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Nicolaus Copernicus — Scholar, Citizen of Toruń and Man of the Renaissance

Mikołaj Kopernik — naukowiec, obywatel Torunia i człowiek renesansu

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Summary

The article consists of two parts, the first of which is devoted to the life of the Great Astronomer in the light of the most recent research, while the second part is devoted to his creative work. The bibliography of works about Copernicus for the period 1509–2001 contains 8246 bibliographical items, with the last ten years bringing further articles and books about the scholar from Toruń. Thus, it is not easy to write something new. In dealing with the life of Copernicus, the author concentrates on matters that have been controversial or barely documented in the literature hitherto. He is inclined to accept—on the basis of the new book by Jeremi Wasiutyński *The Solar Mystery* (Oslo 2003)—Ludwik Birkenmajer's thesis that after finishing the parish school in Toruń, Copernicus attended the cathedral school in Włocławek (Vladislavia/Leslau). In agreement with Karol Górski, he explains the fact that Copernicus did not take holy orders because he did not have a vocation for pastoral work and treated the dignity of the clerical office with honesty. The author explains that the lack of letters from Copernicus written in Polish stems from the fact that Latin was the language of scholars at that time and was also used by the Astronomer. Copernicus died in 1543, the year in which Mikołaj Rej in his *Krótką rozprawą* [“A Short Treatise”] marked the beginning of the use of Polish in literature and in chancelleries. The argument over Copernicus' nationality is, according to the author, gradually becoming anachronistic and today Copernicus unites rather than divides Poles and Germans. In analysing the scholar's works, the author highlights his wide-ranging interests. Similarly to Leonardo da Vinci, he made a long-lasting contribution not only to astronomy, but also to mathematics and physics. In economics, he was the author of a monetary

Streszczenie

Artykuł składa się z dwóch części. Część pierwsza to życiorys Wielkiego Astronoma w świetle najnowszych badań, natomiast część druga poświęcona jest jego działalności twórczej. Bibliografia prac o Koperniku za lata 1509–2001 obejmuje liczbę 8246 pozycji. Ostatnie 10 lat przyniosło kolejne artykuły i książki o toruńskim uczonym. Napisanie czegoś nowego jest więc sprawą niełatwą. Autor przy redagowaniu życiorysu Kopernika zwraca uwagę na kwestie w dotychczasowej literaturze kontrowersyjne lub mało udokumentowane. I tak skłonny jest przyjąć, na podstawie nowej książki Jeremiego Wasiutyńskiego *The Solar Mystery* (Oslo 2003), tezę Ludwika Birkenmajera, że Kopernik po ukończeniu szkoły parafialnej w Toruniu uczęszczał do szkoły katedralnej we Włocławku. Fakt nieprzyjęcia święceń wyższych przez Kopernika tłumaczy za Karolem Górkim brakiem powołania do pracy duszpasterskiej i jego uczciwym stosunkiem do godności duchownej. Wreszcie fakt braku listów Kopernika w języku polskim wyjaśnia, iż językiem uczyonych była wówczas łacina, którą głównie posługiwał się Astronom. Kopernik zmarł w 1543 r., to jest w tym samym roku, kiedy Mikołaj Rej utworem *Krótką rozprawą* zapoczątkował używanie języka polskiego w literaturze i kancelariach. Spór o narodowość Kopernika — jak twierdzi autor — staje się anachroniczny; Kopernik dzisiaj bardziej łączy niż dzieli Polaków i Niemców. Charakteryzując twórczość Uczzonego, autor wskazuje na wszechstronność jego zainteresowań. Podobnie jak Leonardo da Vinci Kopernik wniósł trwały wkład nie tylko do astronomii, ale także do matematyki i fizyki. W zakresie ekonomii był projektodawcą reformy monetarnej. Prawo o wypieraniu dobrego pieniądza przez zły pieniądz nosi nazwę prawa Kopernika-Gre-

