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St. Pavel Florensky: An Appreciation*

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Perhaps I should begin by saying how and why I came to have an interest in this remarkable and highly complex man who has been called "the Russian Leonardo da Vinci". Although for some years I had been aware of his name through my Orthodox theological studies — first encountering him through George Florovsky's criticisms of certain aspects of his religious philosophy — I came into contact directly with his writings when I read his biography of his one-time spiritual father, the Elder Isidore, which appeared in English translation for the first time in 1987 with the title "Salt of the Earth". It was from the Editors' introduction to this work that I discovered that Florensky was not only an Orhtodox priest — one of the New Martyrs of Russia who had died in the Soviet *gulag* and were canonized in 1981 — but also a noted mathematician, philosopher, theologian, electrical engineer, physicist, astronomer, inventor, poet, art historian, and linguist. In short, a man of an incredibly wide range of abilities, dedicated to the belief that all things somehow 'hang together' and that the acquisition of such true knowledge as is attainable in this world demands that it be pursued through a multiplicity of parallel interrelated channels of investigation. Though I cannot myself lay claim to anything like Florensky's range of interests, and certainly do not imagine that I shall ever be canonized as a saint, I do have in common with him that I too am an Orthodox priest, with interests that have included mathematics, philosophy, theology, astronomy, electrical engineering, and art history — in all of which I have had a modicum of education and some experience of teaching.

Pavel Alexandrovich Florensky was born at Yevlakh, Transcaucasia, on 9th January 1882. His Father was of Russian descent and worked as an engineer, whilst his Mother was Armenia, though she made a point of rejecting everything identified with her Armenian upbringing. Although the family observed the conventional religious festivals, his parents were not at all religious, observing these festivals merely as ethnic cultural events — as indeed seems true of so many people today! He was brought up to see scientific enquiry as

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*This paper was intended for the issue devoted to the history of logic in Russia, but regretably was not received in time.

The paper was first read at the Christmas Meeting of the British Society for the History of Mathematics on 20th December 1993 at Birbeck College, London. The Author is indebted to Dr. M. Luptakova of Prague for kindly supplying a list of Florensky's Mathematical publications in Russian with a sketch of possible translations.

Editor's note: Interested readers can obtain information on the personalities, philosophical movements, and ideas from Russian philosophy mentioned in this paper in most books on Russian intellectual and cultural history, and from histories of Russian philosophy such as N.O. Lossky's *History of Russian philosophy* (New York, International Universities Press, 1951; London, Allen & Unwin, 1952), or the Russian text of Lossky, *Истории русской философии* (Moscow, Vysshchaya Shkola, 1991), or George L. Kline's two-volume English translation of V.V. Zenkovsky's *A history of Russian philosophy* (New York/London, Columbia University Press, 1953). A detailed discussion of the Russian religious renaissance mentioned here can be found in Nicholas Zernov's *Russian religious renaissance of the twentieth century* (New York, Harper & Row and London/Darton, Longman & Todd, 1963). Leonid Sabaneff's brief study of "Pavel Florensky — Priest, scientist, mystic" (Russian Review **20**, no. 4 (1961), 312–325) has recently come to my attention.

the key to all truth, but, whilst still a boy, was led to consider the claims of religious faith through his keen observation of nature. The order and beauty which he saw around him suggested to him that behind it must lie the mind of a supreme being.

It was during his period of secondary education in Tiflis, Georgia, that his natural mathematical abilities were first revealed and his interest in discontinuities aroused. At the same time, he went through a kind of intellectual and spiritual crisis. In his autobiographical notes of 1921, he writes: "the limitations of physical knowledge were revelaed to me". Thus science ceased to be an object of faith as he came to perceive that were was a level of existence outside the scope of scientific enquiry. As well as being led to this perception towards a deep interest in religion, he found in it a great measure of intellectual freedom, allowing him to allocate to science a practical role in the understanding of the mechanics of what he called "the lower order of things".

In 1900 Florensky enrolled in the Mathematics and Physics Departments of Moscow University, where he studied Mathematics extensively under N.V. Bugayev and his comtemporaries, most notably B.K. Mlodzielowsky (of "Theory of Functions" fame) and L.K. Lakhtin. It has been suggested that the last of these was his principal advisor, but Florensky himself indicated that his influence was strictly limited. His studies in Physics provided a grounding in Electromagnetic Theory, which he was to develop after the Revolution.

