

Summary of professional accomplishments

1. Name, surname: Agnieszka Maciąg-Fiedler

2. Degrees:

2005 – PhD, Jagiellonian University, Faculty of Philology,
thesis entitled: *Fasti morum, fasti hominum. Ovid's "Fasti" Owidiusza - Roman calendar, poem, panegyric*
Supervisor: prof. dr hab. Józef Korpanty

1999 – MA, Jagiellonian University, Institute of Classical Philology,
thesis entitled: *Elements of the rhetorical composition in the structure of Ovid's "Heroid"*
Supervisor: prof. dr hab. Jerzy Styka

3. Employment:

- since 1. 01. 2005 – The Institute of the Polish Language at the Polish Academy of Sciences
- 1. 02. 2011 – 31. 12. 2014 – College of Philosophy and Theology, The Polish Province of the Dominicans, Crakow, Latin teacher
- 1. 09. 2000 – 31. 08. 2005 - Bartłomiej Nowodworski Secondary School, Cracow, Latin and Greek teacher

4. Achievement:

a) monograph entitled:

Astrorum divina ars et scientia. Astronomical Terminology in Latin writings of Polish authors of the Middle Ages

b) author: Agnieszka Maciąg-Fiedler

published by The Institute of the Polish Language at the Polish Academy of Sciences,
Crakow, 2016

Reviewers: prof. dr hab. Henryk Podbielski,
dr hab. Marek Hermann

c) discussing the scientific goal of the dissertation and the achieved results

The aim of the dissertation is to present and characterize the Latin astronomical terminology used by the Polish writers of the Middle Ages. This subject has not been yet elaborated, although many researchers are interested in astronomy of Middle Ages in Poland. There are mainly historical studies, which do not analyze the astronomical terms and phrases.

The vocabulary in question originates from three types of sources. The first group includes scientific astronomical and cosmological treatises, like e.g. *Commentariolum super Theoricis novis planetarum Georgii Purbachii* by Wojciech of Brudzewo or *Quaestiones super octo libros „Physicorum” Aristotelis* by Andrzej of Kokorzyn. The second group consists of scientific treatises, mainly philosophical, like those by Jan of Głogów or Michał Falkener or Witelo. The third group comprises unscientific sources, but relevant to the topic due to the person and work, like e.g. annals of Jan Długosz and Wincenty Kadłubek, or sources showing particular astronomical interest of the writer, visible in e.g. sermons of Mikołaj Pszczołka. All kinds of sources come from the 11th to the beginning of the 16th century, and relate to Pre-Copernican Astronomy. I considered only published writings and antique books.

The work consists of three chapters.

The first chapter presents briefly the history of European astronomy from ancient times to the end of the 15th century. The knowledge of the history of the ancient astronomy allows us to understand the development of the medieval astronomy, which was based on the two most important Greek systems: Aristotle's and Ptolemy's. Aristotle of Stagira (384-322 BC), analyzing the ideas of his predecessors, created his own system, which, as it turned out, has survived centuries. Aristotle's homocentric spheres, however, were not able to explain the observed irregularities in the motions of the planets. Hence, in the hellenistic period, in Alexandria, two Greek astronomers and mathematicians, Apollonius of Perga and Hipparchus of Nicaea, began to work on a geocentric world based on eccentric circles and epicycles. Ptolemy (ca. 100-168 AD) continued their work, adding his own observations and discoveries, building a coherent world theory that survived more than fourteen centuries, until the Copernican Revolution. *The Almagest* is a mature and refined work, representing undoubtedly a scientific achievement of its time, so it is no surprise, that it had a big impact on later astronomy, both in the Islamic and in the Christian world.

