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## Evgeni Spektorsky - a Student of the History of Science

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Antoni Krawczyk (Poland)

EVGENI SPEKTORSKY—  
A STUDENT OF THE HISTORY OF SCIENCE

Evgeni Vasilevich Spektorsky was a scholar with a broad frame of mind. Dealing with a wide range of problems from theory of law to theory of culture he devoted most attention to the history of science; in particular to the 17th-century achievements in research. With more than half a century gone since its publication his legacy continues to be unassailable. In Polish literature of the subject Spektorsky has been recently discussed at some length by Waldemar Voisé.<sup>1</sup>

Nevertheless the work of Spektorsky, though the bulk of it has appeared in print in Poland, is not too well known to the wider public. This is largely due to the linguistic barrier; as assistant professor at the Imperial University in the Vistula Land, Spektorsky, whether he wanted or not, was compelled to publish in Russian. Another reason was that to the end of his days he lived in exile and thence no information about him is to be found in Soviet scientific sources. Nor did his name often appear in Poland; not in any case, until very recently, when he was mentioned, in a book by Adam Galis which included an essay on Spektorsky.<sup>2</sup>

Spektorsky belonged to the Warsaw quarter of Russian intelligentsia obliged by the Tsar to foster russification of the Vistula Land. How

<sup>1</sup> W. Voisé, *Myśl społeczna XVII wieku* (Social Thought in the 17th Century), Warszawa 1977, pp. 99, 162–164, 166; id., *Erhard Weigel (1625–1699) czyli u progu wieku Oświecenia* (Erhard Weigel or at the Threshold of the Enlightenment), "Kwartalnik historii nauki i techniki" XV, No 3, pp. 527, n. 2; 530, nn. 9, 10; 539; 562; id., *Meister und Schüler, Erhard Weigel und Gottfried Wilhelm Leibniz*, in: *Studia Leibnitiana*, Band III, Heft I, 1971, p. 60, n. 9.

<sup>2</sup> A. Galis, *Eugeniusz Spektorski warszawski cicerone Błoka* (E. Spektorsky Blok's Cicerone in Warsaw), in: *Osiemnaście dni Aleksandra Błoka w Warszawie* (A. Blok's Eighteen Days in Warsaw), Warszawa 1976, pp. 188–195.

far Spektorsky was engaged in this pursuit is not of concern here. He might just as well have kept aloof judging by the contacts he maintained with such Poles as Władysław Podkowiński-Selim, a commentator and man of letters from Warsaw, co-organizer of the school strike of 1905, or with students of Miss Rudzka's boarding school for girls who used to invite him to lectures and with whom he exchanged correspondence, also in Polish.<sup>3</sup>

Spektorsky was born in 1875 in Szczuczyn on the Polish territory. His father, Vasili Alexandrovich, was a Russian of Orthodox persuasion and held the post of a judge of peace and the title of councillor. His mother, Zofia Kraft, was a Swiss citizen of Calvinist persuasion.<sup>4</sup>

After leaving a grammar-school in Radom, Spektorsky read law at the Imperial University, wrote an outstanding dissertation on Jean-Jacques Rousseau as a political writer and graduated in 1897 with a degree of candidate of sciences.<sup>5</sup>

The dissertation earned him a name and the sympathy of Alexander Lvovich Blok, professor at the University, father of the well-known Russian poet. Professor Blok took him under his wings and promoted his scholarly and academic career including further studies abroad. The protégé often showed his gratitude and in 1909 organized the funeral of the patron-master who had lived in an almost total oblivion for some time before his death.<sup>6</sup>

From 1903, Spektorsky had been assistant professor at the chair of state law; in the same time he had a great love affair in Warsaw with a married Polishwoman, Mrs Bogatko.<sup>7</sup>

In 1913 he left Warsaw for Kiev<sup>8</sup> where in 1918, shortly before parting forever with his homeland, he took the post of the Rector of St. Vladimir University. In the same year he emigrated, first to Prague, then to Jugoslavia to accept the chair at Lubljana University. In 1947 he went to the USA and held lectures at the chair of Philosophy of the Academy of Orthodox Theology in New York. He died in 1951.<sup>9</sup>

<sup>3</sup> Ibid., pp. 190-191.

<sup>4</sup> Ibid., p. 188; I. Gancikov notes that Spektorsky was born in Kiev in 1873, see: *Enciclopedia Filosofica*, 2nd Edition, vol. 4, p. 50.

<sup>5</sup> Galis, *op. cit.*, p. 188.

<sup>6</sup> Loc. cit.

<sup>7</sup> Ibid., p. 191.

<sup>8</sup> Ibid., pp. 191-192. Galis quotes a letter written by an unknown Russian to Spektorsky after his departure from Warsaw: "Professor's every departure from Warsaw affords Poles a chance to see that we are not able to govern this country, that only the outcasts from among Russian *chynovniks* and intelligentsia come to Warsaw [...] I will say that you are [...] the pride of the law department as well as the university [...]. Your departure from Warsaw is an irremediable loss for us, Russians in Warsaw [...]. Warsaw University is declining and becoming an object of ridicule for Poles".

<sup>9</sup> Ibid., p. 194.

His major works are: *Problems of Social Physics*<sup>10</sup> and *Christianity and Culture*.<sup>11</sup>

The present article is concerned with his two studies: *Nominalism and Realism in Social Sciences*<sup>12</sup> and *Problems of Social Physics in 17th Century*.<sup>13</sup> Though the latter is an ample treatise we shall begin with the former, much shorter item devoted to the impact of nominalism and realism on the cognitive stance of scientists, for it provides an insight into Spektorsky's methodological views which should help to take a better grasp of his opinions expressed in the *Problems of Social Physics*. Before coming down to its detailed analysis it will be just as well to explain that Spektorsky considered the universalia controversy in a narrower sense than most historians of philosophy usually do. Speaking of realism he meant Platonian position later endorsed by Orthodox Christian thinkers. Aristotelian stance, usually defined as moderate realism, was nominalism for Spektorsky.

