

a deeper and more exhaustive understanding of it. The book expands not only the Polish, but also the international, literature about Wittgenstein.

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Michał Heller, *Podglądanie Wszechświata* [Peeping of the Universe], Znak, Kraków 2008, 212 pp.

The permanent regularity of the development of science must be acknowledged as a fact, namely that scientific theories universally accepted by the researchers of a given branch of natural science penetrate the consciousness of the average person with great delay. Moreover, the greater the specialization in a science, the more difficult it is to be up to date with its achievements. The most difficult barrier in this respect is undoubtedly the language barrier. The language of science has become, at present, so „technical”, and in the case of physics alone also so formal, that many years of study, in a particular specialization, are necessary in order to understand it fully and master its use. A researcher willing to translate scientific results into a language understandable for a recipient coming from outside the academic group, must undertake an effort no less difficult than that of the contemporary translators of the works of classical literature.

Father Michał Heller is not only an example of a scientist able to link harmoniously quite distant fields of knowledge, but also of an experienced researcher, who has become known as a popularizer of science and philosophy. Following the literary achievements of Fr. Heller, it can be noticed, that titles popularizing diverse philosophical and theological ideas and contemporary findings of natural science constitute a great part of his scientific achievements. In his publications, appearing one after the other, he also demonstrates his point of view on the world and science, in which there is no discrepancy between the natural sciences and theology. At the same time he always remains objective and does not allow himself to impose on the recipient his own view. First of all he presents the facts, clarifies and interprets them appropriately, draws conclusions from them, and then allows the reader to take a stance by themselves. The person of Fr. Professor Michał Heller has become well known lately due mainly to his being awarded the Templeton Prize in 2008. Although, on the one hand it is a sad fact, that such a significant event was necessary for the media to notice this outstanding figure, on the other hand it is a great joy, that thanks to this, the attention of many people has been directed to various matters of a philosophical and scientific nature undertaken by the researcher from Tarnów. The latter of these areas seems to be especially difficult to translate into a language understandable for the average recipient, who does not possess education in natural science. Hence, no doubt, the indefatigable desire of the laureate of the aforementioned prize, to bring closer to a wider range of recipients the current

scientific and philosophical picture of the world. The most recent fruit of these efforts is the book entitled „Peeping at the Universe”, constituting the copy–edited record of mini lectures presented by M. Heller on the Tarnów Radio RDN.

This book is in the form of a selection of essays grouped into three parts. They are preceded by a short preface and a prologue, whilst in the conclusion the author has placed a chapter entitled „Reflections”, constituting a peculiar epilogue and being a perfect starting point for discussions about interdisciplinary research. At the end of the book a vocabulary of the most important terms is included, which may prove useful for people unfamiliar with physics and cosmology.

As has been mentioned, this book has come into existence not on the initiative of the author himself but was the idea of „Znak” publishers and the Tarnów Radio RDN, a station on which Heller delivered a cycle of talks about the history of science, cosmology and the relations between the natural sciences and faith. Due to the quite free style with which these talks were presented, preparing a book based on the recorded broadcasts was not a simple task. In the final version it has been divided into three main parts. The first part, *Towards contemporary physics* presents the path human thought has covered from the Middle Ages to contemporary times in the area of research in physics. The second part is entitled: *Revolutionary physics of the XX century*. Changes which shook the world of physics at the beginning of the past century are described there. The last part constitutes the chapter: *Cosmology of the XX century – a child of the revolution in physics*. The circumstances of the birth of contemporary astronomy are shown here.

A short *Prologue*, preceding the fundamental part of the publication, can be recognised as an individual „declaration” of the author’s views. He stresses at the very beginning, that he wishes to direct the reader along the paths of „thinking people”, which means those, who do not want to narrow their horizon only to one way of looking at the world and wish to examine critically the pictures of the world proposed in science and philosophy. According to Heller, the final aim of this path is to be the discovery of the harmony between faith and mind. However Fr. Heller does not impose his own views on anybody. Rather he tries to motivate the readers to think for themselves, the result of which is the working out of their own stance on the issues discussed.

