

LaRouche in Halle pays tribute to mathematician Georg Cantor

by Wolfgang Lillge, M.D.

“For my works I ask for partisanship—not partisanship for my ephemeral person, but rather partisanship for the truth, which is eternal.” This dictum of Georg Cantor (1845-1918) was the theme of a seminar on May 6 in the German city of Halle, at which the Schiller Institute honored the great German mathematician. The keynote speaker was American economist Lyndon H. LaRouche, Jr., who frequently emphasizes his debt to Cantor.

The fact that the name Cantor is now known almost exclusively by specialists, can be attributed to the fact that even during his lifetime, he was massively attacked by his opponents, and his work was, to some extent, deliberately misrepresented and mangled. True enough, George Cantor is considered to be the founder of the theory of aggregates; but what is today understood by “the theory of aggregates” or “group theory” has little to do with the pioneering concepts that Cantor developed.

The chairman of the Schiller Institute, Helga Zepp-LaRouche, opened the seminar, which was attended by 50 people, by pointing out that Cantor can only be properly honored by further developing his ideas. A member of the City Council of Halle conveyed a message of greeting from the city administration, and pointed out that Halle, Cantor’s “second home,” is now the “cultural capital” of the state of Saxony-Anhalt, and that Halle’s Georg Cantor Gymnasium is carrying out the education of gifted students.

De Paoli: Cantor’s life

In the first presentation, titled “The Meaning and the Work of Georg Cantor for the Arts and Sciences Today,” Dino De Paoli sketched out the most important points in the life of the great mathematician, who worked for many years at Halle University, and also died there.

Born in St. Petersburg on March 3, 1845, Georg Cantor came from a family that was very musical, as was he himself: “I belong, on my mother’s side, to a family of violin virtuosi. My grandfather and my grandmother . . . as imperial violin virtuosi in St. Petersburg, delighted musical circles there; and my great uncle Joseph Boehm headed a conservatory in Vienna, and is the founder of a famous school for violinists.”

As a matter of fact, this great uncle had direct contact with Beethoven; Cantor’s mother was a very talented singer. Cantor himself originally wanted to be an artist. He wrote in

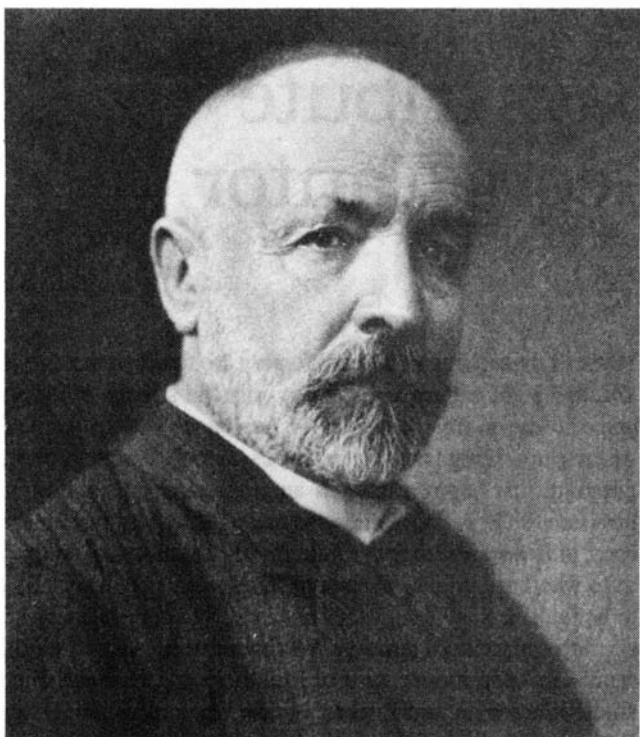
1899: “I myself began to learn to play the fiddle at the age of six, and I got a good way along; only the strange idea that came to me in my 16th year—I no longer know how—of making my living from mathematics, steered me away from pursuing that happy career as an artist, and my violin has now lain for 30 years, abandoned and pining away in its dusty case, only now and then to awaken within me fleeting doubts, as to whether I might not have been happier, had I continued to be faithful to it.”

After his school years in Wiesbaden and Darmstadt (his family in 1856 moved to near Frankfurt am Main), Cantor studied in Berlin and Zurich, in 1869 became a university lecturer in Halle, and then in 1872 an extraordinary professor of mathematics. Becoming the Ordinarius for Mathematics in 1879, he then experienced the most creative period of his life, during which he published his *Grundlagen einer allgemeinen Mannigfaltigkeitslehre (Foundations of a General Theory of Manifolds)*.