After the fall of the Roman Empire, when the Greek language was not taught anymore in the Western Europe, the astronomy studies were limited to read a couple of works that the early Middle Ages received from antiquity. Among the most important are the works of Cicero, Lucretius, Pliny the Elder, Manilius. There were two works, written in the 5th, that played later a leading role in education: Macrobius' *Commentarii in Ciceronis somnium Scipionis* and Martianus Capellas's *Liber de nuptiis Philologiae et Mercurii*. These books communicated some Greek ideas about the construction of the world, gave the basic concepts of astronomy, but were not astronomical treatises. Scientific treatises, e.g. Aristotle's, began to be copied and translated in 6th. Isidore of Seville (5-6th), contributed to the development of the astronomical science, evolving astronomical and cosmological issues in his monumental work: *Etymologiarum libri XX*. Bede the Venerable's (ca. 672-735 AD) *De temporum ratione* and *De temporibus* initiated a vast literature focusing on the *computus*, i.e. calculations related to the calendar. Biblical studies, on the other hand, have resulted in many works, that were explaining in a scientific way the creation of the world described in *Genesis*.

Greek knowledge was assimilated and developed by the Arabs. They adopted the geocentric theory of Ptolemy and improved it by observation. In the 11th and 12th century, astronomy was

developed in Spain. There, inter alia, Toledan tables containing the positions of individual planets and description of instruments, and methods of observation were worked out. These tables have become the model for later tables composed in Europe. The translation of the most important astronomical works was another important step. Around 1175, Gerard of Cremona translated Ptolemy's *Almagest* and, a few years later, Aristotle's various works, what was, undoubtedly, a great achievement that time. It is said that Gerard translated over 70 astronomical works. In the 13th century, the first universities were established, and programs of astronomical studies were created. Astronomy, as one of the *quadrivium*, was obligatory during the studies. Criticism of Aristotle's system appeared at the beginning of the 14th century. Two schools were officially against: Oxford, headed by Thomas Bradwardine (with known Wilhelm Ockham) and Paris with Jean Buridan. They have promoted more modern image of the world, with focusing on physics. Buridan wrote comments on almost all of Aristotle's works. There were many publications in the 14th and 15th centuries, e.g. astrological prognosis were particularly appreciated. Another challenge was the necessity of the reform of the Julian calendar.

The medieval translators, conveying the Greek ideas and the achievements of the Arabs, could to a certain extent use the terminology of the classical Latin. However, the scientific vocabulary passed by the Roman civilization was relatively poor and uneven. It was necessary to forge this vocabulary in the Middle Ages. In the end, the astronomical and astrological terminology has not been specified and unified over the centuries. There were many reasons, both educational as well as mental or religious. The vocabulary of individual writers varies depending on the historical period, the location, and the cultural and educational background of the author. Sometimes, there is a problem of identifying a real meaning of certain words or expressions related to phenomena in the sky.

The second chapter is devoted to the development of astronomical sciences in Poland. It begins with elements of astronomy, which were taught in the cathedral schools in the early Middle Ages, describes first Silesian astronomers and ends with the heyday of astronomical sciences at the University of Krakow. I try to show the different stages of development of the Polish school of astronomy and the most important scholars and their works.

Mieczysław Markowski (*The Periods of the development of astronomy in Poland in the Pre-Copernican times*, "Studia Warmińskie" 9, 1972, pp. 339-378) has divided the history of the Cracovian astronomy into five periods of development. In the first period the European scientific astronomy begins to enter into Polish folk astronomy. In the second period Polish researchers, like e.g. Witelo, Franco of Poland or Konrad of Henryków, participate actively in the European astronomical movement. In the third period the Cracovian astronomy is formed on the basis on the Parisian 14th century philosophy of nature. The most important is the establishing of the faculty of mathematics and astronomy. In the fourth period Cracow's astronomy was developing in cooperation with Italian and Viennese schools. Marcin Król and his disciples are at the forefront. The last period means the flourishing and international renown of the Cracow school.