reform. The law whereby bad money drives out good is called Copernicus-Gresham's law. He was a lawyer by training, obtaining a doctorate in canon law in Ferrara in 1503. He was involved in cartography and was a respected medical doctor. Copernicus was fascinated by the work of the ancients, so characteristic for the humanists of the time. He even translated from Greek into Latin *Simo-catta's Epistles* (1509), published in Cracow. That was the only book which we know with certainty was published in his lifetime. His *Opus Vitae* or *Opus Magnum* was *De revolutionibus* (Nuremberg 1543), in which he refuted the geocentric theory of the planetary system, replacing it with the heliocentric theory. This discovery initiated a new era in the history of science, which is called the "Copernican Revolution". He wrote that the profession of a scientist, in this case an astronomer, is "worthy of a free man". He was truly a Renaissance Man.

Keywords: Nicolaus Copernicus, astronomy, *De revolutionibus*, Toruń, Renaissance

The task of presenting a short outline of the life and works of the great astronomer and mathematician Nicolaus Copernicus, one of the most eminent men of the Renaissance is not easy matter.

Let us start with a short biogram¹. Even establishing the exact date of birth of the Astronomer could have posed problems, since at the time baptismal records or other registers of birth were not kept. This began after the Council of Trent (1546–1565), and thus after Copernicus' death. In Toruń, we have such records from 1600. Despite this, we know the exact moment of Copernicus' birth, thanks to the belief of people then that the constellations at the time of birth programmed the future of the newly born child. The Munich horoscope gives the date and time of Copernicus' birth as 19th February 1473, at the hour of four o'clock and 48 minutes in the afternoon², according to the Julian calendar.

Copernicus is said to have been born at 17 St. Anne's Street, now Copernicus Street. This house was the property of Copernicus' parents, for which they paid a property tax. A few years before the birth of their son, Nico-

¹ J. Dobrzycki, L. Hajdukiewicz: *Mikołaj Kopernik*, Polski Słownik Biograficzny, T. 14, Kraków 1968/1969, p. 3–16 and K. Górska: *Mikołaj Kopernik. Środowisko społeczne i samotność*, Wrocław 1973.

² M. Biskup: *Regesta Copernicana*, "Studia Copernicana", T. VII, Wrocław 1973, after p. 192 reproduction of Nicolaus Copernicus' horoscope written c. 1540.

shama. Był wyuczonym prawnikiem, doktorat z prawa kanonicznego uzyskał w Ferrarze w r. 1503. Parał się kartografią, był uznany lekarzem. Zafascynowany dorobkiem starożytnych, co charakterystyczne dla humanistów tamtych czasów, dokonał nawet tłumaczenia *Listów Symokatty* (1509) z języka greckiego na łacinę opublikowanego w Krakowie. Była to jedyna książka, która na pewno ukazała się za jego życia. *Opus Vitae* czy *Opus Magnum* Kopernika było *De revolutionibus* (Norymberga 1543), w którym obalił teorię geocentryczną układu planetarnego, zastępując ją teorią heliocentryczną. To odkrycie zapoczątkowało nową epokę w dziejach nauki zwaną „Rewolucją kopernikańską”. Kopernik pisał, że uprawianie nauki, w tym wypadku astronomii, jest „godne człowieka wolnego”. Był w pełni człowiekiem epoki Renesansu.

Słowa kluczowe: Mikołaj Kopernik, astronomia, *De revolutionibus*, Toruń, Renesans

laus, the Copernicuses bought one half of a house on the Market Square (today this building houses a shopping arcade) and some researchers would like to see this as Copernicus' birthplace, on account of the more prominent location of this building.

