Open Problems in Mathematics and Computational Science

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Editor

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Preface

A selected group of invited speakers and more than 150 students and researchers attended a special conference on September 18–20, 2013, in "Said Halim Pasha Palace" in Istanbul. There had never been a conference of this kind in Turkey, where "open" or "unsolved" problems are discussed, and even in the world there have only been a few examples.

In principle, mathematicians, scientists, and engineers attend conferences to speak about problems they have solved and to "impress" and inform the academic community about their methods and the final solution. It is not generally expected that a researcher would take the stand in a conference to talk about a problem she or he could not (yet) solve. However, all scientific processes start with hypotheses whose ramifications we do not know or problems whose solutions are not clear yet. Either for personal reasons or in accordance with the expectations of scientific conferences and their attendees, researchers tend to push the open/unsolved problems to the back burner and talk about what they have solved, understood, or proved. Still, once in a while (perhaps every 5–10 years), some researchers come together to discuss problems they have not solved yet or problems whose solutions seem rather challenging. Since the 1970s, there have been 7 such conferences.

Therefore, I am very happy that we were able to organize this *Open Problems in Mathematical and Computational Sciences Conference* with support from the Scientific and Technological Research Council (TÜBİTAK) of Turkey.

A large number of young researchers, MSc, and PhD candidates from Turkey, as well as several from neighboring countries, attended the conference. The invited scientists of the conference are among the most prolific mathematical and computational scientists in the world. They come from various countries, demonstrating that science and engineering are culturally very diverse now. The list of countries and number of scientists from each country were a good reminder of this fact: Belgium (2), Brazil (1), Canada (2), China (2), France (3), Germany (2), Japan (1), Norway (1), Romania (1), Turkey (3), and the USA (2).

The Open Problems Conference was held in Said Halim Pasha Palace, one of the most beautiful seaside palaces in Istanbul, whose history goes back at least 150 years and as far as Egypt!

Said Halim Pasha was the son of Mehmet Abdülhalim Pasha who was one of the four sons of Mehmet Ali Pasha from Kavala, the second largest city in Northern Greece. Mehmet Ali Pasha (Muhammad Ali of Egypt) was an Ottoman commander of Albanian origin and is regarded as the founder of modern Egypt because of the dramatic reforms in the military, economic, and cultural spheres he instituted. Said Halim Pasha was born in Cairo in the year 1863 and completed his education in private lessons in Cairo, where he learned Arabic, Persian, English, and French. He studied politics for 5 years in Switzerland. The palace had become the property of Prince Abdülhalim Pasha in the year 1876 and was reconstructed to its current appearance by the travelling architect, Petraki Adamandidis of the Dardanelles. The property was inherited by the nine children of the Abdülhalim Pasha after his death in 1890. After going through several owners, the Said Halim Pasha Palace was restored following a fire in 1995 under the name "Prime Ministry Official Guest House."

Several peoples' names need to be mentioned with gratitude, they made both the Open Problems Conference and the Open Problems Book possible.

First of all, I sincerely thank Ronan Nugent for his valuable advice and the Editorial Office of Springer for their help in getting the book published.

On behalf of the invited speakers, I am also sincerely grateful to TÜBİTAK for agreeing with us about the vision of the Open Problems Conference and their subsequent work that produced this book and for providing the financial support. I would also like to thank to Şükran Külekci, İsa Sertkaya, Birnur Ocaklı, Mehmet Sabır Kiraz, and Osmanbey Uzunkol for working around the clock several days before, during, and after the conference.

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