The first astronomical observations, of the eclipses of the sun or the appearance of comets, have been conducted since the 13th century. In the 14th century, the computus began to be developed. *Computus manualis metricus*, written in the middle of the 14th century, by an unknown Jan of Poland, was widespread in Europe and widely commented. Tables of new and full moon, and positions of the Sun and Moon in the sky were also prepared. In 1379, the latitude of Cracow was set. However, the true development of sciences, including astronomy, came with the founding of the Cracow Academy in 1364. Establishing in 1405, by Jan

Stobner, the faculties of mathematics and astronomy, was decisive for the development of Polish astronomy, since then it was possible to specialize in the subject. The faculties were dedicated to all *quadrivium* sciences, with particular emphasis on astronomy. University's statutes, that guaranteed a certain number of hours in the program of studies, decided about the position of astronomy. After the re-establishment of the Cracow Academy in the years 1390-1400, Buridan's works were mostly used. The first Polish treatises, like *Quaestiones disputatae super octo Physicorum libros Aristotelis* of Andrzej Wężyk, *Puncta super octo libros Physicorum Aristotelis* of Andrzej of Kokorzyn or *Quaestiones super octo libros Physicorum Aristotelis* Benedykt Hesse, were based on them.

The Polish commentators of Aristotle's works thought, that the Earth was motionless, but only in that sense that it did not move with the circular motion along with the whole sky. But as the Earth underwent physical changes, it moved, in the broader sense of the word. Some commentators, e.g. Jan of Słupcza expressed the opinion that the Earth's motion was possible, and the motion of the heavens did not necessarily indicate the motionlessness of the Earth. The author of the manual *Aristotelis Commentum super quattuor libros De caelo et mundo Aristotelis*, written in Cracow before 1459, gave arguments for the movement of the Earth. God, creating the world, could make every celestial sphere move. Heaven did not need to move, but the Earth could need, as it was affected by heaven. Hence, it was more rational that the Earth was moving. Besides, the Earth is spherical, and bodies of this type are suitable for a spherical motion.

In the second half of the 15th century, the influence of the Buridan's theory lost its predominant role. Some scholars preferred a traditional model of commentaries, others attempted to connect tradition with modern ways (*via moderna*). The tendency to combine ideas (of Buridan's theory of *impetus* and Aristotle's system) is visible in the official textbook, that was used for more than half a century in the Cracow Faculty of Arts, i.e. *Exercitium super octo libros „Physicorum” Aristotelis*. Theories looking for a compromise are also found in later authors, e.g. Jan of Głogów and Michał Falkener of Wrocław.

The aforementioned Andrzej of Kokorzyn, Jan of Słupcza and Benedykt Hesse belong to the most outstanding researchers from the beginning of the 15th century. It is worth mentioning about Wawrzyniec of Racibórz, who explored the astronomical issues and used instruments already around 1430. This is the earliest information about the having and use of instruments while teaching astronomy in Cracow.

Marcin Król of Żurawica (ca. 1422-1453) is considered to be the true father of the Cracow astronomy school. For the first time he applied trigonometry for astronomical calculations. He used different astronomical instruments, indicated in his works how to build them. Martin strove to widen the astronomy studies to include not only theoretical but also practical astronomy, i.e. astrology. Around 1452, just before his death, he founded a new Faculty of Astrology. Marcin's work was continued by his students, among others: Andrzej Grzymała, Wojciech of Opatów, Piotr Gaszowiec.

The scientific activity of Jan of Głogów and Wojciech of Brudzewo represents a period of the flourishing of Cracow astronomy school. Jan Schelling of Głogów (ca. 1445-1507), well-educated and hardworking, since 1466, when he obtained the MA, worked nearly 40 years as a professor of the Faculty of Arts. His lectures on compulsory subjects resulted in diverse and abundant writing. Jan dealt with almost all areas of philosophy, as well as *artes liberales*, leaving many philosophical, logical, grammatical, geographic and, of course, astronomical and astrological treatises. His teaching was eclectic and syncretic, with a visible tendency to combine the elements of *via antiqua* and *via moderna*. He was also interested in observation using the astronomical instruments of his time. Wojciech of Brudzewo, a student and later colleague of Jan of Głogów, was one of the most influential astronomers at Cracow

University at the time when Copernicus began his studies. His detailed commentary: *Commentariolum super Theoricis novas planetarum Georgii Purbachii* fast became an official textbook for a theoretical astronomy. Wojciech referred primarily to the work of Ptolemy and Aristotle, but also quoted views of many Arab authors.

