

GHEORGHE BUCUR ON HIS 70TH BIRTHDAY

Professor Gheorghe Bucur was born on January 26th 1939 in Brănești, Dâmbovița. He attended high school in Pucioasa, graduating in 1956; from the very beginning, his teachers and schoolmates recognized and praised him for his exceptional gift for mathematics, along with other future Romanian talented mathematicians as Constantin Năstăsescu, Constantin Niță, Vasile Oproiu, Dragoș Ștefan, a.s.o. During the high school years (1953-1956) he won numerous prizes at the Olympiads in mathematics, and he was a problem solver at *Gazeta de Matematică și Fizică*.

Between 1956-1961 he attended the Faculty of Mathematics of the C.I. Parhon University in Bucharest, where he had a pleiad of outstanding professors like Miron Nicolescu, Constantin Ionescu Tulcea, Simion Stoilow, Dan Barbilian, Alexandru Ghika, Romulus Cristescu, etc. His innate talent for mathematics brought about his nomination as a university assistant by Miron Nicolescu at the Department of Analysis of the Faculty of Mathematics. Since 1968 he acted as a senior scientific researcher at the Institute of Mathematics of the Romanian Academy. In the period 1995-2009 he worked as a professor at the Department of Analysis of the Faculty of Mathematics of the University of Bucharest, being also a head of this department between 2000-2009. At present, he is a consulting professor at the University of Bucharest. He also worked as a professor, firstly at the Faculté des Sciences of Tunis (1991-1993) and then at the Faculté des Sciences of Monastir, Tunis (1994-1995).

In 1968, Miron Nicolescu, who initiated the potential theory in Romania and who was Gheorghe Bucur's PhD supervisor, suggested to him to join the research group of the potential theory at the Institute of Mathematics, group formed by Cornel Constantinescu, Nicolae Boboc, Aurel Cornea and Paul Mustață. After 5 years of hard work with N. Boboc and A. Cornea, he began to elaborate a new theory of the potential, basically founded on order and convexity. This new theory drew Gustave Choquet's attention, who invited him to expose it during a semester (1973-1974) in the frame of the scientific seminary on the potential theory of Paris 6.

The contact with outstanding scientific personalities like Marcel Brelot, Gustave Choquet, Jacques Deny positively influenced his further scientific work.

It should be mentioned that at the moment Gheorghe Bucur joined the group working on the theory of potential, the triplet Boboc-Constantinescu-Cornea has just gave its substantial contribution to the theory of harmonic

spaces. The ordered convex cones Gheorghe Bucur studied in his PhD thesis were a subject of interest for the researchers in potential theory at that time, since the Choquet boundary theory just showed its powerful utility. Long time collaboration between N. Boboc and Gh. Bucur began. We can identify three parts in the Boboc-Bucur joint works.

The first one was focused on the convex cones and Choquet boundary theory. The monograph “Convex cones of continuous functions on compact spaces” they published with the Publishing House of the Romanian Academy in 1976 which completes the work, became a basic reference in the field, although it was written in Romanian!

The roots of the second part, the axiomatic potential theory, are already visible here, because of the “cones of potentials” (in the sense of Gabriel Mokobodzki), the “carrier”, the “maximum principle”, and the “kernels” arisen in the study.

An impressive series of articles has been published by the triplet Boboc-Bucur-Cornea. A new framework has been founded in potential theory: the H-cones. This frame is adequate not only for studying the superharmonic functions associated with a second order differential operator (as the harmonic spaces are), but also for the integro-differential operators. In addition, the base space is no more assumed to be locally compact. The monograph “Order and convexity in potential theory: H-cones” they published in 1981 in Springer-Verlag (Lecture Notes in Mathematics 853) is now recognized as a standard reference not only for the H-cones, but also for the cones of potentials. The H-cone theory has been completed by N. Boboc and Gh. Bucur after the above book has been published, mainly by developing the localization in the natural topology and investigating the Green potentials. The third part, “energy and perturbations”, includes substantial contributions on the perturbation of excessive structures, Dirichlet forms, and the non-symmetric resistance forms. The impact of this rather new theory will be seen in the future. Gheorghe Bucur is essentially an analyst. However, there are many contacts with the stochastic processes in his works. The explanation is simple, since starting with the H-cones theory, the sub-Markovian resolvent of kernels became basic tools in the studies. We note also that the collaboration with Mounir Bezzarga was oriented to an interesting development of the potential theory associated with a semi-dynamical system.

To conclude, the scientific activity of Gheorghe Bucur deeply influenced the research domains he considered and reflects faithfully the development in the last fifty years of the potential theory in Romania. His professional experience is augmented by his personal warmth and friendly attitude. The people working in the potential theory recognize his outstanding research and teaching accomplishments; his message to the next generation of scientific researchers is clear and invaluable.