Therefore, contrary to most historians of philosophy, Spektorsky did not contrast the views of the Stagirite with those of Roscelianus, firmly as he classified the latter among extreme nominalists. He never mentions another trend in the universalia controversy, namely conceptualism, though he uses the term itself to designate Kant's philosophical system.

In this article the notions of nominalism and realism will be applied in the meaning Spektorsky had given them.

His chief thesis in the work in question is that the universalia controversy transgresses the borders of philosophy and is manifested also in particular sciences.<sup>14</sup> Spektorsky maintains that in the area of these sciences the ideas of the representatives of opposed camps were affected by their nominalist or realist outlooks. Spektorsky traces down the sources of the universalia controversy even prior to the Middle Ages

<sup>10</sup> E. Spektorsky, *Problema sotsialnoi fiziki*, vol. 1, Varshava 1910; vol. 2, Kiev 1917. This volume was reviewed by a Slovak scholar J. Kvacala, in: *Archiv pro badani zivote a spisech J. A. Komensheho*, 1912, 2, pp. 36-40. The library of the Catholic University in Lublin (KUL) has a copy with the author's dedication to a later lecturer on philosophy Henryk Jakubanis as well as of the work from n. 12.

<sup>11</sup> E. Spektorsky, *Khristianstvo i kultura*, Praha 1925.

<sup>12</sup> Id., *Nominalism i realism v obshchestvennykh naukakh*, Moskva 1915.

<sup>13</sup> Id., *Problema sotsialnoi fiziki v XVII stoletii*. His other works are: *K voprosu o sistematzatsii v obshchestvovedeni*, Varshava 1903; *O zadachakh obshchestvovedenia* in: "Voprosy filosofi i psikhologii", kniga 72; *Iz oblasti chistoi nauki* in: as above, kniga 78; *Zapiski obshchestva istorii filologhi i prava pri Varshavskom universitetie*, vypusk 3: *Organicheskaiia teoria obshchestva*; *Fizitsizm v obshchestvennoi filosofi XVII veka* in: "Iuridicheskie zapiski", No 2; *Ocherki po filosofi obshchestvennykh nauk* in: *Obshchestvennaia nauka i teoreticheskaiia filosofia*, Varshava 1907, chapter VII: *Problema sotsialnoi mekhaniki v XVII i XVIII vekakh* and an Introduction to *Politicheskii traktat Spinozy*, Varshava 1910.

<sup>14</sup> Id., *Nominalism i realism...*, p. 1.

which for him was not an epoch but a system of intertwined economic, social, legal and political relations existing alongside definite trends in spiritual culture.<sup>15</sup>

Treating the Middle Ages as a structure composed of different elements, Spektorsky adopts the comparative method of historical research and seeks the elements pertaining to the Mediaeval civilization both in ancient and in modern times or even in the 19th century. Convinced that they existed in those epochs he concludes that the Middle Ages were present in ancient times: in Egypt or Greece, as well as in modern times and in the 19th century, witness the voluntarism vs. intellectualism argument. As conceived by Spektorsky the Middle Ages will continue to exist as long as the controversy between nominalism and realism goes on.<sup>16</sup>

Spektorsky claims that the nominalism-realism dispute is determined by gnosiological and ontological assumptions of which the former comes to play with regard to the origins of cognition where nominalists profess empiricism and realists adhere to apriorism. The second assumption ties up with the fundamental philosophical question to which nominalists answer by materialist systems and realists by idealist systems and through various hypostases.

To prove his point that the nominalism-realism dispute can be viewed in terms of materialism vs. idealism and empiricism vs. apriorism Spektorsky refers to arguments between Platonians and anti-Platonians, thomists and scottists or Dominicans and Franciscans.<sup>17</sup>

Spektorsky held the view that in the so-far evolution of philosophy either nominalism predominated over realism or vice versa. Realism was preeminent in the Middle Ages<sup>18</sup> and nominalism in modern times following the dismissal by philosophy of the essence of forms and archetypes.<sup>19</sup> Nevertheless Kant's category of transcendentalism meant departure from nominalism to the advantage of conceptualism.<sup>20</sup> In turn, Herder's criticism of Kant's philosophy reflected predominance of nominalism.<sup>21</sup> But then Hegel's system was founded on realism.<sup>22</sup> The closing decades of the 19th century saw the return of nominalism.<sup>23</sup>

As in the province of philosophy, in ethics and aesthetics Spektorsky similarly detects the nominalism vs. realism wrangle. In ethics it arose

<sup>15</sup> Loc. cit.

<sup>16</sup> Loc. cit.

<sup>17</sup> Ibid., pp. 1 and 5.

<sup>18</sup> Ibid., p. 32.

<sup>19</sup> Loc. cit.

<sup>20</sup> Ibid., p. 5.

<sup>21</sup> Loc. cit.

<sup>22</sup> Ibid., p. 6.

<sup>23</sup> Ibid., p. 26.

around the question of the origins of good and evil: two rudimentary determinants of morality. Ethical empiricists claim the answer to require an analysis of man's concrete actions and on this score take the nominalist position<sup>24</sup> advocating situational ethics which would treat morality as a dynamic phenomenon affected by a concrete situation and a definite epoch.

On the opposite pole Spektorsky places realists professing ethical apriorism in which moral norms are prior to concrete individual actions. In other words, realists profess the view about the existence of permanent principles of morality<sup>25</sup> and on these grounds treat ethics statically allowing for a variety of moral imperatives.