Besides the above-mentioned professors teaching astronomy and astrology at the Faculty of Arts in the 15th century, more than 40 names can be listed. This proves the great development of these sciences that were not just elite studies. At the end of the 15th century the Jagiellonian University experienced the hayday and was a respected scientific center in Europe.

I agree with Markowski's view that the Copernican Revolution was not made on the basis of new discoveries or additional experiments, but it was the result of transformations of thinking of the scholars of the time. The high level of teaching, a favorable atmosphere for the development of astronomical and mathematical sciences, the ability to use the instruments provided an excellent impulse for further research. A dispute between traditional and modern philosophical directions, discussions on new theories and the creative criticism were also undoubtedly stimulating.

The third chapter focuses on the astronomical terminology contained in both scientific treatises and other texts.

It is impossible to present the medieval astronomical terminology without specifying the criterion that the word should meet in order to be considered a technical term. Jadwiga Waniakowa (*Polish Scientific Astronomical Terminology*, Crakow 2003, p. 18) discussing the current state of research on the term, describes an astronomical term as each "lexical unit, which refers to astronomy and means, in a precise and unambiguous sense, concepts, objects, phenomena and instruments appropriate for this knowledge domain". Following her definition, we encounter difficulties arising from the specificity of the epoch. Dealing with the Middle Ages, when the astronomical vocabulary was creating (in a long, fully unfinished process), it is difficult to talk about accuracy and unambiguity. On the contrary, it often seems that just ambiguity and synonymism is a characteristic feature. The same problem is with a knowledge domain. The connection with other sciences, first of all with philosophy, optics, and *computus*, but also with medicine, was so strong that in many cases it was impossible to classify a given term into only one science. In the case of the astronomical vocabulary, there is also the fact that some of the terms are part of the basic vocabulary (e.g. star, sky), so the word itself has two meanings, depending on usage and context. When choosing a vocabulary, I followed the rules that the word was closely related to astronomy and served to express and convey the contemporary knowledge.

I divided the astronomical vocabulary into 12 groups:

1. Astronomy and astronomers.
2. Proper names of planets and stars (or constellations).
3. Sun, Moon, Earth.
4. Star, planet, comet.
5. Other objects in the sky.
6. Universe and its construction.
7. Terminology related to the Ptolemaic system.
8. Measures.
9. Phenomena.
10. Movement.
11. Astronomical instruments and their parts.
12. Vocabulary of *computus*.

Astronomical studies at the University of Crakow in the 15th and early 16th century were of a very high standard; prominent scholars of those times, such as Jan of Głogów or Wojciech of Brudzewo, were aware of the specificity of their knowledge domain and were able to define it. However, a strict and unequivocal definition of astronomy was not elaborated. Medieval scientists dealing with astronomy and astrology used Greek terms: *astronomia*, *astrologia*, as

well as descriptive: *ars, disciplina* or *scientia astrorum* – "art, science" or "knowledge of stars", *scientia caelorum superiorum* – "knowledge of the heavens ". The names *astronomus* and *astrologus* were used interchangeably, both words could mean both astrologer and astronomer, a term: *observatores astrorum* – "those who look at the stars", is also found.

Regarding the proper names of planets and stars or constellations, names taken from the ancient Latin (Mercurius, Mars, etc.) were mostly used, with little exceptions, such as the planet Venus, which, visible before sunrise, was called: *stella matutina* – "the morning star", visible after sunset: *stella nocturna, Vespera, Vesperus* – "star of the evening", and *Lucifer* – "bearing the light".

The terms belonging to the basic vocabulary, such as the sun, moon, earth or star, are used in other contexts in scientific and unscientific writings. The Sun, the Moon and the Earth were mostly called with words originating from the classical Latin: *sol, luna, terra*. In scientific texts (although not strictly astronomical), chronicles and documents descriptive terms are found (also derived from the ancient Latin): e.g. *globus Solis* or *globus solaris, globus lunaris, globus terrarum* – "solar, lunar, earthly globe". The terms taken from the *Vulgate* were also used to describe the Sun and the Moon: *luminare maius* – "celestial body bigger", i.e. Sun and *luminare minus* – "smaller", i.e. Moon. Many other terms are related to the word *luna*, describing the phases of the moon.