De Paoli reported how directly after that, a sharp counter-reaction occurred, involving particularly the mathematicians around Leopold Kronecker, who launched a veritable witchhunt against Cantor and his new mathematical conceptions. And unfortunately, these reproaches and accusations had a tragic effect upon Cantor. For the first time in 1884, and more and more strongly from that time on, he suffered from emotional crises which, together with disappointments, outside pressure, and animosity, periodically brought him to complete collapse. Increasingly he turned away from pure mathematics and concerned himself with philosophy, theology, and other questions. In 1887, his *Mitteilungen zur Lehre des Transfinitum (Communications on the Theory of the Transfinite)* was published.

De Paoli gave a detailed description of how, at that time, the whole cultural environment in Germany was becoming increasingly degenerate, as Romantic, Nietzschean, and jingoistic pan-Germanic ideas began to spread. As examples, he mentioned the strange theses of the writer Julius Langbehn (*Rembrandt as Educator of the German People*), the increasingly crude anti-Semitism, and the hyped-up debate at that time, over whether the British Aristotelian philosopher Francis Bacon was “the real Shakespeare.”

Cantor, who was oriented toward a Classical, Christian worldview, intuitively opposed this cultural brew of Nietz-



Georg Cantor: His importance can be gauged by the viciousness of his Aristotelian opponents' attacks against him.

sche, Bismarck, and Haeckel's nature religion and philosophy of life, which, in the final analysis, sought to simply banish the paradox between human creativity and the relation of man to God. In a letter to Friedrich Loofs, Cantor wrote in 1900: "By the way, I have recently for the first time had the opportunity to form a precise picture of the so-called Nietzschean philosophy (an appendage of Haeckel's monistic development philosophy). Because of its stylistic appeal, it meets with an uncritical appreciation among us, which, considering its perverse content and the heroic, anti-Christian motifs, seems to me to be most highly questionable."

It was no accident, that Cantor felt repulsed by these anti-Christian "innovators," since his whole thought was aimed, with direct reference to Plato and Leibniz, toward defining a new *unity* in the seemingly infinite. He wrote about his most important scientific discovery: "By *manifold* or *aggregate*, I generally understand every *Many* which can be conceived of as *One*, i.e., that totality of determinate elements which by some law can be bound into a whole; and with this, I believe I am defining something which is related to the Platonic *eidōs* or *idea*, and to what Plato, in one of his dialogues—*Philebos*—called *mixon*."

Just as for Plato, so, too, for Cantor, the antithesis between the infinite and the finite is not an absolute, but the point of departure for a new process of generation. Cantor's famous Aleph series was the best expression of this. Behind

it lies his fundamental conviction, that the Absolute cannot be defined in mathematical terms—the same conception, which later led to the theory of relativity. Furthermore, he wrote: "Every mathematical entity which describes the Absolute, is a contradiction in itself." Consequently, for Cantor there is also no "largest cardinal number," which includes all the numbers imaginable—as, for example, Bertrand Russell asserted at the turn of the century. The totality of the universe cannot be expressed in formal terms. In entirely Leibnizian terms, Cantor wrote: "In my view, time is a supplementary or correlative concept, through which the relation between various movements arising out of nature and perceived by us, are identified. Such a thing as objective or *absolute time*, occurs nowhere in nature."

The "power" of the Absolute is in no way absolute, if one concedes the existence of an unbridgeable gap in the succession from \aleph_0 to \aleph_1 . This puts the question of causality in a different light, and in this connection De Paoli referenced Leibniz's conception of continuity, and Bernhard Riemann's "continuity in discontinuous space." Cantor's answer to this paradox was that something Absolute is required, namely God, in order to have causality in discontinuous space.

De Paoli illustrated Cantor's conception of "bounded infinity" with the image that the infinite universe is bounded by the inner kind of measurement of creative human thought.

