Closing Ceremony

The closing ceremony was held on Thurday, August 27, 1998, starting at 15.00 in the main lecture hall of the TU Berlin

David Mumford, *President of the International Mathematical Union, addressed the audience as follows:*

We have come to the end now of what I believe was a remarkable and very successful Congress. As President of the IMU, it is my very pleasant duty first to congratulate the local organizing committee for their role in this.

I would like to underline several aspects of the Congress which I felt were especially successful. Firstly, in the entire pre-congress stage, the organizers have used email most effectively, putting on virtually everyone's desk the current plans, events, speakers as soon as announced and the registration form. Moreover, their ability to produce two thirds of the Proceedings before the Congress and one third immediately after (held back only by those like me who didn't write their speeches beforehand) is a remarkable demonstration of the potential to publish a major book at minimal cost with no commercial assistance.

Another great success is the quality of the presentations. I want to congratulate the Program Committee for their selections, the speakers on the clarity of their talks and the Organizing Committee for their instructions and suggestions to the speakers (that I'm sure were listened to from my own conversations with many of the speakers).

Still another area in which the organizers have succeeded beyond all expectations is in public relations. Both with unprecedented press coverage and with a beautiful array of programs at Urania, they have reached major groups of Berliners, of Germans and of the World. (My wife reports reading of the Fields Medals in the Boston Globe.)

Finally, I'd like to say that the physical arrangements seem to me to have been near ideal: many large lecture rooms in close proximity, transport passes, etc. Underlying all this, invisible but obviously vital, is probably the largest sum of money ever raised for an ICM. Its use in helping hundreds attend the Congress will be detailed later.

For this great job, I want now to propose a round of applause for the Organizers. BUT, as in all human activities, an institution cannot rest on its laurels. The Congress is really for you and we want your feedback. Taking our clue from the Organizers, we would like everyone who wishes to send us electronically their comments, suggestions and proposals. You can reach the IMU at "imu@impa.br."

My second duty is to report to you on the General Assembly (G. A.) of the IMU that took place in Dresden over the weekend preceding the Congress. Many of you may be unaware of the institutional infrastructure that supports the stately procession of International Congresses, so let me quickly sketch this. The IMU is an organization whose members are countries – about 60 of them – which are represented by 'adhering organizations', National Academies or Mathematical Societies. Each of them sends delegates to the G. A. which precedes each Congress and here the whole chain of committees starts and the control rests. The G. A. elects the President, Secretary and Executive Committee, which in turn appoints the Program Committee (which appoints panels in every subfield), Fields Medal and Nevanlinna Prize Committees and works with the Organizing Committee of the next Congress. The goal, I should add, is to spread decision making over as large and as representative a group as possible.

At this point, I want to report to you the decisons taken at the Dresden G. A. The first decision is that:

ICM 2002 will be held in Beijing, China.

The President of the Chinese Mathematical Society, Professor K. C. Chang, will give further information in a few minutes.
Secondly, the G. A. passed a resolution in support of diversity:

Building on the resolutions adopted at the 1986 and 1990 General Assemblies, the IMU shall continue to endeavour to attract the participation of all mathematicians. Subfields of mathematics and traditionally underrepresented groups should not be overlooked in IMU activities.

Thirdly, the G. A. adopted an 'enabling resolution' to form a Committee on Electronic Information and Communication. This resolution reads:

1. In the last decade, the internet has been transforming our communication and commerce. In the world of science, the internet is radically changing the modes of information transfer at all levels. Communication on hand-written and printed paper, distribution via postal mail and libraries is a system which has been stable for many centuries. We cannot foresee clearly the new system which is evolving except that it will involve electronic media and it will radically alter the economics of communication. This transformation will certainly be global and will affect mathematical research on all continents.
2. We strongly believe that the IMU can play several important roles during this transition. Among these are:

- *i) it can provide a forum where all parties, i. e., all countries and all interest groups (individual researchers, professional societies, publishers, and libraries) can discuss the issues and it can publish proceedings to increase general understanding of all the issues involved,*
- *ii) it can recommend and promote international standards on electronic communication among mathematicians, when needed,*
- *iii) it can act as a liaison between regional, national and local groups, coordinating their initiatives and discussions.*

3. We therefore propose that the GA establish a

Committee on Electronic Information and Communication (CEIC)

to accomplish its objectives whose terms of reference and initial additional membership will be decided by the ad hoc committee consisting of John Ewing, Martin Grötschel, Peter Michor, David Mumford and Jacob Palis and sent by mail ballot to the adhering organizations for approval.