Toruń was always dear to Copernicus. According to tradition, he said: "Me genui Thorunna, Cracovia me arte polivit" (Toruń gave birth to me, Cracow formed my mind)³. He remembered the topography of Toruń as he wrote a letter from Frombork (Frauenburg) dated 11th January 1539 to Johannes Dantiscus, Bishop of Varmia, about his uncle Lucas Watzenrode, Bishop of Varmia, who died in 1512: "This dynasty ends with him, whose coats of arms can be seen on old statues and many works in Toruń"⁴.

The historian has much difficulty in recreating the Astronomer's youth, for no records have been preserved from those years. Nobody could have foretold, after all, that one day he would enter the pantheon of the most outstanding scientists in the world. There is no doubt that he was christened in the Church of Ss. Johns, as it was his parents' parish church. The remains of the family of his mother, Barbara Watzenrode, and also of

³ B. Leśnodorski: *Kopernik-humanista*, [in:] *Ludzie i idee*, Warszawa 1972, p. 12.

⁴ J. Drewnowski: *Mikołaj Kopernik w świetle swej korespondencji*, "Studia Copernicana", T. XVIII, Wrocław 1978, p. 234.

his father, called the Elder, were undoubtedly laid to rest in the cellar of this church. Indirect evidence of this fact is an epitaph dedicated to the memory of Nicolaus Copernicus, funded in the 1580s by a doctor Melchior Pyrnesius⁵, and found in the “Copernicus Chapel” of this church.

Copernicus must have begun his education in the school run by this church. A little information has been preserved regarding the operation of this school in the second half of the 15th century⁶. Obviously, his exercise books, or wax tablets on which Copernicus wrote his first letters, have not survived. It remains an open question as to where Copernicus went to secondary school. The most common suggestion has been Chełmno (Culm), where Copernicus had relatives (an aunt and sister), and more importantly, the local school boasted a high level of education. Recently, new arguments have appeared that his “gymnasium”, or “lyceum” as we would call it now, was in fact the cathedral school in Włocławek (Vladislavia/ Leslau), in Kuyavia⁷. The first definite fact about Copernicus’ university education in 1491–1495 at the Jagiellonian University in Cracow is the entry in the academic register of that university dated autumn 1491 with the following information: “Nicolaus Nicolai de Thuronia solvit totum” (Nicolaus [son of] Nicolaus from Toruń has paid everything)⁸.

We know a little more about Copernicus’ studies and professors in Italy, at the universities of Bologna, Padua and Ferrara in 1495–1503, in the fields of law and medicine, but particularly astronomy and mathematics. These led to a doctorate in canon law at the University of Ferrara on 31st May 1503⁹.

Finally, his 40 years as a canon in Varmia, first with his uncle Lucas Watzenrode, Bishop of Varmia, in Lidzbark (Heilsberg), and then in Frombork, in his “Frombork retreat”, are better documented, but far less than we would wish. Dedicating his famous work *De revolutionibus* to Pope Paul III, Copernicus wrote of himself that he

was living in a “remote corner of the earth”¹⁰. According to a friend of Copernicus, Tiedemann Giese, Bishop of Chełmno, the astronomer liked solitude¹¹. Both the distance from centres of learning, where Copernicus could have been exposed to the pressures of academia and hence to that of supporters of Ptolemy’s geocentric theory, and the solitude in Frombork, created favourable conditions for the astronomer’s profound scientific reflections. On the other hand, though, the lack of personal contact with astronomers together with fears that his work would not be understood stopped Copernicus from revealing his views for 40 years. It was only when Georg Joachim Rheticus, a young, 26-year-old professor of mathematics and astronomy from the Lutheran university in Wittenberg made a long visit to Copernicus in 1539–1540 and with Tiedemann Giese’s encouragement that Copernicus became finally convinced of the advisability of publishing *De revolutionibus*.