Bugayev (1837 – 1903), who had founded the Moscow Mathematical Society in 1864, was the outstanding mathematician of the University in the latter part of the 19th century. He had a particular interest in discontinuous functions, but this interest was not exclusively mathematical but a reflection of a general 19th-century Russian desire to discover links between mathematics, philosophy, and religion. This was a part of the Russian religious renaissance, which contrasts strongly with the contemporary Western nihilism. Like a number of his mathematical contemporaries, Bugayev opposed materialism, determinism, and the mechanized world-view. His mathematical interest in the concept of discontinuity was stimulated at least in part because he saw free-will as its equivalent within the human psyche.

In his first year at University, Florensky was introduced to the works of Cantor, Peano, and Borel, and even at this early date prepared notes for what he anticipated might eventually become his doctoral thesis, which was to have the title *Singularities of Algebraic Curves* witnessing to his continuing fascination with the concept of discontinuity. He remained interested in this concept because (as he said) he wished to avoid what he saw as the "one-sided approach of continuity". Within the Mathematics Department and assisted by his friend N.N. Luzin, he organized student sessions of the Mathematical Society under the presidency of N.E. Zhukovsky. A draft of his speach at the inaugural meeting exixts and was published over three years ago, in 1990. His first mathematical paper read before the Society (presented on 9th November 1902 — or 26th October, Old Style) was entitled *Functions Invariable Within a Given Contour*. In addition to mathematical activities, his comparatively new-found interest in religion led him, in 1901, to found "The Religious-Philosophical Society of Writers and Symbolists" and "The Union of Christian Struggle", the latter being a body dedicated to social Christianity and opposition to the then current subjugation of the Church to the State. Its ideas were published in its journal, *The New Path*, which he edited in 1903 and 1904, and included papers by him with the titles *On Superstition* (1903) and *Spiritualism as Anti-Christianity* (1904), indicating his one-time interest in considering the dangers of the occult.

At University, Florensky began to develop Bugayev's ideas. We can see how soon his horizons were to widen from his research topic, the choice of title being *The Idea of Discontinuity as an Element of a World View*. Here he linked discontinuity with Cantor's set theory

and the contemporary French work on the theory of functions of a real variable. In 1904, *On the Symbols of Infinity* appeared, a work devoted to analyzing Cantorian ideas. In the same year he graduated, and was immediately offered a graduate research fellowship in Mathematics. However, his widening horizons led him to refuse this, and, instead, to enter the Moscow Theological Academy where he studied Philosophy undeer S.N. Lopatin and L.M. Trubetskoy. By this time he was a devout Orthodox Christian, and it was whilst he was at the Acaemy that he visted the nearby Gethsamene Skete** and thus came into contact with the Elder Isidore, who was an unlearned peasant of great holiness of life. The encounter was to inspire in him a lifelong desire for the ascetic life of spiritual struggle and for its associated freedom from material concerns — a desire which was henceforth to be in permanent conflect with his academic role, and which was later to lead to periods of severe depression brought on by the inner conflict caused by dissatisfaction and boredom with the conventional university surroundings amid which so much of hios working life was actually to be spent.

Florensky in 1906

In his initial year at the Theological Academy his first philosophical work was published with the title *One Premiss of World Outlook*, providing a clear hint of his philosophical outlook which was later to dominate all his academic studies. In the following year, 1905, his translation of Kant's *The Physical Monadology* appeared. This was followed a year later by *Forms of Moral Growth*, a title which also hints at was to concern him as being needed in the pursuit of scientific enquiry. But he also published purely religious works, for example: *Issues of Religious Self-knowledge, Dogmatism and Dogmatics, The Lament of the Mother of God, The Author of Life*, and *Joy unto the Ages* (all in 1907).