I am happy to report that this Committee is nearly in place and that Peter Michor has agreed to be its chairman for the next four years.

Fourthly, the G. A. elected as the next President of the IMU Professor Jacob Palis and as Secretary Professor Phillip Griffiths and I wish to congratulate them and wish them great success. The following are the full slates which were elected for various Committees and Commissions of the Union:

IMU EXECUTIVE COMMITTEE

President:	J. Palis	Brazil
Vice-Presidents:	S. Donaldson	United Kingdom
	S. Mori	Japan
Secretary:	P. Griffiths	USA
Members:	V. Arnold	Russia
	J. M. Bismut	France
	B. Engquist	Sweden
	M. Grötschel	Germany
	M. Raghunathan	India
ex-officio:	D. Mumford, Past President	USA

INTERNATIONAL COMMISSION ON MATHEMATICIAL INSTRUCTION (ICMI)

President:	Hyman Bass	USA
Vice-Presidents:	M. Artigue	France
	N. Aguilera	Argentina
Secretary:	B. Hodgson	Canada
Members:	G. Leder	Australia
	Y. Namikawa	Japan
	I. Scharygin	Russia
	J. P. Wang	China
ex-officio:	Miguel de Guzman, Past President	Spain
	President of IMU	
	Secretary of IMU	

COMMISSION ON DEVELOPMENT AND EXCHANGE (CDE)

Chairman:	Rolando Rebolledo	Chile
Secretary:	Herb Clemens	USA
Members:	A. A. Ashour	Egypt
	K. C. Chang	China
	P. Cordaro	Brazil
	J.-P. Gossez	Belgium
	O. Nakoulima	Guadeloupe
	T. Sumada	Japan
ex-officio:	M. S. Narasimhan, Past Chairman	India
	President of IMU	
	Secretary of IMU	

INTERNATIONAL COMMISSION OF THE HISTORY OF MATHEMATICS (ICHM)

Jan P. Hogendijk (Netherlands) and Karen Parshall (USA)

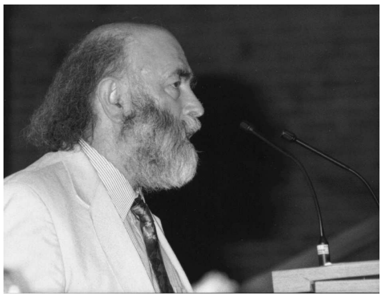
I would now like to call on Jacob Palis to say a few words.

JACOB PALIS, *President of the IMU for 1999–2002, addressed the audience as follows:*

Dear colleagues,
ladies and gentlemen:
It's a great honor for me to become the next President of the International Mathematical Union, a fundamental institution for the development of mathematics in the world. To have good mathematics in all regions, in all countries, is precisely a main goal of the Union: we shall pursue and achieve it together.

The Executive Committee and the Commissions of the Union will be engaged in this major goal. As part of such an effort, IMU members, through their mathematical societies and research agencies, have been contributing to our Special Development Fund; especially the US, Brazil, UK, Japan and France. Through the Fund and Local Organizing Committee, we were able to finance the participation at the ICM of about 100 young and 40 senior mathematicians from the Developing World. Actually, the Local Organizing Committee did more: it also made possible the presence of more than 300 mathematicians from the former Soviet Union and Eastern Europe. To talk about this, I wish to call to the podium Prof. ANATOLY M. VERSHIK (President of St. Petersburg Mathematical Society, Head of the Laboratury of the Mathematical Institute of the Russian Academy of Sciences).

ANATOLY M. VERSHIK *addressed the audience as follows:*



Dear Colleagues:
More than three hundred participants of our congress have arrived from Russia and the former Soviet Union (fSU). Almost all of them have obtained the special grants or partial financial support from the Organization Committee or other funds which that Committee was able to use. These are the results of the efforts of the Committee and all of us thank the organizers of the congress and the International Mathematical Union for this support.

