3rd World Congress of the Bernoulli Society
June 20–25, 1994
Chapel Hill (North Carolina, USA)

High point of 1994 was the Third World Congress of the Bernoulli Sociey, held as a joint meeting with the Institute of Mathematical Statistics (the 57th IMS Annual Meeting) at Chapel Hill. The chair of the Joint Programme Committee was M. Eaton and the chair of the Local Organizing Committee was R. Leadbetter. The world congress is held every four years. Previous venues were Tashkent and Uppsala, and the next world congress will be held in Vienna, August 26–31, 1996 (see Section 8): a change of phase allowing the fifth world congress to be held in the auspicious year 2000.

With a variety of special invited lectures, thirty–six invited paper sessions, and fifty–eight contributed paper sessions, the Chapel Hill meeting was large – around 700 participants. The Bernoulli Society sponsored three named lectures:
the Kolmogorov Lecture delivered by Peter Jagers, the Laplace Lecture delivered by Adrian F. M. Smith, and the Bernoulli Lecture delivered by Herman Chernoff.

The meeting had a strong international flavour with large contingents both from Western Europe and North America. Thanks to financial support from the International Science Foundation and the Office of Naval Research, researchers from Central and Eastern Europe were also well represented.

The program included a wide variety of talks on probability, statistics and applications. For example the invited paper portion of the program included talks on: probability limit theory and its applications in statistics, stochastic networks, probability on trees, M–estimators and maximum likelihood, Bayesian computation, statistical analysis of functional data, statistical methods for data compression, probability in mathematical finance and statistical methods in climatology. A complete list of the invited paper sessions and speakers can be found in the first issue of Bernoulli News (No. 1, June 1994).

On Thursday, June 23, the Bernoulli Society held an open informational meeting for all who were interested. The first issue of Bernoulli News was available to those who had not seen it previously. Society President Ole E. Barndorff–Nielsen announced that the new Bernoulli Society journal, BERNOULLI, would appear beginning in 1995 (see Section 2). Following this there was a wide ranging discussion about the future plans of the society including the evolving relationship between the ISI and the Bernoulli Society (see Section 1).

All in all, the meeting was a rousing success. The large attendance and worldwide representation at the meeting clearly fostered international contacts and the international exchange of scientific research. Both the Local Organizing Committee and the Programme Committee deserve congratulations on a job excellently done.

There were also several parallell workshop/satellite meetings such as the Directions in Probability Workshops and the International Workshop on Stochastic Partial Differential Equations being held in Chapel Hill. The following reports were submitted by the organizers.

• Directions in Probability
Two workshops in the area of "Directions in Probablity" were run jointly with the 1994 BS – IMS Meeting in Chapel Hill in June 1994. These constituted the third in a series of annual workshops providing exposure to some of the currently most active topics in probability.

Workshop 1: "Developments in probability limit theory and their applications in statistics,"
organized by Jon Wellner and Dick Dudley.
The invited speakers were S. van de Geer, E. Gine, V. Koltcinskii, D. Pollard, P. Massart, E. Rio, A. van der Vaart, J. Wellner, and J. Yukich. Besides the formal invited talks, there were two problem sessions based on problems submitted by the speakers. A copy of these problems is available by email from jaw@stat.washington.edu .

Workshop 2: "Brownian Motion and Analysis"
organized by Ruth Williams and Marc Yor.
The invited speakers were D. Bakry, R. Banuelos, M. Barlow, K. Carne, A. Etheridge, M. Fukushima, J. F. Le Gall, M. Ledoux, T. Salisbury, T. Yamada. Besides the formal invited talks, there were two problem sessions based on problems submitted by the speakers. A copy of these problems is available by email from williams@math.ucsd.edu .

• Pathways to the Future
The Workshop on Pathways to the Future is designed primarily to provide young women researchers (within about five years after completion of the doctorate) an opportunity to meet each other and a few established researchers. Since its inception in 1988, the Workshop has taken place on Saturday evening and all day Sunday, immediately prior to the Annual Meeting of the Institute of Mathematical Statistics or the Joint Statistical Meetings. The 1994 Workshop was held June 18–19 in Chapel Hill following the Interface Symposium

and preceding the Third World Congress of the Bernoulli Society and the Institute of Mathematical Statistics. As was typical, the Workshop started with an opening address on the Saturday evening. On Sunday, Workshop attendees gave a brief (about 15 minutes) introduction to themselves and their research work. Over lunch presentations on research funding opportunities were made. Funding for the U.S.–based young researchers participating in the Workshop and the World Congress following was provided by the National Science Foundation and the Office of Naval Research. Anyone interested in attending the 1995 Workshop should contact Lynne Billard, Department of Statistics, University of Georgia, Athens, GA 30602–1952, email: lynne@marie.stat.uga.edu .