The first part of the publication presents the development of scientific thought in the area of physics from its beginning till the end of the XIX century. The author delivers a lecture about the changes occurring in the views of physicists on the basis of presentations of the profiles of great scientists, starting with Leibnitz and Newton, and ending with Laplace and Maxwell. Talking over the polemics going on between Leibnitz and Newton, he introduces simultaneously the forming of Newton’s mechanism, which was to dominate the views of most of scientists for many years. The relation between the interpretation of research data and accepted ways of understanding the world is clearly shown. By showing the dependence between science and philosophy the author helps us in understanding, in what way physics became distanced from philosophy. At the same time he presents facts which lead to the conclusion, that, truth be told, physics had never been fully out of touch with

philosophy, for in fact it was not able to do so. An example of this state of things is given in every interpretation of the results of science in the light of a concrete picture of reality, having its roots in some philosophical view of the world.

The subject of the second part of the book is the intensive development of new physical concepts at the beginning of the XX century. The method of presenting contents proposed by the author remains unchanged – the starting point for the analyses is the presentation of the profiles of great physicists. After discussing some less prominent persons Fr. Heller passes on to the outstanding figure of the XX century, Albert Einstein. In detail and in a very vivid way, thanks to which the discussion is easy to understand, he presents the scientific achievements of the author of the theory of relativity. He calls three of his achievements, „Einstein’s revolutions”. He ranks here: the special and general theories of relativity and the creation of the first cosmological model on their basis. Even though, Einstein surpasses with his greatness the other researchers of his epoch, M. Heller does not forget to present the beginnings of the second great theory of our times, that is quantum mechanics. Although more people participated in its springing into existence, and biographical notes, which constituted the thread of the book at first, begin to disappear in the presentation of the contents of quantum theory, the essential outline of the lecture remains preserved. Therefore the author presents L. De Broglie and his views on the subject of matter waves, E. Schrodinger and the proposition of wave function for the description of the micro world, next interpreted by M. Born, and also W. Heisenberg and his rule of indetermination.

Along with the presentation of the beginnings of contemporary physics M. Heller describes two problems directly related with it. The first is the question of the relation between ethics and science and the responsibility for the use of technology achieved thanks to scientific progress. The historic basis for these considerations is the construction of the nuclear bomb and the dropping of it on Hiroshima and Nagasaki in 1945. The second problem, close to the main thread under consideration, is the coming into being of the Vienna Circle and neopositivism, which the author presents as a theory of three „philosophical cuts”. The first of them is the translation of the language of physics into elementary statements (stating simple facts), the second – the translation of other sciences into the language of physics, and finally the third – the application of the same procedure for philosophy. At the same time Fr. Heller indicates gaps and discrepancies in this minimalist system, which applied fully, would also destroy physics itself.

In the third publication, dealing with the birth of natural cosmology, which draws from empirical data, mathematized and methodological cosmology, Heller departs from the scheme used earlier. The author concentrates on presenting fundamental cosmological ideas and showing their relation with the achievements of physics discussed earlier. He also presents the argument between supporters of the Big Bang theory and supporters of Stationary Condition theory and brings closer to the reader the today universally accepted history of the evolution of the Universe, along with the inflation theory. At the end of this part of the book Heller undertakes to discuss some more crucial subjects, which go beyond science itself and touch

upon philosophical issues. Such a problem is for example the issue of defining the borders of cosmology, beyond which only speculation remains, which cannot be proved by observational data. The author seems to criticize „vulgar” popularizing of science, which presents public opinion with daring hypotheses as to the inevitable future of science which are not supported by any proofs. He also discusses views as to the place of the human being in the Universe and recalls the theory of strings, which in the idea of its creators, aspires to being the Theory of Everything. M. Heller sums up these considerations with the statement that this is still not „the end of the way and of searching”, which, looking at the history of science, seems to be the most reasonable attitude.

In the *Reflections* constituting the epilogue the author considers three questions. The first is the relation between the theological picture of the world and the laws of nature and between faith and reason. Heller shows in it, that the idea of a law of nature, fundamental for physics, derives from theological considerations about the omnipotence of God. He also stresses, that currently more and more scientists are starting to be interested in theology, while on the part of theologians no greater interest in the achievements of the natural sciences can be seen. Next, in a section devoted to a consideration of the existence of life outside our planet, Fr. Heller points out that we do not know, whether we are alone in the Universe, and no answer to this question stands in direct contradiction with faith in God’s existence. At the end, in a short consideration of infinity, the author describes the transition from the concept of the finiteness of nature to the concept of its infinity, in which science participated actively. One may be tempted to call this thread „scientific mysticism”, which is the crossing of everything that is only humanly rational and at the same time an attempt to reach what is eternal.

