Culture and Art of Scientific Discoveries: A Selection of István Hargittai's Writings

Edited by Balazs Hargittai

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REVIEWED BY OSMO PEKONEN

The Hungarian family name Hargittai has become a byword for exquisite science writing with a touch of *Mitteleuropa*. István, Magdolna, and Balazs—father, mother and son of the Hargittai family—are all chemists; they are also prolific authors who have published extensively not only on chemistry but on the interaction of science and art, on twentieth-century history of science, and on personalia of famous scientists, especially Nobel laureates. A key concept of their work that brings them into contact with mathematics is symmetry. Over the years, István Hargittai has contributed many papers to this magazine, and in 1995 through 2000 he edited the *Chemical Intelligencer*, an ephemeral sister magazine modeled on ours.

The present volume brings together from a time-span of four decades some seventy nontechnical papers of István's, often written with Magdolna, Balazs, or other coauthors. The scope of the selection covers all the natural sciences, but we find it useful to focus mainly on mathematics in the present review. Four papers—all on aspects of symmetry—have been published in this magazine, while many others have appeared in journals of chemistry or in such general journals as the *Hungarian Quarterly*, *Leonardo*, *Nature*, *Scientific American*, and *Symmetry*. Twenty-five book reviews are included, some of them on mathematical topics. István Hargittai seems to have known everybody who was somebody in science, and he loves to be photographed together with celebrities such as Martin Gardner, Edward Teller, Craig Venter, James D. Watson, and Eugene P. Wigner. I counted some twenty such "selfies" in the book.

Symmetry is a catchword that appears in the title of an odd dozen books by the Hargittais; it also permeates the present selection. The dinner conversations of the family—we are told by Balazs—often revolved around symmetry as a scientific topic in which the children, Balazs and his little sister Eszter, could easily be involved. During family outings, the children were taught to observe and document symmetry everywhere: in flowers and birds, in buildings and works of art, in symbols and patterns. In the present volume, ubiquitous symmetry is discovered not only in molecules and other chemical structures but also in Degas's and Matisse's paintings, in Hungarian folk needlework, in mosaics and tessellations, in fruits and vegetables. The discoveries of quasicrystals and the buckminsterfullerene molecule obviously count as big topics for a mathematically bent chemist.

István Hargittai was born in Budapest in 1941 into an assimilated Jewish family. His father and grandmother perished in the Holocaust, and only a blunder of German bureaucracy—a death train was misrouted to Austria instead of Auschwitz—saved the rest of the nuclear family. As a grownup, István had to face the absurdity of Soviet-type totalitarianism installed in Hungary, but in spite of his designation as "class-alien," he managed to navigate his way into university studies first in Budapest, then in Moscow. As late as 1982, Hungarian authorities denied him an exit visa for a scientific meeting in Israel. He became fully free to work and travel only after the regime change of 1989/1990. Having such personal experiences, István Hargittai doesn't hesitate to speak out on political issues. He has been concerned with the relationship between science and society, the fate of scientists under dictatorial rule, and in his historical studies he has been fascinated by the survival of creativity even under the most adverse circumstances.

According to Ralph Waldo Emerson, "there is properly no history; only biography." Following this maxim, Hargittai focuses on individual fates of Soviet and Hungarian scientists under totalitarianism. These essays are especially valuable because they contain material that cannot be located anywhere else in English. There are several stories of moral heroism, yet some celebrated Soviet mathematicians are portrayed in a dark light: Lev Pontryagin and Ivan Vinogradov appear as dedicated anti-Semites, while Andrei Tikhonov was one of four academicians who in 1983 signed a letter denouncing the dissident physicist Andrei Sakharov. "Under today's Russia, it appears still undecided whether Sakharov's victory was final or mere[ly] transient," Hargittai writes.

As for Hungary, the damage done to science by the successive dictatorships is appalling. While writing a guidebook [1] about the scientific monuments of Budapest, their hometown, István and Magdolna realized how few scientist victims of the Holocaust have been commemorated. István stresses the anti-Semitic nature of the Horthy regime 1920–1944 and perceives the massive final persecution of Jews during the five-month rule of the Arrow Cross in 1944–1945 as its violent culmination. Among the 400,000 deported Hungarian Jews Hargittai singles out numerous scientists, including mathematicians. A memorial

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plaque in the entrance hall of the Rényi Institute of Mathematics of the Hungarian Academy of Sciences lists fifteen mathematician victims, but there were many more.

Today's Hungary is not a dictatorship, but it veers toward what her leaders blithely present as "illiberal democracy." Hargittai starkly concludes:

> There is a strengthening impression that it is not only that official Hungary avoids facing the Past, but that beyond the falsification of history, it carries on the political legacy of the era between the two world wars that led to a national catastrophe.

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Osmo Pekonen
University of Jyväskylä
Agora, PL 35, 40014 Jyväskylä
Finland
e-mail: osmo.pekonen@jyu.fi

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