** A скит is a small monastery or hermitage.

In 1908 Florensky graduated for the second time, and was elected to the Faculty of the History of Philosophy. In 1909 he evidenced his interest in linguistics with a work entitled *A New Book on Russian Grammar*, and in the same year two papers appeared: *The Universal Human Roots of Idealism* and *The Cosmological Antinomies of I. Kant*. But he was soon dissatisfied with the academic life around him which he saw as "selling out on truth for a comfortable existence". He wrote: "I am sick of culturedness and sophistication: I want only simplicity. I have a desire for something real, some kind of complete contact.... I don't find that contact anywhere, only papers never gold". About the papers which is work required him to read, he wrote: "There is a smell of death around them..., because they have all been written by eunuchs" —by which he meant people castrated spiritually and intellectually by worldly criteria and the ecclesiastical and academic conventions which he had come to detest. He felt that he was being required to undergo a spiritual death appropriate to the monastic life being denied him. Thus, his unhappiness with his lot remained with him, for his Bishop firmly dissuaded him from any thought of monastic calling, seeing that his considerable abilities in mathematics, science, and religious philosophy would be severely restricted within the rigours of a monastery. But he was always to regard his academic abilities as a cross preventing him from becoming a simple monk, though in the end, in the *gulag*, he was perhaps to come closest to fulfilling his monastic vocation.

Florensky, with his wife Anna

In 1910 Florensky's paper, *Forbears of Philosophy* was published, and in the same year, on 17th August, he married Anna, a simple unsophisticated girl, sister of his former roommate at the Theological Academy, but this did not prevent him from making frequent visits to the Optima Monastery, near Moscow, his spiritual father Isidore having died in 1908. Optima had been at the heart of 19th-century religious revival in Russia, and here Florensky

came under the influence of the Elder Anatole the Younger, who in turn sent him to Archpriest Alexei Mechiev, a dedicated priest of a Moscow parish. In 1911, he published papers entitled *Friendship, Excursus on Jealousy*, and *Sophia*, and, on 24th April of the same year, he was ordained to assist at the Red Cross Society Chapel, though he was never to become a parish priest. He was also appointed Editor of *The Theological Messenger* (or *Herald*, as it is sometimes translated), the journal of the Moscow Theological Academy, a position which he held for six years. In 1913, there appeared *The Limits of Gnoseology* and in the following year *Mind and Dialectics*. This was the same year in which, on 14th May, he defended his Master's thesis, *On Spiritual Truth*, which was soon to be developed into his great philosophical work, *The Pillar and Foundation of Truth* (Moscow, 1914), which touches upon theology, Patristics, mathematics, physics, medicine, history, inguistics, art, cosmology, and anthropology.

This remarkable work has also appeared in German (1929), Italian (1974), and French (1975) — but alas not (so far as I know) in English, though its content can be fairly well determined from the excellent analysis by Robert Slesinski in his *Pavel Florensky: a Metaphysics of Love*, published in 1984. *The Pillar and Foundation of Truth* is based on the principle that [I quote] "The being of truth cannot be rationally deduced, but only demonstrated by experience". Because of this experiential approach to philosophy, each chapter is in the form of a letter to a friend. There are twelve chapters entitled respectively: "Two Worlds", "Doubt", "The Trinity", "The Light of Truth", "The Comforter", "Contradiction", "Sin", "Gehenna", "Creature", "Sophia", "Friendship", "Jealousy". Its thesis is that the possession of ultimate truth is not possible in this world: thus, reason alone cannot lead even to such truth as is accessible æ rational intuition and intellectual asceticism are both necessary. In this world knowledge can be fully expressed only by means of antinomic structures.

"Philosophers" (M.V. Nesterov)
P.A. Florensky and S.N. Bulgakov, 1917

It is interesting that the chapter entitled "Sophia" ["Wisdom"] was omitted from the first edition, because Florensky was aware of possible pantheistic interpretation by the

undiscerning. Due to the existence of this chapter, he was often depicted as being within the tradition of the speculative sophiological school (on the fringes of Orthodox Christianity) of which S. Bulgakov is probably the best-known exponent.† But Florensky was to repudiate this, saying later in his life: "Oh, I grew out of all that!"

The idea which permeates throughout *The Pillar and Foundation of Truth* and is, indeed, the context of all Florensky's academic thinking, is that of 'Integral Knowledge'. Some early traces of this can be found in the 13th-century Scottish philosopher John Scotus (1265 ? – 1308), but the term itself first appeared in the writings of I.V. Kireevsky (1806 – 1856), and it was further developed most notably by A.S. Khomyakov (1804 – 1860) and V.S. Soloviev (1853 – 1890), who all belong to what is generally known as "The Slavophile School", though we should note that the Slavophiles were not necessarily purely traditional Orthodox Christian thinkers. They were, however, an exception to the general trend of the Russian intelligentsia in the second half of the 19th century, most of whom turned ever more to Western revolutionary ideas, most notably materialism and Marxism.