This ethical argument bears indirectly on positions in psychology which nominalists would see as an empirical science explaining the human psyche in material terms whereas realists, who undervalue empirical data and consider the psyche in substantial terms, claim that psychology should belong to the group of apriorical sciences.<sup>26</sup>

In the realm of aesthetics the nominalism vs. realism issue involves the reduction of the concept of beauty to a concrete emotional experience by nominalists who maintain that to fathom the nature of beauty the science of aesthetics should refer to the achievements of psychology and sociology.<sup>27</sup> Realists, on the contrary, acknowledge the importance of eternal and unalterable canons in art and look at aesthetics as a separate, autonomous discipline and are opposed to the idea of art being studied with the help of other sciences.

Spektorsky finds the same controversy also in the field of physics and chemistry and argues that there the realistic stance lingered on until the time of Lomonosov, his proof being that apart from the matter the then scholars permitted substances such as phlogiston, warmth, etc.<sup>28</sup> Unaware of the relationship between the matter and the energy as expressed in Einstein's formula ( $E = mc^2$ ), Spektorsky argues, and wrongly so, that it is impossible to interpret the properties of energy on the basis of empirical data and, still wrong, goes on to conclude that the study of energy has to be anchored in philosophical realism.<sup>29</sup> However, he cannot be blamed since that was the common view of the time. Following his train of thought it can be assumed that in physics and chemistry a shift from realism to nominalism was not

<sup>24</sup> *Ibid.*, p. 7.

<sup>25</sup> *Loc. cit.*

<sup>26</sup> *Loc. cit.*

<sup>27</sup> *Ibid.*, p. 6.

<sup>28</sup> *Ibid.*, p. 8.

<sup>29</sup> *Loc. cit.*

feasible until the crystallization of the theory of relativity which precluded the concept of ether, the last imponderabilium.

Another field in which Spektorsky traced the controversy is that of natural sciences. It was to be seen most clearly in connection with the problem of life. For nominalists life is derivative of the matter.<sup>30</sup> Spektorsky quotes no concrete examples as evidence of this statement. He does not mention Engels' *Dialectic of Nature* whose significance was and continues to be widely acknowledged not only in terms of dialectic materialism. Instead, he gives much more space to the realistic concept of life in biology. Drawing on Autenrieth, Spektorsky criticizes vitalists for hypostatizing a result of that was a division between life and matter, or the spirit and the body. He also points to adverse effects which vitalism had on psychology where hypostasis resulted in the human psyche being treated substantially which Spektorsky challenges as non-scientific and contrasts with the investigation of phenomena on the basis of empirical facts.<sup>31</sup>

Further on Spektorsky considers the nominalism vs. realism controversy in social sciences. Although he thinks general notions inevitable in this field, the situation is more complex than in the disciplines discussed above. Unlike in natural sciences, general notions in social sciences can express not only general, but also individual situations. This poses the question of whether sciences applying such notions belong to realism or nominalism. Spektorsky holds that there are no uniform criteria in this respect. Only the context can determine which notion pertains to which ideology.<sup>32</sup> Spektorsky turns for evidence to the economic situation. He claims that the economists who use the concept of the universal man—divorced from any concrete reality—are realists and those for whom the notion of the universal man is wedded to concrete situations are nominalists.<sup>33</sup>

For Spektorsky the only right approach is that social phenomena should be expressed in general terms. On the strength of this belief he advocates the extreme nominalist stances according to which the formulation of general notions in social sciences means hypostasis. A representative of such extreme view was de Maistre who criticized the 1795 Constitution for having been created for a concrete man and not for man in general. There are only concrete representatives of particular nations—the French, Russians, Italian, Persian, etc.<sup>34</sup>

The planes of social sciences on which the nominalism vs. realism

<sup>30</sup> Loc. cit.

<sup>31</sup> Ibid., p. 7.

<sup>32</sup> Ibid., p. 23.

<sup>33</sup> Loc. cit.

<sup>34</sup> Ibid., p. 12.

controversy came out most distinctly was history, and studies on state and law. In history it had chiefly methodological significance and determined the idea of the object of historical knowledge. This diversified historic writing, with nominalists adhering to a history which cannot go beyond description of individual facts; there Spektorsky places ideographers, biographers as well as hunters for irrepeatable events<sup>35</sup>, e.g. E. Meyer and theoretical nominalists mainly Badenian neo-Kantists: Rickert and Windelband.<sup>36</sup>

Spektorsky gives much less attention to realism in history and only observes that this category embraces historians who go beyond descriptiveness in an attempt to grasp the evolution of events, the function and the dynamic quality of the process of history as well as those who apply farreaching generalizations.<sup>37</sup>

The sources of many arguments in the theory of state and law can, Spektorsky claims, be also traced down to the nominalism vs. realism controversy. In this field the nominalist-oriented factions question the plausibility of general notions, adhere to the analysis of concrete legal acts and are opposed to idealizations such as, for instance, the will of the state.<sup>38</sup> There is no such thing as the will of the state; one can only speak of the will of concrete individuals exercising authority. In this group Spektorsky classifies the British analytical school of law whose representatives identify the state with legislation and legislation with persons who exercise authority.<sup>39</sup> The realists, on the contrary, place legal principles above concrete individuals who are authors of legal acts, and consider the individuals as mere executors of these principles. Such standpoint allows to distinguish two types of persons who wield authority: realists, *i.e.* those who rule on the basis of legal norms and consider law to be above them, and nominalists who do not consider law to be above them and identify their own will with legal acts.<sup>40</sup>

Spektorsky's classification is justifiable only in terms of logic. It cannot serve as an instrument of cognition because of considerable simplifications it employs which can be seen when Spektorsky counterposes Peter the First's autocracy or the absolute role of Frederic the Second and Louis XIV's absolutism, classifying the former two among the realists and the latter one among the nominalists<sup>41</sup>, only on the grounds that Louis XIV said "l'état c'est moi" and the others did not.

<sup>35</sup> Ibid., p. 15.

<sup>36</sup> Loc. cit.

<sup>37</sup> Ibid., p. 16.

<sup>38</sup> Ibid., p. 20.

<sup>39</sup> Loc. cit.

<sup>40</sup> Loc. cit.

<sup>41</sup> Loc. cit.