WWP'94
Workshop for Women in Probability
October 16–18, 1994
Cornell (New York, USA)

The Workshop "Women in Probability" organized by Ruth Williams and Molly Hahn at the invitation of Rick Durrett, was held at Cornell University under the auspices of the Mathematical Sciences Institute (MSI). The meeting was cosponsored by the American Mathematical Society.

The sixty attendees, including participants from four foreign countries, found the interactions unusually rewarding and are extremely greatful to MSI for the financial and organizational support. The strength in numbers and quality of a new generation of female probabilists was clearly indicated in the eleven invited lectures and 26 contributed lectures. Accompanying panels and round–table discussions positively addressed many issues related to the overall health of probability as well as issues of specific interest to women probabilists. One highlight of the workshop was a wonderful after dinner talk by Alexandra Bellow on "The Ironies of Life".

A Women in Probability email list has been established for future networking and distribution purposes. Anyone desiring to be added to the list should send their name, address, and email address to womprob@math.ucsd.edu .

ICM'94
International Congress of Mathematicians
August 3–11, 1994
Zürich, Switzerland

The International Congress of Mathematicians attracted about 3000 scientists from 125 countries around the world. A special section on Probability and Statistics reflected the importance of our field in mathematics. A list of lectures in probability and statistics at the ICM can be found in Bernoulli News No. 1, June 1994.
ICM'98 will be held in Berlin, Germany.

Ruth Dreifuss together with Jean Bourgain (IAS,IHES, Illinois), Pierre-Louis Lions (Paris-Dauphine), Jean-Christophe Yoccoz (Paris-Sud), Efim Zelmanov (Wisconsin): Fields Medals, and Avi Wigderson (Hebrew U. Jerusalem): Nevanlinna Prize.

The opening ceremony was highlighted by an official speech by Ruth Dreifuss, the Swiss Federal Minister of the Interior, which we reprint here.

Opening address of Minister Ruth Dreifuss

Ladies and Gentlemen,

A hundred years ago, in 1897, the first international Congress of Mathematicians was held in Zurich. In 1932, the Congress met in Switzerland for the second time. On that occasion, the Fields Medal was introduced as your Nobel Prize equivalent. Today, our country hosts your congress for the third time. No other country has been honoured in such a way by your scientific community and I am sure that the "genius loci" will show his gratitude for your fidelity and ensure the success of your work.

I feel personally very honoured to open your Congress. It's a rare opportunity to host the world's leadings masters of this art and to come into contact with their scientific debate.

If the subject of your congress was cancer research or modern history, for a lay person it would be simpler to understand what the discussion is about. In contrast, mathematics at first sight, seems to be an abstract tool for its own purpose or an exclusive art.

Two years ago, in Rio de Janeiro, under the sponsorship of UNESCO, "World Mathematical Year 2000" was launched. On the occasion, the International Mathematical Union defined a vision for mathematics which stresses the relationship between science and society. The Declaration of Rio de Janeiro states that "Pure and Applied Mathematics are one of the main keys to understanding the world and its development". I am sure that society needs these keys.

But since I am not a mathematician myself, I wonder what doors they open, and what society will find behind them. Therefore I would like to learn from you how mathematicians view their role in society.

With the relationship between science and society in mind, I sent three questions to over a dozen of the world's most eminent mathematicians and I am very grateful for all the answers I received. For the first two questions, I referred to the distinction between pure and applied mathematics cited in the Declaration of Rio.

The first question concerns pure mathematics. Pure mathematics seems to function within a realm of complete independence. Its results have their purpose not in usefulness to society, but in their truth. The clarity of this truth finds a beauty which elevates pure mathematics to an art form. But, in contrast to a harpist who delights others by her music, I fear the pure mathematician cannot make his art accessible to a wider public. My question then was: How can pure mathematics justify its art to the State which finances it?

For Beno Eckman, mathematics "sets the standard for every objective thought" and according to Friedrich Hirzebruch, "without mathematics there would be no structured logical thinking".

For Raoul Bott, "the treasure the (mathematician) hunts is at the very core of all ... precise inquiring into the world. ... As such (his) search must be a central concern of any enlightened state".

I agree and I am convinced of the need of mathematical thinking as a fundamental component of the modern world. Historically mathematics has been a key to open the doors to Enlightment. Today, pure mathematics can still be considered as the guardian of the grail of logical thinking.

But as Roland Bulirsch puts it, "mathematics is invisible culture". Further Jürgen Moser says that "mathematics may not be accessible for the enjoyment of a broad audience". If this culture of pure mathematics is invisible and inaccessible how then can one show its practical use and demonstrate its tangible results?

Armand Borel explains that "mathematics resembles an iceberg: beneath the surface is the realm of pure mathematics, hidden from the public view. ... Above the water is the tip, the visible part which we call applied mathematics."