Kireevsky explains 'Integral Knowledge' as follows: "Knowledge of truth is not the affiar of the mind only, but must involve man in his totality, with all his faculties and strivings". He contrasted what he saw as essentially an Eastern approach to knowledge with Western abstract logical thinking with its pretentions to arrive at the truth, its arrogance not to recognize its own limitations, and whose conclusions he considered to be limited, conditional, and relative. For him, supreme thought stems from belief, the higher spiritual vision of the soul, requiring inner integrality of being; further, no knowledge is complete without a moral dimension.

Khomyakov saw the task of philosophy as the harmonization of belief and logical thought. For him, 'Integral Knowledge' involved three things: reason, the will, and belief — the last of these tominclude both natural and supernatural realities. He saw reason as inadequate because of its limitation to formalities. The will was essential for determining the perceptions of reality provided by belief — a process which, for him, defined 'intuition'. Thus belief provides the mind with its living content, the will determines what is acceptable, and only then should reason discover the abstract laws present.

Soloviev made much of the concept of intuitive mystical knowledge, which he saw as the esstential bond between empiricism and rationalism, empiricism being limited to the subjective experience of the senses and rationalism to subjective formal thought as part of the mind's self-affirmation. A serious limitation of Western abstract thought was that it dissolved the bond between the knower and the known. He saw "Integral Knowledge' as itself belonging essentially to the realm of primordial intuition, possible only for those living an integrated life. For him, knowledge is the end-product of a synthesis of experimental science, philosophy, and theology. Rational man is a part of the created order whose unity is the ontological condition for knowledge to be possible.

Florensky took on all these principles of 'Integral Knowledge', including perhaps especially Soloviev's idea of the importance of accepting the unity of the created order as a prerequisite for obtaining knowledge. This is reflected in the wide range of Florensky's studies, and in some of his specific approaches to mathematics. For example, he studied poetry, and especially that of Dante, in order to see if in the mystical worlds of the poets he

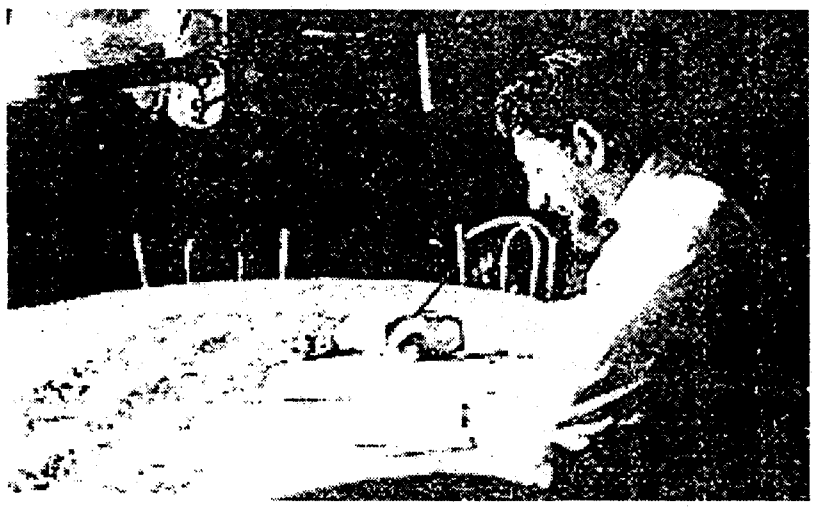
† Editor's note: the reference is to the concept of *haigia Sophia* ["Divine Wisdom"] first eneuciated by Soloviev.

could find a deeper understanding of and even suggestions for non-Euclidean geometries. He had certainly not deserted pure Mathematics entirely, for in 1913 he published a detailed review of Tannery's *A Course of Theoretical and Practical Arithmetic*, and three years later a paper with the title *The Reduction of Numbers*.