The four terms originating the classical Latin were used by Polish authors to call a star: *stella, sidus, astrum, and signum*. The most common word is *stella*, the lesser *sidus*, and *astrum* and *signum* occur in certain contexts. *Stella* connected with some adjectives or nouns could mean any celestial body, both a star and a planet or a comet. A star was most frequently called *fixa* – "a fixed star", a term deriving from the classical Latin. The classic term: *stella erratica* – "a moving star, wandering in the sky", meant, as in the ancient times, a planet. *Stella* combined with the noun: *cometes* – "comet" or adjective *crinita* – "hairy, with a plait", as in the classical Latin, meant a comet. The semantic field of the word *sidus* is closest to the word *stella*. The classic combination of *sidus crinitum* and medieval *accensum* – "lit" and *ignitum* – "blazing" means a comet. *Sidus* was often associated with a name of a constellation, e.g. *sub sidere Cancri* – "under the Cancer Star". The word: *astrum* (as in the classical Latin) occurs mainly in plural, indicating groups of celestial bodies (stars, planets, comets, etc.). Unlike *stella*, *astrum* was not combined with adjectives like *fixum* or *crinitum*. It was often used in the strictly astrological sense, especially with adjectives: *felix, secundus* – "happy, successful" or *comminans* – "menacing, unlucky". The word: *signum* is primarily used in the meaning of the sign of the zodiac, in medieval collocation: *orbis signorum* – "circle of signs". *Signum* itself also usually means a sign of the zodiac, as in the classical Latin, often with a name of the sign, e.g. *in signo Cancri* – "in the sign of Cancer."

The planet was called: *planeta*, a word originating from the Greek. Polish authors in their treatises often defined this term, translating it using synonyms derived from Latin: *stella errans* or *erratica*. In the scientific writings the word: *planeta* is accompanied by a numeral: *septem* – "seven" (Mercury, Venus, Mars, Jupiter and Saturn, the Sun and the Moon were considered to be planets in the Middle Ages). Aside from the word of the masculine gender: *cometes*, derived from the Greek, forms of the feminine gender are found in the Middle Ages: *cometa, comata*, which we also encounter in Polish writings. The phenomenon of comets has always touched everyone, hence these term is present in various texts, astrological treatises and chronicles, e.g. Długosz often discussed comets.

In addition to the basic vocabulary describing of what can be seen in the sky, there are the technical terms, related to the research and debates, that we find in scientific, astronomical and philosophical treatises. The celestial equator was rarely called: *circulus aequinoctialis*, as in the classical Latin, the nominalised form of the adjective: *aequinoctialis*, or the term:

aequator, formed in the Middle Ages, was used more frequently. The post-classical Greek word: *galaxias*, means Milky Way, occurs in writings of Polish authors in the form of *galaxia*, of the first declension.

The universe was called: *mundus* and *universum*, the words from the ancient Latin. Astronomers and philosophers also used the classical Latin word *universitas*, but definitely less often. In the writings of Głogowczyk and Falkener we find the word: *macrocosmos*, taken from Greek. This term was not used in antiquity, and it was extremely rare in the Middle Ages. Heaven and the firmament were mainly described by the classical Latin word: *caelum*. The post-classical word: *firmamentum* spread in the Middle Ages thanks to the *Vulgate* is found in the texts of Polish writers much less often. While the classical nominalised adjective: *caelestia* means mainly the celestial spheres, in the philosophical treatises of Andrzej of Kokorzyna or Hesse. According to the medieval image of the world, the sky consisted of the seven spheres, where the planets orbited, and the eighth, the sphere of fixed stars. The word: *caelum*, with a accompanying numeral, often means a single planetary sphere. The sphere of fixed stars was mostly named: *caelum stellatum*, whereas, *nonum caelum*, also called *cristallinum* or *aqueum*, means the ninth sphere, containing the water – remnants of the deluge. *Caelum empyreum* was identified with the Christian sky, the seat of God and angels. These spheres carrying planets and stars were commonly named by two words, derived from the classical Latin: *sphaera* and *orbis*. The term: *sphaera* rarely occurs alone, usually is accompanied by a numeral, a name of the planet, or adjectives: *caelestis* or *mobilis*. On the contrary, the word: *orbis* is rarely connected with a numeral, but combined with adjectives as *mobilis*, *caelestis*, and *concentricus*.

