings and 9 of the very recent symposia are still in the process. In total, 74 % were in book form, 16 % were special issues of a journal, 4.2 % are in the just recently established *Procedia IUTAM* series, and just 2.6 % had no proceedings at all. Several publishers with high reputation have been responsible for most of the published books, but clearly Springer/Kluwer have published the largest share of symposia proceedings. Recently the open access publication in the *Procedia IUTAM* series by Elsevier attracted a lot of interest. It is also visible, that there are more and more symposia with no proceedings at all although IUTAM's policy and rules demand proceedings. This causes some discussion in IUTAM and it is currently unclear what will be the result for the future: mandatory proceedings, voluntary proceedings, or no proceedings.

## 2. Advantages and Disadvantages of Publication Modes

If one considers the advantages and disadvantages of publishing the papers and possible discussions presented at a symposium in book form as compared with a special issue of a journal, then special consideration must be given to the four types of users to whom the mode of publication is of interest. These are the author of the paper, the applied mechanic at large (who might or might not be a specialist in the field but who is, for one reason or another, interested in the subject); the organizer and/or organization behind the symposium; and the librarian, who is a potential buyer of the book and subscriber (or not) to the journal.

For the organizers, the book form is advantageous for several reasons. They can keep much better control of the publication, even though another entity (the publisher) issues the book. Author prepared manuscripts are used in most cases, as the responsibility for following the guidelines, such as availability of abstracts, presentation of equations, etc., is usually the author's, and it is highly likely that the author will pay much more attention to the details than he would to preparation of a journal article, where the author receives only galley proofs. Also, the organizers receive a reasonable number of free copies of a book for distribution. For the author of a paper presented at a symposium, the publication in book form has several disadvantages: referencing a symposium paper is more difficult; also, in a list of publications, a paper published in a book form is sometimes not considered to be a refereed paper. In the case of a journal, the fact that it was given at a symposium may be omitted, and thus, the publication has greater weight in a list of publications. However, it is visible that much fewer papers can be published in a special issue compared to a book and that especially younger scientists are thus hardly represented in special issues. For the "applied mechanic on the street," the publication in book form has the disadvantage that he might not know about the symposium, even if it is in his own field. If he does know about it, he might not have ready access to it. Finally, the book-form publication has a disadvantage for the librarian, who might be unaware of its publication. Even if he is aware of it, he

might not be able to fit it into his budget. The proceedings of symposia that are published in a well established journal, even in a special issue, are of no financial consequence to the librarian, for he is paying for a full year's subscription. The trend to move away from books and journals on paper and, instead, to have only electronic publications will further change the situation. Another current issue is, that journals are under high pressure not to publish special issues anymore related to conferences since this might lead to loosing their impact factors or to being banned from major indexing services.

### **3. Length**

The maximum and minimum lengths of the symposium proceedings are determined not so much by the symposium organizers but rather by the publishers. Springer normally wanted a 400-page limit. There are exceptions, e.g., where external funds are sponsoring the printing. In such cases, the book publisher has less to say. Typically special issues of journals can only accommodate less than 10 papers and so just a very limited selection of the research presented at a symposia can be included there.

## **H. Sponsors and Arrangements**

### **1. Organizers**

The organizers of the symposia are mostly members of academia, and the institutions involved, other than IUTAM itself, are universities. Rarely there was considerable amount of industrial support of the symposia. There is no symposium in recent memory that was organized by an industrial organization. Research institute sponsorship has sometimes been approved.

### **2. Socials**

The duration of the symposia is at least two days and goes up to five days; thus, the inclusion of socials is important. The majority of past symposia have made efforts to accomplish this, as the socials contribute much to the exchange of scientific information.



### 3. Photos of Participants and List of Participants

Some symposia have generated a printed list of participants in a bound volume, yet others have not. A group picture of up to sixty people is quite feasible if the participants are standing on steps in four or five rows. This has been done at certain symposia, and a key identifying the persons was sometimes supplied.

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