This book may evoke surprise in some readers. The title and the layout of the cover lead us to expect a study strictly connected with astronomy and less with history and philosophy. However the proposed title expresses perfectly the contents of the presented work. In the most literal understanding „peeping at” the Universe is the subject of astronomy, thanks to which we learn, what its most remote parts and structure look like. But after deeper consideration the conclusion becomes obvious, that this activity may also be a matter of practicing physics. After all it describes the laws governing the world observed by us with the help of telescopes. But this is not the last level of understanding the title „Peeping at the Universe”. We can go still further and say, that „peeping at”, our *universum* is asking questions about what it really is, who we are in it and where we are going. Philosophy, which is to answer these questions, is then an attempt to see, what remains covered by the next layers of mystery. And somewhere deep at the bottom, one more plane is hidden, on which „peeping at” the world acquires an entirely different meaning. It penetrates deeper than all the others and we can touch Infinity in it, in what is finite, material, and constitutes merely the product of our cognitive mind. Infinity is therefore everywhere, you must only learn to perceive it. The „peeping” at the Universe, mentioned in the title, means such an ability.

Fr. Professor M. Heller's book is worth recommending to those who wish to deepen, even a little, the mystery which the Universe is, and to delight in its beauty. Thanks to the reliable research and free style it is interesting and didactic reading, enabling the reader to work out a picture of nature and of the history of the sciences studying it. However, it may prove especially valuable for those, who, like the author, wish to combine in entirety scientific and religious outlooks, creating one coherent picture of the world.

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Gerhard Ernst, *Einführung in die Erkenntnistheorie* [Introduction to Theory of Knowledge], Darmstadt: Wissenschaftliche Buchgesellschaft 2007, 168 pp.

Vorwiegend Einführungen „erfreuen sich“ im Bereich philosophischer Aktivitäten einer brillanten Popularität. Nicht zuletzt hängt dies mit dem Charakter der Philosophie als wissenschaftlicher Disziplin zusammen, die ein breites Forschungsfeld umfasst. Erkenntnistheorie als philosophische Disziplin kann sich nicht dieser Konstellation entziehen.

Deshalb gibt es auf dem „philosophischen Markt“ auch zahlreiche Einführungen in die Erkenntnistheorie. In methodischer Hinsicht sind die meisten Einführungen *philosophiegeschichtlich* geprägt und lassen sich ohne weiteres einstufen als apriorische, natürliche, analytische, evolutionäre usw. Gerhard Ernst, der als Oberassistent am Seminar für Philosophie, Logik und Wissenschaftstheorie der Ludwig-Maximilians-Universität München tätig ist, bemüht sich dem ungeachtet eine Einführung anzubieten, in der es nicht um Philosophiegeschichte gehen sollte, sondern um das Philosophieren selbst. Nicht Namen und Epochen sollten im Vordergrund stehen, sondern Argumente. Eine didaktische Aufarbeitung (insbesondere Zusammenfassungen, Übungsaufgaben, Literaturhinweise), eine übersichtliche Gliederung und die gute Lesbarkeit werden angestrebt, um diese Schrift zu einem hervorragenden Hilfsmittel für Studierende zu machen. Folglich wird der Einführung von Ernst auch der Platz in der Reihe „Einführungen“ (Philosophie) zugewiesen.

Das Buch besteht aus neun Kapiteln, wobei das erste eine Einleitung und das letzte einen Ausblick darstellen.

Im einleitenden Kapitel werden zwei Fragen hervorgehoben: *Was können wir wissen?* und *Was ist Wissen?* Es sind nach Ernst die Grundfragen der Erkenntnistheorie. Die erste Frage weist Kantische Implikationen auf (vgl. KrV B 833) und fordert die Bestimmung des Umfangs menschlichen Wissens. Die zweite Frage „bemüht sich“ hingegen die Natur des Wissens zu klären und ist in der ersten fundiert: Nur wenn klar ist, worin die Natur des Wissens besteht, kann man die Frage beantworten, ob (und wenn ja wie viel) Wissen wir besitzen können. Bei der

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