Spektorsky argues that nominalist and realist standpoints can be manifested on such legal and system grounds as the division of competence of powers, or the federations of states. But, for instance, Montesquieu's concept analysed in these terms would pose a complex question: does it involve separate authorities or divided functions of one? The first stand is endorsed by nominalists, the second by realists.<sup>42</sup> Problems similar to the division of authority arise from the issue of the federation of states. Is a union of states a separate statehood or simply a union of states which formerly existed separately and, as such, does not form a new organism? Nominalists endorse the latter view whereas realists claim the former and in contrast to nominalists advocate the idea of an empire.<sup>43</sup>

Following the evolution of views on the essence of state and law, Spektorsky maintains that they had been shaped and changed under the influence of nominalist and realist stances. In ancient times, he observes, nominalism prevailed which is to be seen in the practice of identifying the state with one city ( πόλις ) and assuming society ( ἡ κοινώνια ) to be a sum of individuals.<sup>44</sup>

Affected by Christianity, the Middle Ages brought the study of state and law on to the grounds of realism, premises for which were set up at the end of the ancient era by St. Augustine whose concept of state went beyond ( πόλις ) and amounted to the State of God.<sup>45</sup> The Middle Ages widely employed the notion of a universal state.

A similar evolution is to be observed in the attitude towards the Church which in ancient times was treated nominalistically as a congregation ( *ecclesia* ) and in the Middle Ages came to be treated in terms of realism. Spektorsky believes that it took on the character of hypostasis and became an object of cult and worship ever since the formula "I believe in one apostolic church"<sup>46</sup> was first used. A typical feature of Mediaeval realism was the reference to transcendental beings. The law on earth was to be founded on heavenly law, the Church constituting a particle of the mystical body of God and positive law based on the ethical essential justice identified with God.

It was not until more modern times that a tendency towards the nominalistic treatment of social reality had appeared. This had been connected with the rejection of archetypes and essence in sciences. That period also marked the beginnings of a tendency to explain all

<sup>42</sup> Ibid., p. 21.

<sup>43</sup> Loc. cit.

<sup>44</sup> Ibid., p. 26.

<sup>45</sup> Ibid., p. 30.

<sup>46</sup> Ibid., p. 31.

phenomena of mechanics and the laws of logic. Spektorsky discusses this subject at length in his *Problems of Social Physics in the 17th Century* which will be referred to in the further course of this report. Having analysed cognitive stances of different scientific disciplines drawing on nominalism or realism, Spektorsky proceeds to judge which of these orientations can prove most adequate for research.<sup>47</sup> His conclusion deserves attention because of its correspondence to the principles of dialectic of the individual and the general professed by dialectic materialism. Spektorsky takes the right view claiming it impossible to build any science on the basis of concrete notions as suggested by nominalists. But at the same time it is equally impossible to form general notions if they fail to stem from description of concrete reality. Therefore, Spektorsky concludes, we learn the general with the help of the individual and vice versa.<sup>48</sup> This cognitive view of Spektorsky should be taken into consideration during the analysis of his other works.

It is also worthwhile to point out Spektorsky's attitude towards Russian nominalists and realists. He considers Lev Tolstoi a nominalist in terms of culture but at the same time an ethical realist.<sup>49</sup> In legal sciences Spektorsky enumerates his patron, professor A. L. Blok and L. Petrazhytsky<sup>50</sup>, later a professor at Warsaw University, as nominalists and B. V. Chicherin, A. Gradovsky and Solovev as realists.<sup>51</sup>

Let us now proceed to the analysis of his two-volume study: *Problems of Social Physics in the 17th Century*. The title indicates that the aim of the study was to provide a physical interpretation of human and social behaviours in the period indicated.

His interest in this subject springs not only from his thirst for knowledge. It is first of all a result of his critical attitude to the positivist theory which claimed its philosophy to be the first to lay down scientific foundations for interpretation of the behaviour of man and society. Spektorsky challenges the assumption that Comte and Quételet are originators of modern social science and as evidence points out that the scientific study of society propounded by Positivism had been already practised in the 17th century.<sup>52</sup>

The period when Spektorsky carried out his research was marked by a feeling of mistrust towards scientific values of social theories. For instance, Jelinek spoke of sociology as a bay of scientific dimness<sup>53</sup>

<sup>47</sup> Loc. cit.

<sup>48</sup> Ibid., p. 36. See: V. I. Lenin, *Zeszyty Filozoficzne* (Philosophical Fascicles), Warszawa 1956, pp. 70-71, 172, 264, 337.

<sup>49</sup> Spektorsky, *Nominalism i realism...*, p. 24.

<sup>50</sup> Ibid., p. 25.

<sup>51</sup> Loc. cit.

<sup>52</sup> Spektorsky, *Problema sotsialnoi fiziki*, I, p. 11 and IV.

<sup>53</sup> Loc. cit.

while Tarde called students of social phenomena looters comparing them to Spanish conquistadors.<sup>54</sup> But Spektorsky did not share this point of view. Maybe—he claimed—the hitherto theories speculating about society are not perfect enough but this in no way dooms them to failure. They should not be dismissed. All we need is to wait patiently for a theory which will satisfy malcontents.<sup>55</sup>

In his work about problems of social physics, Spektorsky makes an attempt to present methodological issues connected with the study of social phenomena in the 17th century. He distinguishes three main aspects:

1. the emergence of a new world-view under the impact of modern science,
2. the new theory of science,
3. the effect of mechanics upon the interpretation of social phenomena.

In the course of his survey Spektorsky changes his standpoint. First critical about Positivism he wanted to follow the lines of the Marburg school of neo-Kantists from among whom he had greatest respect for Natorp and Cohen<sup>56</sup>, later, however he found insufficient the neo-Kantist postulate to carry studies of society from the abstractionist and apriorist positions. He also found of little use the transcendental gnosiology applied by neo-Kantists as an instrument of speculation about phenomena which did not and could not exist.<sup>57</sup> Instead, he introduced a new method and called it a genetic study. It does not differ much from the one he applied in the first of his works discussed here. He examines not only scientific events which took place in the period he discusses but, when necessary, he also looks into the past or the future to show that the problems confronting the 17th-century science have also been present in other epochs.