In the geocentric system, the Sun passed through 12 constellations in its annual motion; the basic term in the Middle Ages for this part of heaven was *zodiacus*. This term occurs both in astronomical and philosophical treatises, and also in unscientific texts, though in the meaning of heaven. Synonyms of *zodiacus* were *circulus signorum* – "circle of signs", and *locus obliquatus* – "the inclined place" or *obliquus circulus* – "the inclined circle". In the works of Marcin of Żurawica we find the term: *signifer*, very rarely used in the Middle Ages, (common in the classical Latin).

The term: *ecliptica*, formed in the Middle Ages from the Latin adjective *eclipticus* – "undergoing the eclipse", meaning the apparent annual path of the Sun on the celestial sphere, occurs only in astronomical texts. Two terms are connected with the ecliptic, that refer to the points in which the orbit of the Moon intersects the ecliptic: *ascendens nodus* – "the so-called northern node", named also *draco* or *caput draconis* (literally "the snake, snake head") and *descendens nodus* – "southern node", otherwise *cauda draconis* ("the snake tail"). In Polish scientific writings the term: *nodus* is usually used in plural, without additional terms *ascendens* or *descendens*, there are also the synonyms *caput* and *cauda Draconis*. Wojciech of Brudzewo added the third point: *venter Draconis* – "the snake's belly", denoting the northernmost point of the planet's deferent.

The celestial spheres rotated on an axis – *axis*, ended with two poles – *polus*. Both classical Latin words have expanded their meaning in the Middle Ages. In the astronomical and philosophical texts of Polish authors, not only the world had the poles, but also the zodiac as well as deferents and individual spheres. Similarly, the term: *axis* was used for other circles in the sky, such as the zodiac, eccentric, or deferent. In unscientific texts *polus* means "sky, firmament". In medieval astronomical writings, the classical term: *horizon* was maintained, meaning the circle formed by the intersection of the celestial sphere into two parts. The highest and lowest point of the horizon was called with the Arabic terms, that were taken to Latin in the 12th century – *zenith* and *nadir*. The Arabic term was translated by Plato of Tivoli as *zenith capitis* and *zenith capitum*, these collocation occurs often also in Polish scientific

works. The term: *nadir* is found very rarely in Polish writings, Wojciech of Brudzewo uses an expression *nadir Solis*, speaking of two opposing points of a circle's diameter.

The vocabulary related to the Ptolemaic system, i.e. *epicyclus*, *deferens*, *eccentricus*, *aequans* occur in astronomical treatises, e.g. of Wojciech of Brudzewo and Stanisław of Zawada.

The typical measures of the medieval astronomy occur in the earliest Polish scientific writings. The basic measures such as degree – *gradus*, and minute – *minuta*, were in common use, more detailed: *quinta* and *sexta* are found in the treatise of Wojciech of Brudzewo. The classical Latin terms: *longitudo*, *latitudo*, *altitudo*, denoting the length, width, and height, have narrowed their meaning in the medieval astronomy to the ecliptic longitude and latitude, and the astronomical altitude. The term: *aux* is really interesting, it derived from the Arabic *auge*, meaning apogee. Initially, the word: *auge* was not declined, then its Latin form: *aux*, declined according to the third declension, become dominant. In the treatises of Polish authors forms already declined are found. This term was quite common, e.g. Wojciech of Brudzewo gave two precise definitions. The parallax, on the other hand, was expressed in the Middle Ages through the combination of the words: *diversitas* – "difference " and *aspectus* – "view". The celestial phenomena such as eclipses, conjunctions, equinoxes and solstices were arousing not only astronomers' and philosophers' interest. Hence the terms: *eclipsis*, *coniunctio*, *aequinoctium* and *solstitium* are present in all types of texts. The term: *eclipsis* was mostly accompanied by the name of Sun or Moon in the genitive, or adjectives: *solaris* and *lunaris*. In the Middle Ages, other parts of speech were created. In the treatises of Polish authors the adjective: *eclipsabilis* – "undergoing eclipsalis" and the verb: *eclipsari* – "to eclipse", occur. The term: *aequinoctium* is often combined with adjectives: *vernale* – "spring " and *autumnale* – "autumnal"; while *solstitium* with adjectives: *aestivalis* – "summer's" and *hiemalis* – "brumal".