According to Phillip Griffiths, "one of the deep mysteries of life is the way in which the best pure mathematics, pursued for its own sake, inexpicably and unpredictably turns out to be useful".

Jürgen Moser adds that "the difficulty in getting his message across lies in the longer timespan needed to recognize the significance of mathematical discoveries. ... Sometimes twenty or more years have to elapse ... Politicians unfortunately often think in much shorter terms."

This is certainly true not only for politicians but for society as a whole. In modern times we insist on increasingly shorter timespans for everything in our life. We ask for immediate return on investment. We want real time information. The life-span of technologies is getting shorter and shorter. Cost efficiency and speed have become the basic criteria to judge any human activity. This is dangerous because it's shortsighted.

In such an environment it is very important to continue to recognize that knowledge is a value in itself. Mathematics or Philosophy or any basic research develops only thanks to this principle which is an important part of our civilization. If we start to forget it, we jeopardize the roots of our progress.

The future is unpredictable. We cannot judge knowledge on the basis of its immediate usefulness.

As an example, the work of Vaughan Jones, who connected threedimensional knot theory with functional analysis, was awarded the Fields Medal at your last congress in Kyoto on the basis of its intrinsic merit. Later, this theory was utilized by physicists in statistical mechanics and by biologists to explain the structure of DNA. It is only through the recognition and support of basic research that society can ensure the continued and full development of scientific progress.

Let us turn to applied mathematics. Today applied mathematics has become a basis for all other sciences and has a tremendous impact on life in modern societies. Applied mathematics is hereby both highly relevant and useful to society but it has lost its innocence. However, in contrast to the debate on responsibility of nuclear physics and of genetechnology it seems to me that there has been little ethical discussion on the role of mathematics in society. Thus here is my second question: Has mathematics avoided such discussions?

There are mathematicians who claim moral neutrality for their science. René Thom for example writes me that "mathematics by itself it ethically neutral".

But Sir Michael Atiyah reminded me in his answer, that the "atomic bomb was only built after extensive mathematical calculations", and Jürgen Moser adds that "the renowned mathematicians von Neumann and Ulam played an important role" in this project.

Armand Borel asks "should one see the fact that mathematics is at the base of artillery or guided bombs as an ethical problem?". Yes, I think one should.

It is true that "most mathematicians are remote from the decisions of the application" of their work, as Friedrich Hirzebruch puts it. Beno Eckmann goes even further, when he says: "For mathematics itself this (ethical and political) discussion is not relevant. ...As a purely intellectual activity, it could not be influenced by such a discussion. Of course, those who apply mathematics have to face (this) discussion."

However, I do not think that making a distinction between abstract theory and practical application can altogether eliminate the ethical problem. We owe much of our progress in society to mathematicians and we have to recognize their merits while at the same time they have to assume their responsabilities.

Raoul Bott has expressed his argument against ethical neutrality, writing to me "that the age of innocence has come to an end for us all".

I am convinced this is true not only for science, but for most human activities. Today, thanks to science, our society has developed a tremendous power to control nature. This power enables us to take our destiny in our hands. But this power forces us to assume the responsibilities bound to it. If the age of innocence has come to an end, we have to recognize that it is the age of responsibility that has replaced it.

Let's now turn to my last question: If, as Minister of Science, I had the possibility to create 10 new professorships in Swiss universities, how many of them should I give to mathematics and why?

Phillip Griffiths is generous with his science and answers: "They should all go to mathematical scientists."

So is Gerd Faltings: nine chairs for mathematics, but–as he likes music–he leaves the tenth chair to the harpists.

Sir Michael Atiyah, Friedrich Hirzebruch and Jürgen Moser request four or five chairs of mathematics. That is about the average of all the answers. In fact, in Switzerland today only one chair out of twenty is for mathematics.

Some replies focus exclusively on the needs of natural sciences. This is surprising. When one considers the complexities of the problems that face society, I am convinced that their solution will require a supported and dedicated effort of the social sciences and humanities, in close collaboration with natural sciences.

In view of the growing importance of science I understand why scientists ask for more means, why they want more professorships than they have. Scientists are increasingly expected to find solutions to all of our problems. It is more than legitimate that you ask for the necessary means from society.

Science and research are crucial today. You don't have to convince me of this as minister of science, but together we have to convince the public and the Parliament. We have to convince the taxpayer. This is a difficult task when public budgets are running huge deficits.

One problem is that the growing impact of science in society is not felt when we drive a car or use a phone. Most people are not aware of the scientist whose work is behind everything in our everyday life. Ask for instance any Swiss "Whose portrait is on the ten franc note?". They won't be able to tell you. They have never noticed that it is Leonhard Euler. Probably they don't even know who Euler is.

It is the task of the scientific community to tell the public why science matters. It is your task–and it it mine.

I wish you all the best for your congress. I thank you.