This Congress is the second International Congress of Mathematicians (of course except Moscow Congress in '66) with such a wide presence of mathematicians from Russia and the fSU. It was impossible to imagine such a big group from those countries at a congress even 10 years ago. Everybody understands how important it is, especially for young mathematicians, to have the possibility to take part in a meeting of such a high scientific level, to listen to the talks of prominent scientists about recent studies, to present their own achievements, to obtain new information and to look for new problems.

Those over 40 perhaps remember how limited the attendance of Soviet mathematics at the international congresses in the sixties, seventies and eighties was. Even invited speakers could not obtain the permission from "very high scientific" organizations for going abroad, e. g., I was an invited speaker at the Congress '74 in Vancouver but approximately 15 other invited speakers from Russia could not visit that congress. It was common at that time to have a gap in the schedule instead of the lectures of Soviet mathematicians or to entrust the reading of the lecture to some of the foreign colleagues. Moreover, even Fields Medalists from Russia (Novikov – Nice '70, Margulis – Helsinki '78) did not visit these congresses and did not receive the medal during the ceremony because they had not obtained permission for that!

The international mathematical community tried to help our mathematics and mathematicians in those days many times but it was impossible and hopeless. Indeed, the reasons for such stupid behaviour of Soviet authority were political or something similar to that. The result of that policy was the separation between the remarkable mathematical schools which had developed in the Soviet Union and in the worldwide mathematical community.

Now fortunately we do not need any permissions of authorities and there are no obstacles for going abroad, for having contact with our colleagues, for collaboration with them and for visiting the conferences and congresses. But we face completely new problems which are more understandable – for all that we need financial support. For that matter the International Mathematical Community has shown very deep and clear understanding of our problems, in this situation they can help and they do help. There are many examples of such help and two excellent ones are our visit to the Congress in Berlin and the previous Congress in Zürich.

Thank you very much. Needless to say how important this help is for us! Especially nowadays when the sole existence of the mathematics in our countries is in such a danger.

In a rather solemn way I can say that our mathematics must survive and will survive and the international solidarity of mathematicians is a guarantee for that.

JACOB PALIS *continued his speech as follows:*

Also as part of our strategy to achieve the goal of having good mathematics throughout the world, we have proposed, and the General Assembly has approved unanimously, a change in our statutes, to have multinational mathematical societies and unions to be affiliated with IMU in order to facilitate joint actions in their respective region. The same applies to professional associations and in this respect emerges our second main objective: the unity of mathematics in its diversity of themes. We should have good mathematics, beyond being pure or applied and this should reflect in the ICMs, as in the present one.

Finally, I wish to ask the mathematicians of the world to participate in our multiple activities of the World Mathematical Year 2000.

Thank you.

Now I'm very pleased to invite K. C. Chang.

KUNG CHIN CHANG, *President of the Chinese Mathematical Society, addressed the audience as follows:*

Ladies and gentlemen:
It is a great pleasure and honor for me to invite all of you, on behalf of the Chinese Mathematical Society, to the next ICM at Beijing, a city interweaving historical tradition with modern fascination.

All the past congresses were held in developed countries. Now, the next congress, the first in the new century, will be held for the first time in a developing country. This will add a new chapter to Prof. Olli Lehto's book "Mathematics Without Borders."

We are grateful to the Executive Committee and the General Assembly of IMU for the decision on the site of Beijing. To host such an important congress is not only a great chance, but also a big challenge. However, the successful experience of the previous congresses, in particular, of the Berlin congress with such high levels of hospitality and efficiency, will be very useful for us.

In the past two decades, many mathematicians all over the world, and most of the members of the Executive Committee of IMU have visited China. Their suggestions and ideas in organizing the congress are warmly welcome. With the help of IMU and the cooperation of mathematicians throughout the world, the Chinese mathematicians, who are eager to make the congress a success, will do their best to make your attendance fruitful and enjoyable.

I am looking forward to seeing you all in Beijing in the year 2002.

The last speaker was MARTIN GRÖTSCHEL, *President of the ICM'98:*

At the first International Congresses it has been a tradition to commemorate the mathematicians who have deceased in the previous years. We would like to resume this tradition today. Following a German custom, I would like to ask you to stand up for a few moments and remain in silence while I read some words of remembrance.