Having the canonry in Varmia meant that from 1495¹² Copernicus was assured of a steady income, and without the worry of earning his keep, he was able to study abroad and then spend decades on mathematical calculations and astronomical observations, which yielded the creation of the heliocentric theory. Although he was a canon, it is highly probable that Copernicus did not have higher holy orders. Karol Górski¹³ believes that Copernicus might not have had a vocation for pastoral work and this would testify to his honest attitude towards his clerical position. Among the 39 books belonging to Copernicus that have survived (now in Uppsala), there are no theological works¹⁴. His uncle Watzenrode probably saw his nephew as his successor on the Bishop’s throne in Varmia. Everything seems to indicate that Copernicus was not favourably disposed towards these plans. There might even have been a confrontation between the uncle and nephew in 1510 and Copernicus left Lidzbark for Frombork.

Copernicus’ passion was studying in the field of astronomy and mathematics and he wanted to devote himself completely to that. Today it seems strange to us that a canon did not have to be a priest. At the time, however, it was common practice. The duties of canons were

⁵ J. Flik, J. Kruszelnicka: *Epitafium Mikołaja Kopernika w bazylice katedralnej św. Janów w Toruniu*, Toruń 1996.

⁶ Z.H. Nowak: *Czy Mikołaj Kopernik był uczniem szkoły toruńskiej i chełmińskiej*, “Zapiski Historyczne”, T. XXXVIII, v. 3, Toruń 1973, p. 9–33.

⁷ J. Wasiutynski: *The Solar Mystery*, Oslo 2003, p. 167 ff., the chapter entitled: “Callimachus, Nicholo and the Humanistic Circle of Vladislavia”.

⁸ *Album studiosorum Universitatis Cracoviensis*, T. II, A. Chmiel (ed.), Kraków 1892, p. 12 and facsimile, see J. Wasiutynski: *Kopernik, twórca nowego nieba*, Warszawa 1938, before p. 41.

⁹ Facsimile of the record of Copernicus’ doctorate in the notary’s ledger in Ferrara, see: J. Wasiutynski: *Kopernik...*, p. 160.

¹⁰ Nicolaus Copernicus: *On the Revolutions*, E. Rosen (trans.), Baltimore 1999, p. 6.

¹¹ Tiedemann Giese to Jerzy Donnert, Lubawa, 8th December 1542, see: M. Biskup: *Regesta Copernicana...*, p. 215, no. 490.

¹² M. Biskup: *Regesta Copernicana...*, p. 54, no. 23.

¹³ K. Górski: *Czy Kopernik był kapelanem?*, [in:] *Mikołaj Kopernik: studia i materiały Sesji Kopernikańskiej w KUL*, Lublin 1973, p. 201–204.

¹⁴ L. Jarzębowski: *Biblioteka Mikołaja Kopernika*, Toruń 1971, p. 66.

above all connected with the administration of capitular property, the obligation of residence, participation in the election of the bishop, daily attendance at mass in the morning and evening (canons had their own stalls in the choir) and participation in processions. Masses were celebrated by curates, who had taken higher holy orders. They also gave sermons. They were paid modestly, but lived permanently in cathedral accommodation¹⁵.

For almost two hundred years, there was an argument about Copernicus' nationality between Polish and German historians¹⁶. Polish researchers emphasised that Copernicus was born in Toruń, which had been within the borders of the Polish state for 19 years, and that, apart from studying in Italy, he spent his whole life in Poland and was a Polish citizen. He chose Cracow as the place of his studies and not a German university. Both his family and he, himself, displayed a pro-Polish stance in the conflict between Poland and the Teutonic Order. German researchers found the main argument for their theories in the lack of correspondence by Copernicus in Polish, and that alongside Latin there were some letters in German. They did not take into account, however, the fact that the language of the church administrative office in Poland at the time was Latin. Let us recall that in the year of Copernicus' death, 1543, Mikołaj Rej's *Krótką rozprawą miedzy panem, wójtem i plebanem* was published, acknowledged as the literary beginning of the Polish language. Recalling all of the arguments of both sides would take a lot of time and transferring modern concepts of nationality to Copernicus' times could prove fruitless. Aleksander Humboldt was also drawn into this discussion, and at first he was apparently inclined to recognise Copernicus' Polishness, but then took a more ambiguous stance¹⁷. Such debates were nothing unusual in the past. There were arguments over the nationality of Christopher Columbus or Erasmus of Rotterdam. Nowadays the disagreement over Copernicus' nationality has waned, and he and his works are considered in the European dimension. Today, Copernicus unites rather than divides Poles and Germans.