His belief in the interdependence between science and *Weltanschauung* urged him to ask whether the advancement of science in the 17th century brought any changes in the *Weltanschauung*. He marks off two periods in the history of *Weltanschauung*. The first, he argues, lasted from the time man started to think about the surrounding reality until the 17th century, and brought about the shaping of a new type of world outlook. Having adopted such a view, Spektorsky does not go into differences between Judaism, ancient Greek or Roman cultures, Christianity, Muslim civilization, or Renaissance humanism. Since they

<sup>54</sup> Loc. cit.

<sup>55</sup> Loc. cit.

<sup>56</sup> Ibid., p. III.

<sup>57</sup> Loc. cit.

all were, in various degrees, aiming at the perfection of the individual, they all drew on both secular and religious authorities and professed the same ontological assumptions, i.e. anthropomorphism, teleologism and hierarchism, he considers it right to speak of one type of world outlook which he calls moral.<sup>58</sup>

At the opposite pole Spektorsky puts the new type of world outlook which emerged in the 17th century and which he calls physical.<sup>59</sup> Unlike the former it took no account of the difference between God, man and nature, treating each of these phenomena equally—in a mechanistic way. He applies a term founded much later by Hall: it can be said that the physical world outlook was an expression of cosmic egalitarianism.<sup>60</sup>

Spektorsky believes that the birth of the physical *Weltanschauung* was affected by scientific events and technological inventions, namely the use of compass in navigation, the construction of telescope, the discovery of blood circulation by Harwey and, first and foremost, by Copernicus' heliocentric system.<sup>61</sup>

The employment of compass allowed for long-distance travels which, in turn, made possible the verification of Mediaeval geography. The telescope played a similar role in astronomy: the opportunity to discover new stars undermined cosmological hierarchy and opened up the way towards the idea of the infinity of the Universe. The discovery of blood circulation allowed to narrow the gap between man and animals and led to the conclusion that human and animal organisms functioned according to similar principles, which again undermined the principles of hierarchism and teleologism and laid foundations for a determinist explanation of reality.

But it is to the Copernican theory that Spektorsky attributes the greatest influence in the change of the *Weltanschauung*. It was not only opposed to the Biblical description of the world but also undermined the so-far ontological premises of science. Spektorsky quotes Bodin who observed that Copernicus' theory exploded the hitherto established definitions in philosophy and theology, and verified human feelings—the seedbed of all sciences.<sup>62</sup> Moreover, Spektorsky observes that that theory attacked religious dogmas and enfeebled the meaning of such notions as original sin or mankind's redemption by Christ. He refers to Pascal's thoughts prompted by Copernicus' *De revolutionibus orbium coelestium*. Pascal reasoned that the acceptance of the heliocentric

<sup>58</sup> Ibid., pp. 38–45.

<sup>59</sup> Ibid., pp. 39, 41.

<sup>60</sup> Ibid., pp. 46–64.

<sup>61</sup> Loc. cit.

<sup>62</sup> Ibid., p. 51.

theory would mean no celestial world above the earth, where according to religious dogmas the soul goes after death. If so, how could there be a hell underneath? Influenced by Copernicus, Pascal believed that there might be one infinite world or an infinite number of worlds.<sup>63</sup>

The 17th-century conception of the Universe differed decidedly from the Mediaeval one. It treated the terrestrial reality and the outer space equally. Spektorsky quotes Descartes' philosophical view, which became widespread in the 17th century, that the whole nature is composed of the matter of one kind, and that there are no grounds to oppose the terrestrial matter to the celestial one.<sup>64</sup>

The entire nature was thought autonomous and governed by laws of its own and not subject to God's interference. Spinoza and Boyle maintained that nature was indeed capable of self-sustenance.<sup>65</sup> The functioning of nature was compared to that of a machine or a big automaton which contains smaller parts—smaller automata. The mechanistic conception of nature assumed its cognizability given knowledge of the laws of motion. Here Spektorsky quotes the views of Descartes, Kepler, Hobbes, Galileo, Pascal and even Vico.<sup>66</sup>

The belief in nature's autonomy prompted the notion of cognizability of science. This, however, brought about new problems. On the one hand, there was a critical or even hypercritical stance towards all valid scientific data established so far. Spektorsky calls this attitude theoretical realism.<sup>67</sup>

On the other hand, there appeared an unqualified faith in the validity of human efforts aimed at learning the laws of nature in order to tame it. This, Spektorsky calls practical realism.<sup>68</sup>

One representative of the latter orientation was I. A. Komensky who took the view that owing to the cognizability of nature man turned from its slave to its ruler. Practical realism had broad bearings not only on the scientists' attitude to nature but also on their world outlook. Komensky implied that having learned the laws of nature man would be capable of extricating himself from the metaphysical fear of supernatural forces.<sup>69</sup>

The appearance of practical realism in science altered the under-

<sup>63</sup> *Ibid.*, pp. 46–47. A. G. van Melsen maintains that Copernican theory complemented with Galileo's views abolished Greek and Mediaeval world views. See: A. G. van Melsen, *Nauka i technologia a kultura (Science and Technology)*. Translated into Polish by S. Zalewski, Warszawa 1969, pp. 230–231.

<sup>64</sup> Spektorsky, *Problema sotsialnoi fiziki*, I, p. 60.

<sup>65</sup> *Ibid.*, p. 69.

<sup>66</sup> *Ibid.*, pp. 70–72.

<sup>67</sup> *Ibid.*, p. 54.

<sup>68</sup> *Ibid.*, p. 55.

