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Letter from the editors

Renato Betti[1] · **Angelo Guerraggio**[2] · **Settimo Termini**[3]

As the reader can easily guess, each issue of this journal is constructed as a result of an extensive debate. The contributors' voices, expertise and curiosity are different and one of the editors' tasks lies in finding a balanced variety of the articles: by subject, by level of complexity, by interest for the readers and so on. Then, when the issue is ready, it is good to find that something unexpected has appeared, as often happens, something that goes beyond the expected structure and provides it with a kind of autonomy.

Today, in the issue you have in your hand, you may recognise a motif that, here and there, in different and appropriate forms, seems to have taken over. It is the theme of wonder that accompanies the satisfaction of curiosity.

This feeling is first evoked in the article by **Andrea Capozucca**, the third instalment in his ongoing series devoted to "Communicating mathematics in Europe"; this time, he discusses the topic with **Andrew Jeffrey**, who actually is a magician, but is also a teacher who found a link between his main interests: magic and mathematics, to the benefit of his teaching.

Another article demonstrates that mathematical structures are first of all within ourselves. This is not new, of course, but look at the images and follow the discussion in "Matter built, excavated, split: a journey through fractal cities" by **Sandra Lucente** of the University of Bari, showing how some of these structures—in this case of fractal type—are revealed by the ways—embedded in the rocks, excavated in stone, constructed in dwellings—in which, over the centuries, man has dealt with the morphological features of the terrain and the human problems associated with them.

And then? What else arouses our curiosity in this issue? The paper "Image-matching technology applied to 15th-century printed book illustration" by two young researchers, **Matilde Malaspina** and **Yujie Zhong** (both graduate students at the University of Oxford), introduces us to the problems of visual recognition of the illustrations in the incunabula, the precious books printed before 1500: reconstructing the exact composition of the printed sheet makes it possible to shed light on important aspects of these works, such as the transmission of texts, commercial and cultural relations among different printers, technicians, artists, engravers, iconographic traditions, etc. Here too, wonder is linked to the ability to address a problem whose inherent complexity is much greater than that of other categories of images.

Curiosity, magic, wonder. Let us return now to an area that is more usual for mathematics, but no less interesting. In her paper "Earth's temperature and climate", **Elena Prestini** of the University of Rome "Tor Vergata" reminds us of an alarming issue for our generation, climate, which controls the life of our planet, and tells of its mathematical study, starting with Joseph Fourier. **Renato Betti**—one of the authors of this editorial—tells us in "The twin prime conjecture and other curiosities regarding prime numbers" about a recent result on the fascinating, and in some ways even magical, sequence of prime numbers. In addition to the result, it is the method used that arouses interest, due to the uncertainty of its procedures.

There are two more papers dealing with the application of mathematical methods to problems of life. The first is in a classical spirit: in "The paradox of Vito Volterra's predator–prey model", **Jean-Marc Ginoux** of the University of Toulon covers the fundamentals of population dynamics, from Malthus to the modern approach, via the great contributions by Vito Volterra. Then **Tullio Aebischer** proposes in "A new algorithm for the rating of orienteering athletes: the OriELO system (OE)" an original method to assign ratings

✉ Renato Betti
renato.betti@polimi.it

Angelo Guerraggio
angelo.guerraggio@unibocconi.it

Settimo Termini
settimo.termini@unipa.it

[1] Dipartimento di Matematica, Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy

[2] Università Bocconi di Milano, Via Sarfatti 25, 20136 Milan, Italy

[3] Dipartimento di matematica e informatica dell'Università di Palermo, Via Archirafi 34, 90123 Palermo, Italy

in orienteering competitions, the sport consisting in navigating terrain marked by predefined checkpoints using only a compass and a map; it turns out that the proposed rating method is borrowed from that used by chess players. What does chess have to do with it, you will ask? This too seems to be a bit of mathematical magic.

In conclusion, **Pietro Nastasi**, historian of mathematics and editor of the journal *PRISTEM/Storia. Note di Matematica, Storia, Cultura*, reviews *La corrispondenza massonica di Luigi Cremona con Giosuè Carducci e Francesco Magni*, edited by Aldo Brigaglia and Simonetta Di Sieno, the third volume in a series about Italian mathematicians at the time of the unification of Italy, published by Mimesis. It recounts a piece of modern Italian history that sees, in mid-nineteenth century, the mathematician Luigi Cremona in correspondence with two other well-known intellectuals: poet Giosuè Carducci and physician Francesco Magni.

All that remains now is to wish you, as usual, "enjoy your reading!".

Translated from the Italian by Daniele A. Gewurz.

Renato Betti is a former professor of geometry at the Politecnico di Milano. His research concerns category theory and its applications to algebra and geometry. His recent publications include *La matematica come abitudine del pensiero. Le idee scientifiche di Pavel Florenskij* (Libri del Pristem, 2009) and *Geometria leggera. Introduzione all'idea di spazio matematico* (Franco Angeli 2015). He is a member of the Accademia Nazionale Virgiliana in Mantua.

Angelo Guerraggio is lecturer of general mathematics at the Università dell'Insubria in Varese and at the Bocconi University in Milan, where he directs the Research Centre PRISTEM (Progetto RIcerche SToriche E Metodologiche), founded by him in 1987. His research interests range from non-linear programming to the history of mathematics, with particular reference to the Italian post-unification period. In 2007 he was appointed by the Italian Government national representative for the committees of the 7th Framework Programme of the European Union.

Settimo Termini was professor of Theoretical Computer Science at the Universities of Palermo and Perugia, directing, from 2002 to 2009, the Istituto di Cibernetica "Eduardo Caianiello" of the Italian National Research Council (CNR) in Naples. A theoretical physicist by training, he has been mainly concerned with problems raised by the treatment of incomplete and revisable information in complex systems and, recently, with the connections among scientific research, innovation and economic development. His work forms the basis of the "Theory of measures of fuzziness". Fellow of the International Fuzzy Systems Association (IFSA) and the Accademia Nazionale di Scienze Lettere ed Arti, his books include: *Aspects of Vagueness* (with Heinz J. Skala and Enric Trillas; Kluwer, 1984); *Imagination and Rigor* (Springer, 2006); *Contro il declino* (with Pietro Greco; Codice, 2007); *Memoria e Progetto* (with Pietro Greco; GEM 2010).