Silhouette of St. Paul Florensky by N.R. Simonovich-Efimov, 1920

Two further philosophical papers were to appear before the Bolsheviks seized power: *The Meaning of Idealism* (1915) and *First Steps of Philosophy* (1917). After the Revolution, the Theological Academy was closed, and Florensky took up a number of scientific posts. From 1920 to 1927 he taught the Theory of Perspective in the Higher State School of

Art, in 1922 publishing a paper with the title *Divine Worship as a Synthesis of the Arts*. But he also continued with his mathematical work: in 1922 there appeared *Imaginary Values in Geometry*, in 1923 *Number as Form*, in 1925 *Space, Mass, Medium*, in 1928 *Thhe Physical Meaning of the Curvature of Space*, and in 1929 *On the History of Non-Euclidean Geometry*. He was closely involved with the programme for electrification of the Soviet State from 1920, and his book on Dielectrics became a standard text. He published two works on Transformers (1921 and 1922), and a more general work with the title *World Reserves of Energy* in 1925. The last work to be published during his lifetime appears to be *Physics for Mathematical Purposes* which appeared in 1932. He was also interested in the properties of oils, and in 1927 invented the non-coagulating machine oil known as "Dekanite". His technological expertise was ultimately recognized by his appointment as Editor of the Soviet Technical Encyclopedia.



Florensky in 1932, a year before his final incarceration

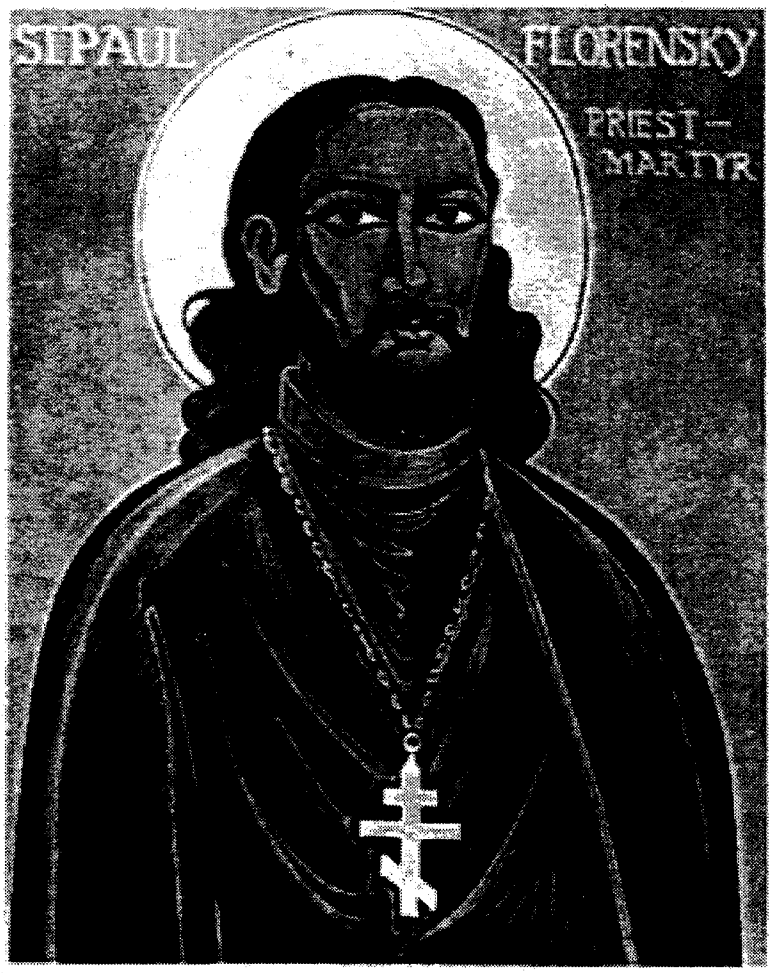
The State authorities repeatedly pressured Florensky to renounce his priesthood and devote himself exclusively to science, but he refused, and continued to sport a beard and to appear in the University wearing his priest's cassock, cross, and hat. From time to time he came into direct conflict with both State and Church authorities, and was several times imprisoned for short periods. One of these occasions was at the time of the Soviet persecution of the Optima monks during the period 1925 to 1927, leading to the gradual closing of the Monastery. Florensky issued a "Save Optima" appeal which made him highly unpopular with the State rulers — it has been posthumously published in 1981. On other occasions he protested at the many executions taking place, and criticized the Russian Metropolitan Sergius (the Head of the Church of which he was a priest) for what qppeared to him to be the latter's servile declaration of loyalty to and collaboration with the atheistic Communist State. He had not been included, however, among the 100 dissident scholars banished by Lenin in 1922 because his abilities were considered too valuable to be lost to the country. However, in 1933, he was sentenced to 10 years in concentration camps. Initially, he was

sent to Skovorod Labour Camp (by Lake Baykal in Siberia), then later to the camp which had been the former monastery on Solovki Island, and finally (according to Solzhenitsyn) to a camp near the River Kolymer, where he made a study of the local flora and mineral deposits. Official sources state that he died on 15th December 1943, just as he was due to be released — a circumstance which lends credence to the suspicion that he was murdered, on State instructions, by camp authorities.