Let us now turn our attention to Copernicus' scientific work and his place among the greats of the Renaissance. The bibliography of works about Copernicus had

reached 8,246 titles over the period 1509–2001¹⁸, while little source material has survived to add to Copernicus' biography. Paradoxically, Copernicus only published one book during his lifetime, a translation from Greek to Latin *Theophilacti Scolastici Simocati, Epistolae morales, rurales et amatoria...* (Theophylact Simocatta, moral, pastoral and amorous epistles), Cracow 1509, at Jan Haller's press¹⁹. It is not, however, certain whether his "Opus Vitae", his "Opus Magnum" *De revolutionibus*, published in Nuremberg before 21st March 1543²⁰, reached him before his death on 24th May in the same year²¹. I do not include here the publication of part of *De revolutionibus* in Wittenberg in 1542 under the title *De lateribus et angulis triangulorum...* (On the sides and angles of triangles).

His legacy in the form of his manuscripts seems to be dogged by ill fate. Fortunately, the manuscript of *De revolutionibus* itself has survived unscathed²². This manuscript was taken from Frombork to Nuremberg by Georg Joachim Rheticus with a view to publishing it. In the 17th century, it was owned by the renowned Czech pedagogue John Amos Comenius. Today the manuscript is kept in the Jagiellonian Library. Of Copernicus' manuscripts, a few of his minor writings on astronomy, some writings on economy and administration, prescriptions and only 17 original letters written and signed in his hand have survived to this day²³. A significant proportion of his handwritten output, including correspondence, was taken from Frombork in 1618 by Johannes Broscius, astronomer and mathematician, professor at the Jagiellonian University, supporter of the heliocentric theory²⁴. Unfortunately, these manuscripts have disappeared.

Research to date has established about 80 titles by authors of ancient times and over 90 titles by mediaeval and Renaissance authors as constituting Copernicus' reading matter²⁵. There are either references to these authors in his writings, or remarks in his hand in the

¹⁸ H. Baranowski: *Bibliografia Kopernikowska*, T. I–III, Toruń 1958–2003.

¹⁹ M. Kopernik: *Dzieła pomniejsze*, [in:] M. Kopernik: *Dzieła wszystkie*, T. III, Warszawa 2007, p. 203–239.

²⁰ M. Biskup: *Regesta Copernicana...*, p. 216, no. 493.

²¹ *Ibidem*, p. 218, no. 498.

²² Manuscript of Nicolas Copernicus' work *De revolutionibus*. Facsimile, [in:] M. Kopernik: *Dzieła wszystkie*, T. I, Warszawa 1972 and M. Kopernik: *O obrotach*, [in:] M. Kopernik: *Dzieła wszystkie*, T. II, Warszawa 1976.

²³ These manuscripts together with translations into Polish were published in: M. Kopernik: *Dzieła pomniejsze*, [in:] M. Kopernik: *Dzieła wszystkie*, T. III, Warszawa 2007.

²⁴ J. Sikorski: *Prywatne życie Mikołaja Kopernika*, Olsztyn 1973, p. 271.

²⁵ B. Leśnodorski: *Kopernik-humanista...*, p. 21.

¹⁵ *Idem*: Mikołaj Kopernik. *Środowisko społeczne i samotność...*, p. 165–168.

¹⁶ J. Małlek: *Nikolaus Kopernikus*, München 1992, p. 34–38; *idem*: *W kwestii posługiwania się Mikołaja Kopernika językiem polskim*, [in:] *Nad Bałtykiem, Pregolą i Łyną XVI–XX wiek*, Olsztyn 2006, p. 96–106.

