MATHEMATICIANS OF THE WORLD, UNITE!

The International Congress of Mathematicians
A Human Endeavor

Guillermo P. Curbera
My First ICM was the congress at Harvard 1950. I was then 22 years old and had just defended my thesis in classical complex analysis at the University of Uppsala in Sweden. This was to be my first contact with non-Swedish mathematicians. The voyage was a major enterprise—it took ten days.

The congress was a great experience. I was amazed to encounter the richness of our field and how unimportant my own specialty was considered by many people. I made friends from different parts of the world, and these contacts have lasted through the years. I saw icons of mathematics whose names I knew from theorems and listened to their lectures. I remember in particular Jacques Hadamard. The organizers of the congress had with great effort managed to get a visa for him for a few days, in spite of the risk for the security of the country to let an 85-year-old communist in. This was my first contact with the problem of how politics interferes with mathematics. Much more on this subject can be found in this book. At the congress, I listened to lectures by not only Hadamard but also H. Cartan, K. Gödel, J. Leray, J. von Neumann, and S.-S. Chern, to just mention a few. I also remember the excitement of the Fields Medals—who would win?—and the discussions afterwards.

Much is the same today, and much has changed. For us who are now old, it is a great trip of nostalgia to remember the congresses and see the faces of the people on the following pages.

We must be grateful to the author for collecting so many pictures from the past 100 years. The book complements the earlier book by D. Albers, G. Alexanderson, and C. Reid (1987). But much has changed. Mathematicians now meet on a regular basis, travel is easy, and information is instantaneous over the Internet. The specialization within mathematics is very pronounced. The meetings are specialized as well as the journals, and many people are as mathematically isolated as I was in Sweden during and after the war. The ICMs, however, still provide the unique possibility for the young to see today's icons, to learn and respect areas of the field other than their own specialty. We often talk about the unity of mathematics, and the ICMs give us the possibility to get new impulses from areas that we otherwise don't see.

I welcome this book and hope it will inspire international cooperation without politics and promote curiosity and interest in the whole area of mathematics.

Lennart Carleson
The origin of this book lies in the celebration of the International Congress of Mathematicians in Madrid in 2006. The congress was the 25th in the series of international congresses. The Executive Committee of ICM 2006 decided to celebrate the occasion with an exhibit on the history of the congresses, and I was invited to organize it. The idea was to make a largely graphic display, showing the 25 official posters and some photographs of mathematicians. It seemed nice and simple.

The main source of inspiration for the exhibition was the two books on the subject (always books!). One was the original International Mathematical Congresses: An Illustrated History 1893–1986, by Donald J. Albers, Gerald L. Alexanderson, and Constance Reid. The other book was the precise and encyclopedic Mathematics without Borders: A History of the International Mathematical Union, by Olli Lehto. I reread both books and then contacted Lehto in order to visit the archives of the International Mathematical Union. Lehto had organized the archives at the University of Helsinki after leaving his post as Secretary of the Union. This was in April 2004.

Naively enough, I went to Helsinki with the idea of coming back with the exhibition in my bag. I spent a week there, hosted by Lehto, who granted me full access to the Union’s archives. Then came the surprise: there was almost no usable material for the planned exhibition. There were hundreds, thousands of memoranda, letters, and invoices but no trace of any poster or photograph. The exception was the 1978 International Congress that Lehto had organized in Helsinki. Even worse, there were no records at all of the congresses before World War II.

Back to the beginning again. I realized that there was only one solution: reading the proceedings of all the congresses in order to find the thread that would weave together the script of the exhibition. The experience was fascinating. The 24 congresses have produced 54 volumes, the bulk of which are devoted to the invited lectures and communications, but there was a great deal of very interesting information about the course of the congresses. I had found the thread, so I wrote the script for the exhibition.

Next came the problem of finding the images that would support the script. This is where the mathematical community as a whole came into action. I will illustrate how I acquired the graphic materials with the story of three sets of photographs.

Let us start with the 1962 International Congress held in Stockholm. I was obsessed with the idea of showing a photograph of the King of Sweden presenting the Fields Medals to Lars Hörmander and John Milnor. I contacted Hörmander and the organizers of the congress, Lars Gårding and Lennart Carleson, but they did not have any photographs.
Carleson was very interested in my request and directed me to other scientific institutions in Sweden. I even contacted the photographic agency that deals with matters of the Swedish Royal House. Nothing at all: I was defeated. Some months later, I received a message from Anne M ich e de M alleray, archivist of the Center for History of Science of the Royal Swedish Academy of Sciences, one of the many institutions that I had contacted during my search. The message said: “Archival work sometimes moves in mysterious ways. Today when I was looking into a completely different matter I came across an unlabeled box. When I opened it I saw six pictures from the 1962 ICM, and among them two showing the presentation of the Fields Medals by King Gustaf VI Adolf.” Finally, here was success.