With Florensky's sentence the religio-philosophical interest of the Moscow Mathematical Faculty came to an end, though it had already received an initial death-blow with the dismissal of the President of the Mathematical Society, Professor Dmitrii Egorov, three years earlier after betrayal by some Marxist colleagues, amongst whom were numbered Pontryagin and Gelfond. Two of Egorov's 'crimes' against the State had been listed as "renunciation of the necessity of revolutionary terror" and "the preaching of general human morals"! Today, the Russian (formerly Soviet) *Philosophical Encyclopedia* speaks highly of Florensky, commenting on his incarceration merely with the words: "In 1933 he was repressed, and posthumously rehabilitated in 1956".

How can we sum up the life and achievements of this remarkable man who has only recently become familiar to Western scholars, and is now canonized as a 20th-century Martyr? First and foremost he was an Orthodox Christian, but one with an open mind ready to explore whatever came his way — a mixture of scientist and Christian mystic who, at the time, anticipated many ideas of Heidegger, Whitehead, Marcel, and Buber. He was essentially what we call today a 'bottom-up' thinker giving a primacy to experience, believing that we must learn from within as well as without. Thus, his methodology was experiential, but, because he accepted the limitations of the human mind, his theory of truth was necessarily antinomic. He saw all academic disciplines as attempts to reach out to the 'one reality' from differing viewpoints, hence none should be studied in isolation for all are related. Although within philosophy he belongs to a speculative school trying to give philosophic expression to experience of this unity in creation, his spiritual mentors had ensured that his theology remained within the boundaries of traditional Orthodoxy in spite of his incursion into sophiology — the dangers of which he was fully aware. It was out of this Orthodoxy that he sought a wholeness of vision that could be found only with one unchanging point of reference, the God of his Orthodox Faith. Whose 'Wisdom' was expressed in the created universe; and from the same source he was able to declare that truth becomes important only where love is present. He had, as we have seen, a broad commitment to Mathematics taking in Cantorian set theory, geometry, and the theory of functions (both continuous and discontinuous), together with mathematical applications in Electrical Engineering, but his approach to Mathematics was underwritten by an interest which was basically philosophical rather than mathematical.

Although Florensky had published widely from 1903 until shortly before his incarceration in the *gulag*, no complete bibliography of his writings exists, though a reasonably full one appeared when the centenary of his birth was celebrated in 1992. Posthumous publications havew appeared regularly since *Prayer Icons of the Venerable Sergius* in 1969: these include*Machines as Extensions of Body Members* (also 1969), *Pythagorean Numbers* (1971), *Summations* (1974), *Macrocosm and Microcosm* (1983), *Christianity and Culture* (also 1983), *Imaginary Values in Geometry* (in German, 1985), *The Law of Illusions* (also 1985), and *The Idea of Discontinuity as an Element in the Contemplation of the World* (1986), together



Icon of St. Paul Florensky by Mother Nadezhda Russell, 1987

with several other theological works, various sermons, correspondence with colleagues, and reminiscences of childhood. Much, no doubt, is still in manuscript form, awaiting appropriate publishers and translators. Some of his writings, still to be identified, may well comprise further reviews and introductions to the published works of others.

Perhaps it is best to conclude this paper with Florensky's own reflections on his academic life (written fron the Solovki Concentration Camp in 1937) — reflections which have, perhaps, a 'geometric flavour' about them. He wrote: "I would investigate the relationships within the world by dissecting it in particular directions, on particular planes, and would strive to understand the world from the plane which interested me. The planes were different, but one did not deny the other — only enriched the other. This resulted in a perpetual dialectic of thought, the exchange of planes of observation, while at the same time

viewing the world as one". I cannot but think that the world might become a better and safer place in which to live if his principles were to be followed by all those scientists today who work on the fringes of experimental knowledge — and, not least amongst those principles, the need for a moral dimension in all that we do!

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[Quotations from Florensky's writings in English and illustrations are taken from the following works.]

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