¹⁷ K. Zielnica: *Polonica bei Alexander von Humboldt*, Berlin 2004, p. 270–282.

margins of books. According to research by Leonard Jarzębowksi²⁶, his own library contained 39 volumes, including 20 books on astronomy, 9 on medicine, 4 on mathematics, 2 on geography, 2 on physics and 2 on philology and philosophy. The latest discoveries enlarge Copernicus' library by a few titles²⁷, but do not change the proportions given above.

Copernicus' life came at the time of the Renaissance and the age of humanism, one of whose leading characteristics was the return to the writings of the ancients, about whom the Middle Ages had almost forgotten. Before the Renaissance, the greatest treasure of human thought was precisely the learning of ancient times. The fact that Copernicus used a signet seal with an image of Apollo clearly shows his connections with *studia humanitatis*. Similarly, his fascination with antiquity is proved by the fact that he learned Greek. It is true that the quality of his translation of *Simocatta's Epistles* from Greek to Latin is rather critically viewed by Classicists, it is nevertheless further proof how much humanism even in this narrow sense, in other words a return to antiquity, was dear to him. A characteristic trait of Copernicus, as of other eminent figures of the Renaissance, was a broad-ranging set of interests. Like Leonardo da Vinci, he made a long-lasting contribution to various sciences, not only astronomy, but also mathematics and physics. In economics, he designed a project for monetary reform. Although his project for monetary union between the Polish Crown and Royal Prussia was not accepted, perhaps because of its radical nature, Copernicus-Gresham's law, whereby bad money drives out good, entered the canon of economic laws²⁸. He was also a geographer-cartographer, being undoubtedly of assistance to Bernard Wapowski in his cartographic work and especially to Georg Joachim Rheticus and Heinrich Zell in their creation of a map of Prussia²⁹. He was a lawyer by training, and even an archivist. He drew up an inventory of the documents in the castle treasury of the Varmia chapter in Olsztyn (Allenstein), which in the 1970s was discovered and published by Bishop Jan Obłak³⁰. He was also a doctor by training, having studied in Padua. Only a few

knew of his greatest passion — astronomy. During his lifetime, he was known above all for his medical expertise. An ordinary person who met Copernicus would not have realised that he was speaking to one of the greatest scholars on a global scale. Johannes Kepler believed that even Copernicus himself was not aware of the wealth of his mind³¹.

The fundamental question regarding Copernicus' work, and thus his heliocentric theory, is what determined its discovery. The answer was given by Immanuel Kant in the preface to *The Critique of Pure Reason*. Writing about his innovative concept of philosophy, he compared it to Copernicus' science: "Failing of satisfactory progress in explaining the movements of the heavenly bodies on the supposition that they all revolved round the spectator, he tried whether he might not have better success if he made the spectator to revolve and the stars to remain at rest"³². Copernicus himself also precisely explained the motives that led him to search for a new theory of the structure of the universe. Obviously the basis for his studying astronomy at all was his fascination for the stars. He wrote: "Among the many various literary and artistic pursuits which invigorate men's minds, the strongest affection and utmost zeal should, I think, promote the studies concerned with the most beautiful objects, most deserving to be known. This is the nature of the discipline which deals with the universe's divine revolutions, the asters' motions, sizes, distances, risings and settings, as well as the causes of the other phenomena in the sky, and which, in short, explains its whole appearance. What indeed is more beautiful than heaven, which of course contains all things of beauty? This is proclaimed by its very names [in Latin], *caelum* and *mundus*, the latter denoting purity and ornament, the former a carving. On account of heaven's transcendent perfection most philosophers have called it a visible god"³³. And on the reasons for undertaking a revision of the existing theory of the structure of the universe he wrote in a dedicatory letter to Pope Paul III: "I was impelled to consider a different system of deducing the motions of the universe's spheres for no other reason than the realization that astronomers do not agree among themselves in their investigations of this subject. For, in the first place, they are so uncertain about the motion of the sun and moon that they cannot establish and observe a constant length even for the tropical year. Secondly, in determining the motions not only of these bodies but

²⁶ L. Jarzębowksi: *Biblioteka Mikołaja Kopernika...*, p. 66.