<sup>69</sup> *Loc. cit.*

standing of its tasks. In contrast to previous ideas science was no longer treated as the sum of information collected for its own sake but began to be seen as a potent instrument in human efforts to subjugate nature. In this respect Spektorsky thinks the 17th century to be a turning point which tied up theory with practice.<sup>70</sup>

Spektorsky speaks at length about the effects physical explanation of reality had on knowledge about man and society. As this point has been discussed in greater detail elsewhere<sup>71</sup> we shall only mention its estimation of scientific findings ensuing from the physical interpretation of reality. Spektorsky argues that exaggerated belief in scientific progress does not yield expected results. It led to the emergence in science as well as in human consciousness of a one-sided attitude which met with broad criticism. Thomas Carlyle observed in his *Sartor Resartus* that at his time man became even more weary of the nightmare of the genius of Mechanism which loomed from everywhere, earth or sky. In result, the man was unable to see, fear or hope in nothing but Mechanism.<sup>72</sup>

Let us now proceed to the analysis of Spektorsky's views on the new concept of science as shaped in the 17th century. Considering that he examined it against the views held on science in previous epochs—ancient, Mediaeval and Renaissance—it seems right to start here from presenting his thoughts referring to those times.

Speaking about ancient views on science, Spektorsky observes that it was considered in terms of a self-sufficient abstract and transcendental system of eternal and unalterable rules based on pure reason. This attitude ruled out the controversy over the object of science which in consequence was merely reduced to methods of cognition.<sup>73</sup>

The major methodological event in ancient science was the controversy between Platonism and Aristotelianism. Spektorsky did not value Plato's philosophy of cognition very much; he even calls Platonism infertile as compared with Aristotelian ideas. He claims that Plato failed in his attempt at finding a valuable method of cognition and attributes to him but the following two methodological achievements:

1. setting up the dialectic against the sophistic-heuristic methods and,
2. the idea that natural sciences should be based on mathematics.<sup>74</sup>

He thinks the latter to be Plato's chief credit since less than 25 cen-

<sup>70</sup> Ibid., p. 56.

<sup>71</sup> A. Krawczyk, *Z problemów "nauki naturalnej"* (Some Problems of Natural Science), in: *Annales Maria Curie-Skłodowska*, Lublin 1976, vol. 1, XI, pp. 115-122. This volume was published in honour of Prof. Dr Narcyz Łubnicki to commemorate the 50th anniversary of his work as scientist and teacher.

<sup>72</sup> *Op. cit.*, vol. 2, p. 377.

<sup>73</sup> *Op. cit.*, vol. 1, p. 126.

<sup>74</sup> Ibid., pp. 129-131.

turies later the idea was resuscitated in the theories of Marburg neo-Kantists: Cohen, Natorp, Cassirer, and Hartman.<sup>75</sup>

Much more than Plato's dialectic Spektorsky respects Aristotle's systematization of science and especially the concept of explaining the known through the unknown.<sup>76</sup> At the same time he takes to task those scientists who claim empirical attitude to have prevailed in the Aristotelian thought. The misnomer of an empiricist was given to Aristotle no sooner than the 19th century. If there was a reception of Aristotelianism in the Middle Ages it was chiefly due to his being a rationalist.<sup>77</sup> It was at that time too that his rationalist philosophy was transformed into logico-formal speculations with notions. To prove that Aristotle was a rationalist Spektorsky points out that it was precisely for his rationalism that he was criticized by the 17th-century science. In fact, Aristotle used the empirical method only in so far as it helped him to form general notions<sup>78</sup> which is not enough to speak of the prevalence of empiricism over rationalism in his work.

Spektorsky contrasts this ancient concept of science with Mediaeval science which was subordinated to the scholastic method where all scientific problems were solved by means of logico-formal operations.<sup>79</sup>

The scholastic concept was undermined in the Renaissance which marked the change in viewpoint from a theocentric to an anthropocentric one. The interest in natural sciences grew and put the Renaissance philosophy of nature on a far higher level than in the ancient times. The Renaissance scholars questioned Aristotelian views on physics. But at the same time Spektorsky emphasizes that the cult of the ancient times acted as a considerable obstacle to the abolition of Aristotle's misconceptions. This was responsible for the fact that scientists, even while disagreeing with him, would never challenge his views openly only because they were stated in Greek which at the time not only ensured their immunity from criticism but also made them an object of cult.<sup>80</sup>

It is not until the modern times that Spektorsky sees new achievements appearing in science. As has been said before, he contrasts this period with the preceding ones. The new type of science appeared in the 17th century, its distinctive features clearly evident from the very outset. Spektorsky points out that the advocates of the old cognitive

<sup>75</sup> Ibid., p. 132, n. 4.

<sup>76</sup> Ibid., p. 136.

<sup>77</sup> Ibid., p. 140.

<sup>78</sup> Ibid., p. 141.

<sup>79</sup> Ibid., p. 9.

<sup>80</sup> Ibid., p. 13.

stances called adherents of the new science innovators, since they cut off all bonds with tradition in science, both scholastic and humanist.<sup>81</sup> The criticism of the hitherto 17th-century theories was carried to an extreme: Descartes, for instance, professed that it was of no importance at all nor of any interest to him what had been written by scholars before him or even whether there had been any people before him at all, for in the light of recent achievements of science all past events were insignificant.<sup>82</sup>

Discussing innovators in modern science Spektorsky acknowledges their share in the rise of modern rationalism and places Descartes, Spinoza, Leibniz and Hobbes among its pioneers. He compares the 17th-century rationalism with its Mediaeval and 19th-century varieties and points out its superiority over them. While Mediaeval rationalism was scholastic and the 19th-century rationalism, at least ever since the times of Hegel, metaphysical, the 17th-century realistic thought was founded on natural sciences which added much to the formulation and solution of rudimentary theoretical problems in science. The 17th-century rationalism produced scientists of the calibre of Kepler, Galileo, and Newton.<sup>83</sup>