Another obsession of mine was the 1966 International Congress, held in Moscow. I was especially interested in finding photographs of this congress, since they would show the world of the communist Soviet Union that no longer exists. I contacted the organizers of the congress; again I had no success. When I attended a conference in Moscow, I visited the Steklov Institute looking for any material from the congress; I was not lucky. In desperation, I asked for help from Anna Doubova, a Russian colleague at my university. We searched endlessly through the Web in the archives of Russian scientific institutions with no success. About to give up, Anna suggested searching wildly through the Internet. My opinion was that for this type of information, the Internet was useless, and I was right... until Anna suggested searching with Cyrillic characters. After a while, we found more than we had expected. On the personal Web page of Serge I. Khashin, from the Faculty of Mathematics of the University of Ivanovo, there were dozens of photographs from ICM 1966. The department had a rather large archive with negatives belonging to the late S. V. Smirnov, who had attended the 1966 congress and had taken his own personal pictures. We had found a treasure!

1932 congress card of J. J. Burckhardt. (Courtesy of J. J. Burckhardt.)
The last story concerns the International Congresses held in 1932 and 1994 in Zurich. In the proceedings of ICM 1994, I saw the photograph of J. J. Burckhardt, who had helped to organize the 1932 congress and also had attended the 1994 congress. I contacted a friend, Hans Jarchow from the University of Zurich, who had been on the organizing committee of the 1994 congress, and inquired about Burckhardt. He was living up in the Alps, but he was very old, and I was told that he should not be disturbed. Nevertheless, I contacted Burckhardt in February 2006, and after an exchange of letters, one day I received a large envelope with a handwritten note in which Burckhardt explained that he was sending me his archives from the 1932 congress. The envelope contained photographs, newspaper clippings, and documents from ICM 1932 (see, for example, page xii). In the letter, under his signature, Burckhardt had written “Ge- boren 1903” (born 1903). In December 2006, the sad news came from Zurich that Burckhardt had passed away.

These and many other stories illustrate the way in which the exhibition became a collective effort. The exhibition was entitled The ICM through History. The construction was a navy blue cube, ten by eight meters at its base and three meters high (see page xiv). It contained nearly 500 images of different types, as well as many stories. A more detailed description of the exhibition can be found in Part V of this book, “In a Global World,” where the Madrid 2006 International Congress is discussed.

This book gives the full description of what was prepared for the exhibition. Sir John Ball from Oxford, who was president of the International Mathematical Union when the 2006 International Congress took place, said that “[t]he tradition of the ICM is a wonderful one.” This book intends to substantiate that statement. As a follow-up to the exhibition, the book can be considered, in some sense, an offspring of a collective effort.

It is a pleasure to acknowledge the support that I have received. The greatest support came from members of the Executive Committee of ICM 2006: President Manuel de León, Emilio Bujalance, Antonio Durán, and Rosa Echevarría. Antonio Durán deserves special notice as a friend who believed in this project from the beginning. Olli Lehto has always helped and advised me. Juan Arias de Reyna has shared with me his wide knowledge. Two colleagues from my department have helped me beyond all expectations: Pedro López and Olvido Delgado. I am indebted to Eileen O’Brien, who counseled me beyond the call of friendship. José Luis Aránguiz has helped me to navigate through the Babel of languages of the proceedings of the congresses. And last but not least, I thank my wife Lourdes, not only for her constant support, but also for the extra support at critical moments. In March 2006,
The ICM Committee received unfortunate news: financial support from the Spanish government was much less than had been expected. The president of the ICM committee called everybody with one message: cut down expenses and freeze projects. The first in line for this was the exhibition. After two years of work, there might be no exhibition. At that moment, I made a difficult decision: I would keep working, no matter what. If the exhibition was to be buried, it would be so completely finished. These difficulties were overcome, and the exhibition was opened at the same time as the International Congress, in August 2006.

I am proud to recognize that the list of people and institutions to whom I owe gratitude is much longer; the complete list is printed in the final pages of the book.
The series of International Congresses are very loosely held together. They are not congresses of mathematics, that highly organized body of knowledge, but of mathematicians, those rather chaotic individuals who create and conserve it.

Reading the above text produces different reactions in the reader, because not many mathematicians recognize themselves as “rather chaotic individuals,” although they do consider themselves among those who “create and conserve” mathematics. The person who made this observation was not a romantic poet nor an outsider to mathematics, but rather the U.S. mathematician Oswald Veblen, who was president of the American Mathematical Society between 1923 and 1924 and presided over the first International Congress of Mathematicians held after World War II in 1950 at Harvard University. The occasion where he expressed this view of the ICMs and their significance was a solemn one: September 2, 1954, in Amsterdam’s Concertgebouw (concert hall) at the opening of the International Congress. Following a well-established tradition, in the opening ceremony the president of the preceding congress proposed to the participants the election of the new president of the congress. The nominee was usually the person who had presided over the organizing committee. In the meantime, he was the remaining representative until the next congress. At that time, the International Mathematical Union had not yet taken over the control of the ICM and, as Veblen explained,

At each congress they somehow agree on the country where the next one is to be held and then leave it to their colleagues in this country to work out a program.

