TRANSLATOR'S INTRODUCTION:
FATHER PAVEL FLORENSKIJ

IRVING H. ANELLIS

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Father Pavel Aleksandrovich Florenskij was the first in Russia to write about Cantor's set theory (although until recently, because Florenskij was a "non-person" or *persona non grata* in the Soviet Union, the credit for being the first in Russia to write on Cantorian set theory had gone to Ivan Ivanovich Zhegalkin, for his dissertation Трансфинитные числа [Transfinite Numbers] of 1907). Florenskij was a student of Bolesław Młodziejewski (called in Russian Boleslav Kornelievich Mlodzeevskij; 1858 – 1923), who at the turn of the century taught the first courses in set theory and theory of functions at Moscow University and established the Russian terminology in these subjects. Among Młodziejewski's earliest students were N.N. Luzin, and, beginning in January 1901, Pavel Aleksandrovich Florenskij. Luzin became a close friend of Florenskij and kept up a correspondence with him throughout their years of ordeal. Part of the correspondence between Luzin and Florenskij was published by Demidov, Parshin, Polovinkin and P.V. Florenskij in *Istoriko-matematicheskie issledovaniya* [Luzin & Florenskij *1989*].

Florenskij was born on 9 January 1882 in Elakh, Azerbajan. After his ordination as a priest, Father Pavel wished to become a monk, but with the encouragement of his spiritual advisor he instead entered the university in 1900, where he studied mathematics. He did not pursue mathematics as a discipline for its own sake, but for the light it could bring to the philosophical and theological aspects of the concept of Infinity.

As Młodziejewski's student, Father Florenskij studied the work of Cantor, Peano, and Borel, and wrote a research thesis entitled "The Idea of Discontinuity as an Element of the Worldview" dealing with concepts of continuity and discontinuity, for which he was awarded his baccalaureate in 1904. The "Introduction" to this dissertation was published in *Istoriko-matematicheskie issledovaniya* by Demidov and Parshin [Florenskij *1986*]. Florenskij also published an article in the literary-cultural journal *Novj Put'* (vol. 2, 1904, pp. 173–235) entitled *On symbols of the infinite (sketch of the ideas of G. Cantor)* [О символах бесконечного (очерки идей Г. Кантора)]. This paper gave the first sketch

in Russian of Cantor's ideas on infinity. Florenskij was one of the founders and a leading figure in the Student Mathematical Circle of the Moscow Mathematical Society. His "Draft for a Discourse for the Inauguration of the Student Mathematical Circle of the Moscow Mathematical Society" has recently been published in *Istoriko-matematicheskie issledovaniya* by Demidov, Polovinkin and P.V. Florenskij [Florenskij *1990*].

A collection of Florenskij's writings under the title *Mnimosti v geometrii. Rashirenie oblasti dvuxmernyh obrazov geometrii (Opyt novogo istolkovanya mnimostei)* was first published by the Publishing House "Pomor`e" in 1922; a second edition was published by Izdatel`stvo "Lazur`" in 1991 (with the epilogue, commentaries, and general editional work by L.G.Antipenko). In his writings, Florenskij expressed a view of God as infinite which did not accord with Orthodox theological teachings. Florenskij's interest in mathematics was largely theological. He sought to establish an analogy between mathematics and theology by creating an isomorphism between the classical (pre-Robinsonian) infinitesimals and Hell on the one hand and the infinite and Heaven on the other. In Florenskij's view, Hell is the negative projective isometry of the Infinite of Paradise. This heterodox mathematical definition of the theological accounts for the reluctance of the Moscow Patriarchate of the Orthodox Church to canonize Father Florenskij and accounts in large part for the reluctance of the author of the essay that follows to be identified by name.

Overzealous dialectical-materialist philosophers in the formative years of Soviet rule regarded formal logic, set theory, and many other branches of mathematics with distrust, arguing that these subjects were idealistic bourgeois instruments. This hostile attitude, coupled with the work and ideas of the League of Militant Atheists, led inexorably to the arrest, emprisonment, and execution of Father Pavel, along with multitudes of clergy and ordinary believers.

In the chapter "Several Individual Stories" of *The Gulag Archipelago*, Aleksandr Solzhenitsyn wrote about Father Pavel Florenskij. Solzhenitsyn apparently had direct contact with other prisoners who knew something about Father Florenskij, his life and work. Much of what Solzhenitsyn knew or heard about Father Florenskij was itself hearsay and second-hand, and of course the few assertions that Solzhenitsyn passes along about Father Florenskij's work in mathematics are better judged by historians of mathematics who are able to study them that by novelists. Because Solzhenitsyn necessarily did not know the details of Father Florenskij's experiences in the *Gulag* or have access, as we do today, to the files of the KGB, some of the history which he gives of Father Florenskij's "prison career" and execution are inaccurate; Solzhenitsyn's account, however, supplements and helps us understand and fill in parts of the account given by our author. Of Father Florenskij, Solzhenitsyn wrote in the *Gulag Archipelago* [*1975*, 670–671]:

> I think it would be very appropriate here to include a sketch on the life, prison and camp persecutions, and death of Father Pavel A. Florensky, perhaps one of the

most remarkable men devoured by the Archipelago of all time. Well-informed people say of him that he was a scholar rare for the twentieth century, who had attained a professional mastery of a multitude of knowledge. He was educated as a mathematician, and in his youth had experienced a deep religious coversion and become a priest. The book he had written in his youth, *The Pillar and the Affirmation of the Truth*, is only today coming into its own. He had to his credit many essays in mathematics (topological theorems, proved much later in the West), in art history (on Russian icons, on religious drama), and on philosophical and religious subjects. (His archive has been in the main preserved and has not yet been published. I have not had access to it.) After the Revolution he was a professor at the Electrical Engineering Institute (where he delivered his lectures in his priest's robes). In 1927 he expressed ideas anticipating those of Wiener. In 1932 he published in the magazine *Socialist Reconstruction and Science* an essay on machines for the solution of problems which were close in spirit to cybernetics. Soon after that he was arrested. His prison career is known to me only at several separate points, which I list with trepedation: exile in Siberia (in exile he wrote works and published them under a pseudonym in the works of the Siberian expedition of the Academy of Sciences), Solovki [colloquial name for the Solovetskij Islands], and after Solovki was shut down the Far North, and according to some sources the Kolyma. In the Kolyma he studied flora and minerals (in addition to his work with a pick). Neither the place nor the date of his death in camp is known. But according to some rumors he was shot during wartime.

In the introduction to the published correspondence between Florenskij and Luzin, written before the opening of the KGB files, Demidov, Parshin & Polovinkin [*1989*, 116] and in Demidov's [*1986*, 124] history of the early years of the Moscow school of function theory, gave the year of Florenskij's death as 1943; this accords with the rumors reported by Solzhenitsyn. However, Charles Ford [*1992*] publicized the information concerning Florenskij's incarceration and death contained in secret files of the KGB soon after the documents were released, listing the date of the execution of Father Florenskij as 8 December 1937.

The author of the paper that follows, a historian of mathematics at the Russian Academy of Sciences who also teaches history of philosophy at the higher Orthodox Theological Academy in Sergeev Posad, has asked to retain his anonymity. (The phenomenon of anonymous publication in scholarly journals is not entirely unprecedented. Paul Carus, for example, was among those who practised it in some of his papers for *The Monist* when he signed them with the initials "Kappa Rho Sigma." This writing "for the desk drawer" is much more common in Russia, where it has a long history and has often been coupled with *samizdat*.)

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