LaRouche: There are no limits to growth

Both of the other speakers at the seminar, Lyndon LaRouche and Dr. Jonathan Tennenbaum, developed various aspects of Cantor's central concepts further. LaRouche explained that he had come to Halle in order to show how much he has to thank Cantor for, in his own scientific development. His presentation, "There Are No Limits to Growth: Cantor's Concept of Infinity in Economic Science," outlined the scientific tradition from Plato through Nicolaus of Cusa to Leibniz, Riemann, and Cantor. One can only understand Cantor, if one sees him in this scientific historical tradition, which was diametrically opposed to that of Aristotle, as transmitted, via the Venetian Paolo Sarpi, to Galileo and to Newton.

LaRouche discussed the breakthrough of Gottfried Leibniz in economic science, "the revolution in cameralism through the idea of power, in the sense of energy and new forms of technology increasing the power of labor." This concept was opposed to the three other principal currents of economic thought: the Physiocrats, Adam Smith, and Karl Marx.

Already during the 1950s, LaRouche explained, he came across Cantor as he was analyzing the concept of infinity in Riemann's "habilitation" paper, at the end of which Riemann explains that he now had to leave the domain of mathematics and enter the domain of physics. Through his own scientific discoveries—especially on the problem of measuring economic processes—Cantor had played a decisive role for him,



Lyndon LaRouche addresses the seminar: "Economic science is the ordering of discontinuities in the sense of Cantor's concept of powers."

LaRouche said.

Every new idea exists first in the form of a metaphor, and not as an assemblage of digital information. The question is thus posed: How do we measure progress? "Every time you have scientific progress, you have a discontinuity. . . . And in that sense, economic science is the ordering of discontinuities in the sense of Cantor's concept of powers." To organize a society on the basis of scientific progress, you have to look for anomalies, although you do not know the result of your search in terms of measurement. "If you are in a swamp," he said, "you have to find the stones to walk on. You don't have to count them; you don't have to know how many there are; you only have to find them."

Tennenbaum: Looking to the future

Dr. Jonathan Tennenbaum's concluding presentation, "Can Georg Cantor's Work Be a Contribution to the Necessary Scientific and Technological Revolution of the Future?" elaborated the scientific theoretical and moral implications of Cantor's work. Using examples from history, he showed how creative ideas have changed the material world in often unforeseeable ways—mentioning Plato, Leonardo da Vinci, Dmitri Mendeleev, Max Planck, and others. One of the most essential domains in which mankind today can expand its horizons, is in the colonization of space. Here the line of creative discontinuities can be continued into the future, he said.

Peoples War Group terrorizes India

by Ramtanu Maitra and Susan Maitra

The shocking demonstration of firepower by the Liberation Tigers of Tamil Eelam (LTTE), when LTTE troops shot down a Sri Lankan Air Force plane in early May using surface-to-air missiles, has proven beyond doubt the growing military capability of the Tigers, which is now a major branch of international terrorist organizations.

The Tigers' challenge to the Sri Lankan military is no longer a problem for Sri Lanka alone, as the hushed voices in the relevant corridors of New Delhi's South Block (government offices, including the Foreign Ministry and prime minister's offices) attest. It is evident that the Tigers have developed strong links with India's Peoples War Group (PWG), otherwise labelled "Naxalites." The linkup between the two is the kind of natural arrangement that often exists between terrorist groups, which interact and overlap in handling drugs and guns. Despite public bravado, it is evident that terrorist threats are hanging over India, and, unless India urgently deals with the situation and in a much sterner manner than it has so far dealt with either the Tigers or the Naxalites, the drug-gun nexus will grow.

How powerful the terrorists have become in South Asia is evident from recent reports, which categorically state that the Tigers now have a better-equipped Navy than the Sri Lankan government. And with the discovery of an airstrip in the Jaffna peninsula in northern Sri Lanka, the Tigers' stronghold, there is a growing fear that the Tigers may now deploy their aircraft in strikes against the Sri Lankan population and military installations.

Indian paralysis must end

India has little choice but to accept certain unsavory realities. First, the Tigers are capable of downing civilian aircraft. And, second, these weapons will sooner or later find their way into the hands of India-based terrorist groups such as the PWG, located in Andhra Pradesh. As of yet, the Indian reaction to these terrorists has shown little imagination and even less concern. One of the reasons for such paralysis, is the vested-interest politics of individuals who continue to play all possible sides in this dangerous situation.

In India, the Unlawful Activities (Prevention) Act has been routinely used to ban a number of organizations. The Jammu and Kashmir Liberation Front (JKLF), a terrorist group seeking an independent Kashmir and a major contribu-