Spektorsky does not acknowledge Bacon's contribution to modern science but rather sees him on the opposite pole as one of scant significance and originality. Referring to the works by such authors as Apelet, Lange, de Maistre and Düring, Spektorsky shares their disrespect for Bacon's legacy. The main charges he levels against the author of *Novum organum* are: his slave-like susceptibility to Aristotelianism though Bacon, as Spektorsky often emphasizes, thought himself a critic of Aristotle; that Bacon's views on physics are not his own but were taken from other scholars; and finally, dilletantism to be seen in his extreme empirical stance from which he challenged the Copernican theory only on the ground of its lack of empirical justification.<sup>84</sup> This obviously was an unjust and harmful criticism of Bacon; it was ill-founded, too, considering opinions of other scholars, who like e.g. B. Willey, recognized Bacon's superiority over his contemporaries as the first modern thinker to pay attention to differences between science and theology; Bacon argued that scientific knowledge must draw on experience and reasonable argumentation whereas the authority of the Scriptures is binding for theology.<sup>85</sup>

<sup>81</sup> *Op. cit.*, vol. 2, p. 1.

<sup>82</sup> *Loc. cit.*

<sup>83</sup> *Op. cit.*, vol. 1, pp. 24-25.

<sup>84</sup> *Ibid.*, pp. 27-29.

<sup>85</sup> B. Willey, *The Seventeenth Century Background*, New York 1955, pp. 33 and 36; see: *Chelovek i epoka*, Moskva 1969, pp. 42-43.

In Volume One of the study in question, Spektorsky devotes much space to the theory of truth in modern science.<sup>86</sup> He is interested in the period of mistrust for Aristotle's definition of truth, spanning from the 17th to the end of the 19th century. Spektorsky believes that the departure from the classic definition of truth was largely determined by Pascal's scepticism and the problems of solving the relationship between thinking and being which neither Locke, the 18th-century materialists, Berkeley and Hume nor Kant could tackle.

Nevertheless, it is Kant's philosophy that Spektorsky thinks to have born most heavily on the abolition of the classic theory of truth. But sharing the opinion of Vaihinger's *Commentar zu Kants Kritik der reinen Vernunft* he criticizes Kant's system for its eclecticism and lack of perfection.<sup>87</sup>

Spektorsky considers the problem of the relationship between thinking and being still hard to solve. He makes no mention of the standpoint of dialectic materialism as known from Engels' or Marx' studies on Ludwig Feuerbach which put forward a new methodological postulate that the thinking—being relationship goes beyond theory and should be regarded only on practical grounds.

This doubtful and questioning attitude to the existence of objective truth and the decline of the classic definition marked, Spektorsky claims, a turning-point in philosophy. As a result there emerged new philosophical systems such as Feuerbach's psychological anthropocentrism, Stirners' misanthropic egocentrism, Nietzsche's metaegoism, Poincaré's gnosiology of judgement and James' pragmatism.<sup>88</sup>

Another question Spektorsky touches on in Volume One of his *Social Physics* is that of the creation in the 17th–19th-century science of pansophy<sup>89</sup>, a universal system of knowledge and the analysis of scientific views of Edgar Weigel. These will not, however, be discussed in the present report as they are presented at length by Waldemar Voisé.<sup>90</sup>

Volume Two of the study contains many repetitions of the arguments presented in Volume One. Therefore we shall reduce ourselves to discussing only the most important points. Spektorsky focusses his attention on new tendencies in the 17th-century social science.

Drawing on the views of Descartes, Hobbes, Geulincx, Komensky, Puffendorf, Thomasius and Weigel he concludes that the then science

<sup>86</sup> Spektorsky, *Problema sotsialnoi fiziki*, I, pp. 124–206.

<sup>87</sup> *Ibid.*, pp. 147–178.

<sup>88</sup> *Ibid.*, pp. 193–198.

<sup>89</sup> *Ibid.*, pp. 430–458.

<sup>90</sup> *Ibid.*, pp. 488–563. See: Voisé, *Erhard Weigel...*, pp. 527–543.

of society was ostensibly opposed to theology and sought to deal with problems in terms of mechanics and logic.<sup>91</sup> Spektorsky shows that as conceived by the then students of science, social philosophy, contrary to Mediaeval opinions, need not seek agreement with theology but rather with the principles of the philosophy of nature. The 17th-century scholars stressed the agreement between *philosophia civilis* and *philosophia naturalis*.<sup>92</sup>

In the further course of his analysis, Spektorsky regards the explanation of human behaviour in terms of ethics and of natural law. He contrasts the 17th-century ethics with the Mediaeval one. While the latter held it right to seek support for moral norms in divine reason, the former, on the contrary, professed the view that support for moral norms was to be sought in the eternal, unalterable reason governing the Universe. This stance led to ethical intellectualism which claimed that violation of moral norms should be treated as logical absurd.<sup>93</sup>

Similarly as in ethics, in the interpretation of natural law Spektorsky also sees many changes. Drawing on the classification of the natural law in deontological, logical and ontological terms, Spektorsky indicates the methodological novelty of the 17th-century approach. It tied up with the rejection of the deontological conception of natural law identified with justice as based on the archetype of godly reason. Since then the interpretation of natural law was enriched with the causalities of mechanics and the principles of logic. This led to far-reaching changes in *Weltanschauung*. The deontological concept of natural law assumed that natural order originated from God's order. Now, with the logical conception of natural law for which pure reason was the archetype of order, the order of God came to be excluded from natural order. This is how God started to be subordinated to nature.<sup>94</sup>

Spektorsky confronts this new approach with Mediaeval views, referring to Aristotle and to Protestants. He is not much in favour of the Protestant conception of natural law as being too conservative when put against the views prevailing in the 17th-century world of learning.