It is impossible to list here all mathematicians who have died in the last four years, even if we restrict the list to the most prominent ones. I have chosen six colleagues who, I believe, represent all those who we will miss in the future:

HANSGEORG JEGGLE. Jeggle has been a professor at TU Berlin since 1971 and has been dean of the Faculty of Mathematics for many years. He was killed in a car crash on August 22, 1998.

FRANÇOIS JAEGER. Jaeger, an expert in combinatorics and combinatorial knot theory, had been selected by the ICM'98 Program Committee as an Invited Speaker in Section 13 "Combinatorics". He died on August 18, 1997 on the day when the ICM'98 invitation was mailed to him.

ANDRÉ WEIL, a towering figure of our field, whose name came up in many of the plenary and invited presentations of this Congress. Weil died on August 6, 1998.

PAUL ERDÖS. Erdös was among the most productive mathematicians of all time and probably the most highly connected individual of us all. He died at a conference in Warsaw on September 22, 1996.

Finally, I would like to mention that two Fields medalists have deceased within the last four years.

LARS AHLFORS, the first recipient of a Fields Medal in 1936, died on October 11, 1996.

KUNIHIKO KODAIRA, who received a Fields Medal in 1954, died on July 26, 1997.

Thank you for paying respect to the deceased colleagues. Please sit down again.

Ladies and Gentlemen, dear Colleagues:

One of the last sentences of my Opening Speech was:

> "We would like to make ICM'98 an exceptional event. Let us hope that our dreams come true."

I think our dreams came true.

However, not everything went exactly as planned. For instance, last night's ICM party was going to be staged as an open air party on the greens behind the Math Building. Bad weather made a rescue operation necessary. The available facilities were, unfortunately, not really optimal for good queue management. I apologize for these inconveniences and a few others that came up during the last 10 days. Some participants, in fact, told me that they were happy that misfortunes such as these occured. In their opinion, they made the ICM organization look more human.

I consider this as a compliment and would like to thank again all my colleagues in the Organizing Committee, our students, secretaries, spouses, children, and friends who have helped to run ICM'98 smoothly.

I have received a lot of additional requests. Participants would like to buy videos of the Opening Ceremony, of some of the Plenary Presentations, etc. We will consider all these issues in the near future, and I will write to you another Circular Letter to let you know what we can do and offer. One offer will be made right after the end of this Ceremony. We will show in the lecture hall H 104 the ICM'98 Special produced by channel B1 of Sender Freies Berlin which was broadcast on TV last week.

The ICM'98 Proceedings will be sold and distributed after the Congress by DOCUMENTA MATHEMATICA and the American Mathematical Society.

This is the right occasion to thank the many mathematical societies around the world who have generously helped the ICM'98 Organizing Committee distribute information about ICM'98 and advertise the Congress. This has been a very promising sign of international cooperation. I also consider it very positive that the IMU has decided to integrate the regional mathematical unions, such as the European Mathematical Society or the currently forming Asian Mathematical Union, into its activities. And I believe that electronic information and communication, another topic taken up by the IMU, will considerably foster joint work of mathematicians from around the world, so that we can also reach those groups and countries that seem somewhat isolated. Additional efforts, however, are necessary on all sides.

It was somewhat difficult for me to attend lectures. But I managed to participate in most of the Plenary Addresses. I am grateful to all speakers that they have made efforts, in some cases really remarkable efforts, to address a broad mathematical audience. These lectures certainly formed the scientific backbone of our Congress. I would also like to thank those who have presented posters or gave short presentations. That's where most of the communication and discussion took place.

Many words of thanks have been said. I believe that only one word of thanks is left. No congress, however well organized, can be successful without enthusiastic participants. That is what you all have been. When officials of this university noticed that on Saturday at 6 p.m. there were still 1500 persons attending lectures they were really convinced that this Congress is an unusual event. I think that the participants of this Congress found the right mixture between leisure, fun, and hard work, and that many of us go home with a lot of new ideas and new friends.

Thank you very much for coming to Berlin and participating in ICM'98.

I declare the 23rd International Congress of Mathematicians closed.

Members of the organization teams:
Grötschel, Behrends, Brüning, Sprekels, Hartmann, Winkler, Aigner,
Mumford, Palis, Hirzebruch, Möhring, Rehmann, Teuchert