²⁷ P. Czartoryski: *The Library of Copernicus, Science and History*, "Studia Copernicana", T. XVI, Wrocław 1978, p. 355–396.

²⁸ S. Cackowski: *Mikołaj Kopernik jako ekonomista*, Toruń 1970, p. 46.

²⁹ K.H. Burmeister: *Georg Joachim Rheticus as a Geographer and his Contribution to the First Map of Prussia*, *Imago Mundi*, XXIII, 1969, p. 75–76.

³⁰ Bp J. Obłak: *Mikołaja Kopernika inwentarz dokumentów w skarbcu na zamku w Olsztynie Roku Państkiego 1520 oraz inne zapisy archiwalne*, "Studia Warmińskie", T. IX (1972), p. 7–85.

³¹ Bogusław Leśnodorski: *Kopernik-humanista...*, p. 23.

³² I. Kant: *Critique of Pure Reason*, N. Kemp Smith (trans.), London 1929, p. 22.

³³ Nicolas Copernicus: *On the Revolutions...*, p. 8.

also of the other five planets, they do not use the same principles, assumptions, and explanations of the apparent revolutions and motions... Nor could they elicit or deduce from the eccentrics the principal consideration, that is, the structure of the universe and the true symmetry of its parts”³⁴.

Being aware of the imperfection of the existing theory of the structure of the universe and after reading works by several ancient thinkers who entertained the idea of the Earth moving, Copernicus wrote: “Therefore, having obtained the opportunity from these sources, I too began to consider the mobility of the earth”³⁵. Copernicus realised that the view that “the earth remains at rest in the middle of the heaven as its centre”³⁶ was so entrenched that to question it would be seen as preposterous. That is why he delayed in announcing his heliocentric theory for 40 years. He wrote: “For I am not so enamored of my own opinions that I disregard what others may think of them. I am aware that a philosopher’s ideas are not subject to the judgment of ordinary persons, because it is his endeavor to seek the truth in all things, to the extent permitted to human reason by God. Yet I hold that completely erroneous views should be shunned”³⁷. He shared

Aristotle’s opinion that: “It is just that we should be grateful, not only to those with whose views we may agree, but also to those who have expressed more superficial views; for these also contributed something, by developing before us the powers of thought”³⁸. Finally, Copernicus’ opinion that the profession of astronomer is “worthy of a free man” should be particularly highlighted.

From all of these statements by Copernicus, there emerges the figure of a scholar for whom the freedom to undertake research and the search for the truth are the highest values. Invalidating Ptolemy’s geocentric theory and replacing it with the Copernican heliocentric theory emboldened scholars in many disciplines to question existing findings and to form new research questions. Copernicus’ work *De revolutionibus* initiated a new era in the history of science called the “Copernican Revolution”. The confirmation of the rightness of Copernicus’ theories had to wait until Galileo’s observations of the planets in 1609 thanks to the invention of the telescope, and the observations and the formulation of the three rules of planetary motion around the Sun by Johannes Kepler in 1604, 1609 and 1618³⁹.

³⁴ *Ibidem*, p. 3.

³⁵ *Ibidem*, p. 5.

³⁶ *Ibidem*, p. 1.

³⁷ *Ibidem*, p. 1.

³⁸ B. Leśnodorski: *Kopernik-humanista...*, p. 9.

³⁹ T. Przypkowski: *Dzieje myśli Kopernikowskiej*, Warszawa 1972, p. 141 ff. and p. 147–149.