The Protestant doctrine, or more specifically the Lutheran doctrine of that period, was controlled by Luther's and Melanchthon's views that the aim of natural law is to instruct man about God's creation, the only way to this being through theology.<sup>95</sup> While the adherents of na-

<sup>91</sup> Spektorsky, *Problema sotsialnoi fiziki*, II, pp. 20-22.

<sup>92</sup> *Ibid.*, p. 40.

<sup>93</sup> *Ibid.*, pp. 22-24.

<sup>94</sup> *Ibid.*, pp. 64-65.

<sup>95</sup> *Ibid.*, pp. 80-85.

tural science sought to give the natural law a rational character believing in its cognizability, Protestant theologians claimed, in the 17th and even well into the 18th century, that an ordinary man is unable to fathom the natural law as he is not able to fathom God himself.<sup>96</sup>

Next, Spektorsky weighs Protestant views against the 17th-century innovations. Though he shares Dilthey's opinion (*Das naturalische System der Geisteswissenschaften im siebzehnten Jahrhundert*) that it is hard to find any uniformity of stances among the then Protestants, he claims that what they had in common was hostility towards rationalism, stronger even than the one displayed by the scholastic thinkers. Protestants attacked rationalism both in science and in Catholicism.<sup>97</sup> They criticized Catholic theology for its departure from the principles of irrationalism and its affiliations with philosophy. It is from these extremely conservative positions that Quenstedt challenged scholasticism for the frequent presence in its philosophy of Aristotle and Averroës instead of the Evangelists and the Apostles.<sup>98</sup> Spektorsky observes that the critical approach to science in many Protestant countries brought theocratic control over science. He refers to cases of academics swearing allegiance to Protestant religion which was required in some universities, or of doctoral degrees being decided upon by the church (in Leipzig until 1768 and Göttingen throughout the 18th century).<sup>99</sup> Protestants were bound sometimes to tailor rationalism to the needs of their theology but were decidedly opposed to more radical rationalist views of some scientists: Boethius, for instance, supported rationalism but only in such forms which did no harm to the religious doctrine and on this score he condemned Descartes since his thinking led to atheism.<sup>100</sup> Descartes was also criticized in the same vein by von Matrich who called his works gangrene which caused decay of the theological body<sup>101</sup>, and A. Calovius (Kalau) and his school who defined Descartes philosophy as poisonous to Christian theology.<sup>102</sup> Municipal authorities joined in the anti-Descartes campaign: statutes issued by the town council of Marburg banned professing this philosopher's views in the city.

<sup>96</sup> Ibid., p. 103.

<sup>97</sup> Ibid., pp. 245-250. Spektorsky also mentions a work by K. G. Bretschneider, *Luther an unsere Zeit* which he claims to tally with the views of Protestant and Catholic theologians. Its author aims at proving that Luther's views led to rationalism or were even close to the 19th-century rationalism. Ibid., p. 189.

<sup>98</sup> Ibid., pp. 145-150.

<sup>99</sup> Ibid., p. 251.

<sup>100</sup> Ibid., p. 258.

<sup>101</sup> Ibid., p. 265.

<sup>102</sup> Ibid., p. 267. Calovius recommended critical study of Aristotle but only in order not to ascertain nature as the principle of being.

Nor did Spinoza win much credit among the protestants. They considered him the prince of atheists, an atheist Euclid. Christian Karthold spoke of him as one of the greatest liars.<sup>103</sup>

Drawing on these examples Spektorsky concludes that Protestant theologians were inclined towards Mediaeval tradition even more than the Catholic ones. Therefore, he regarded Protestant rationalism as having nothing in common with the rationalism of Descartes, Spinoza, or Hobbes, all of whom were opposed by the church. Protestant rationalism was dogmatic. The strict observance of the dogma that reality must be interpreted on the basis of Biblical norms spread the view that *natura est scriptura*.<sup>104</sup> Spektorsky shares the opinion of Troeltsch (from *Die Bedeutung des Protestantismus für die Entstehung der Modernen Welt*, München und Berlin 1911) that Protestants replaced theocracy with bibliocracy. This obstructed the shaping of a rational approach in science. The rapprochement between Protestantism and scientific rationalism did not take place until the second half of the 17th century.<sup>105</sup>

However, Spektorsky's conclusions about the hostile attitude of Protestants towards rationalism in science can only be accepted as plausible when referring to Lutheranism; Calvinism and Puritanism were different in this respect. R. Hooykaas suggests that Calvinism was streets away from bibliocracy in science which is clear in the approach of Calvin himself who in case of any gap between scientific views and the Bible never ignored the former.<sup>106</sup> Account must be taken of the contribution of Calvinism and the Puritans into the development and reception of modern science. This subject has been dealt with by A. D. Candole, J. Pelseneer, D. Stimon, M. Mathijssen, J. J. Kane, R. K. Merton, and M. Weber.<sup>107</sup> Yet scant attention that Spektorsky had given to Calvinism and Puritanism in no way belittles the value of his study.

Summing up the discussion of Spektorsky's legacy, special mention is due to the breadth of his erudition, and his awesomely comprehensive analyses. Though his opinions can provoke controversy, his contribution to the evolution of the history of science cannot be underestimated. Unlike his protector A. L. Blok who visualized decay in Western culture, Spektorsky noticed its values and its share in the develop-

<sup>103</sup> Loc. cit.

<sup>104</sup> Ibid., p. 255.

<sup>105</sup> Ibid., p. 263.

<sup>106</sup> R. Hooykaas, *Religia i powstanie nowożytnej nauki (Religion and the Rise of Modern Science)*. Translated into Polish by St. Lawicki, Warszawa 1975, p. 146.

<sup>107</sup> Ibid., pp. 116-117, see nn. 1-5.

ment of civilization. The history of science was not the only field of his research. He made frequent references to his contemporaries such as Troeltsch, Bergson, or Gilson. The present article makes no claim to be an all-embracing study of his work: it seems that there is still much to be said about relationships between science and culture or culture and religion, as well as there is much to be found about Spektorsky in the archives in Kiev or in the United States.