The importance of the human factor in the ICMs, noted by Veblen and which can be appreciated in the peculiar mechanism of the succession of presidents, has had many consequences for the history and the character of the ICMs. One of them is that the sequence of the congresses reflects very accurately the world in which they have taken place, from political events to economic development to social habits. This situation has given the international congresses a dual personality. On one hand, they are scientific summits of mathematics where every four years a steady image of the state-of-the-art is displayed, with its achievements and its challenges. This facet of the ICMs is the one we see in the scientific content of the congress proceedings. Invited lectures, laudations for the awardees, and communications draw a lively and kaleidoscopic mosaic of the mathematics of the moment.

But it is the human factor that has given life and vitality to another facet, to which we will refer as the cultural side of the ICMs. This human facet and its journey, mostly through the twentieth century, is the aim and focus of this book, and it explains the way in which we look at the congresses.
We enjoy reading the original words spoken in the congresses; they allow us to grasp the viewpoints of the time and the world in which they were said. Sometimes they are so vivid that we can even imagine we are listening to them. We believe what is said in the congress proceedings. That is why when someone wrote, “A beautiful and inspired song was played,” we write that down. These are the reasons for the extensive quotes; we think that the reader will enjoy reading them.

The same happens with countries, cities, places, cultures, and languages. Through the narration of the congresses we see the world evolve; we detect the glories and obsessions of different countries. Each language carries an interpretation of the world; discovering these interpretations is an adventure. Titles and pompous expressions illuminate, or shade, a truth. Names of places, hotels, institutions, and songs have stories attached to them and represent national character.

The relevance of the ICMs as social events in the countries and cities where the congresses have been held can be gauged by the importance of the buildings that have hosted the congresses. We look at these buildings; they display a remarkable review of the history of architectural styles.

The lists of plenary lectures can be somewhat long and even tedious, but they are interesting in that they help us sense the flow of time in mathematics. In some, we find topics of interest today; in others, the hot topics of the time are now forgotten or neglected. As time goes by, the titles of the lectures lose their charm and become more technical, sometimes even cryptic. A similar phenomenon happens with the names of the lecturers and participants. We are moved when we recognize well-known mathematicians, and at the same time surprised and puzzled not to recognize others. The same occurs with the list of scientific sections into which each congress divided mathematics. They reveal a view of mathematics—the strength of certain fields and the decline of others—throughout the years.

The picture drawn is not uniform; it never could be. Some congresses were much more intense than others. Some left a detailed record of their course; others did not.

The role of pictures in the book is crucial. They are not just a “side dish.” With them, we have the same aim as with the original texts: to imagine the world in which they were taken. Unless stated, the pictures are authentic; that is, they are from the place and time described. They should not be treated as fast food that one gobbles without tasting. Rather, they should be used as a vehicle for imagining what they do not show.

What is the story of the ICMs that this book tells? The published proceedings of the Amsterdam 1954 congress have a section entitled “A Bird’s-Eye View of the Congress.” This is our intention: to give a bird’s-eye view of the congresses. This bird’s-eye view consists of two intertwined stories: a chronological narration and a thematic story of the congresses.

We follow the historical course of the congresses in chronological order. The 25 congresses fall naturally into five periods, determined by important historical events. Each period included congresses with a unifying character. “The Origins” briefly surveys the scientific, social, and historical conditions that made possible—and necessary—the appearance of the international congresses. “Early Times” looks at the period of progressive consolidation of the congresses in the years 1897–1912. In “Crisis in the Interwar Period,” we follow the struggle of the congresses during the years 1920–1936, confronting the aftermath of the Great War. In this period, non-scientific influences were very strong in the international congresses. “The Golden Era” is devoted to the years 1950–1962, when the splendor of the congresses was deployed in full and when the classic congresses took place. “On the Road” narrates the congresses in the period 1966–1986, when attendance became popularized. The last period, 1990–2006, is presented in “In
a Global World,” where we find new lines of development emerging in the ICMs.

Intertwined with the chronology are the interludes. These give a somewhat different story of the ICMs, not following the flow of time but focusing on a particular feature of the congresses. Their role is that of a celery sorbet in a degustation menu: cleansing taste and preparing the palate for the next course. With this aim, “Images of the ICM” looks at the graphic creations used by the congresses, appearing in posters, logotypes, stamps, and other printed materials. “Awards of the ICM” is devoted to the awards associated with the international congresses: the Fields Medal, the Nevanlinna Prize, and the Gauss Prize. “Buildings of the ICM” is a visual tour through some of the buildings around the world where the ICMs have been hosted. The most important of these interludes (a true main course) is “Social Life at the ICM,” where we review how the mandate set in the first congress of “fostering personal relations between mathematicians of different countries” has been accomplished.

We end with a coda devoted to summarizing the turbulent life of the International Mathematical Union.