The movement of celestial bodies was mainly named: *motus*, the word derived from the classical Latin, in astronomical treatises *motus* was combined with certain adjectives, which precised the meaning. There was often written about the "middle" movement – *medius*, calculated on the basis of the partial movements of the body. The term: *impetus*, related to the Buridan's theory, famous in the Middle Ages, occur in philosophical writings. In Polish comments on Aristotle's *Physics*, there is the term: *antiperistasis*, which explained the motion from the Aristotle's point of view.

The names of astronomical instruments occur primarily in astronomical treatises of Polish authors, usually in the context of their use or construction. The astrolabe was known, as well as the armillary sphere – *armilla*, and quadrant – *quadrans*, Marcin Król of Żurawica mentioned other, less common, e.g. *saphea*, an astrolabe-like instrument. Franco in his famous work first described the torquetum – *turketus*, the names of the parts of the instrument generally derived from the ancient Latin, but they have other specific meanings. *Horizon*, for example, is a plate that represents the equator, while *basilica*, the diminutive of the Greek word: *basis* – "the base", denotes a plate attached to the first part of the instrument. Franco also used words taken from the Arabic language, such as *allidada* – "the alidade" and *almuri* - "the pointer".

The vocabulary related to the *computus* occur in Polish writings since 12th century. Various terms, such as *cyclus decennovennalis*, literally translated as "the nineteen-year cycle", which was the basis of calculations, *lunatio* meaning a lunar month, or the epact – *epacta*, were used both in astronomical and astrological treatises (very often with an exact definition), as well as in documents or letters. It reflects not only its prestige but also the universality of the computistic science in Poland.

The astronomical vocabulary of the Polish writers of the Middle Ages reflects the state of the contemporary knowledge, education level and personal interests. Most of the technical terminology derives from the treatises by Wojciech of Brudzewo and Jan of Głogów, which only confirms the peak of astronomical sciences at the end of the 15th century at the University of Krakow. The Wojciech's treatise is not a mere commentary on Peurbach's work, as a title would mistakenly suggest, but an attempt to account for the contemporary astronomy in a modern fashion and to resolve the remaining problems. Wojciech's command of the highly technical vocabulary is flawless, he sometimes also develops it by providing new interpretations of particular issues. The Glogowczyk's literary output is impressive, unlike Wojciech, who focused on the mathematical astronomy, he preferred the Aristotle's cosmology and astrology. It is not surprising that the earliest researchers, like Witelon or Mikołaj of Poland who lived at the turn of the 13th and 14th century and were educated and worked in foreign centers, were acquainted with astronomical technical vocabulary. Meanwhile, commentaries on Aristotle from the 15th and early 16th century, written e.g. by Andrzej of Kokorzyn or Benedykt Hesse, include structured cosmological vocabulary. In many ways, the *Commentary on the Book of Genesis* of Stanisław of Zawada from 15th is interesting, which, in addition to the vocabulary taken from the *Vulgate*, contains many cosmological terms and related to the Ptolemaic theory. Chronicles and literary works, apart from the terms belonging to the basic vocabulary, used in a literal and figurative sense, present many astrological terms. Długosz e.g. described the appearance of comets and numerous misfortunes caused by them.

The monograph ends with a list of sources, bibliography and indexes: index of persons, of Polish and Latin astronomical terms. Indexes facilitate searching among the large number of specialized terms that are presented thematically in the work.

5. Discussing other scientific achievements.

My professional accomplishment consist of 23 publications, including the co-authorship of 8 fascicles of the *Dictionary of Medieval Latin in Poland* and 4 translations of Latin works. At that time I did papers at 7 national and 4 international conferences, I was one of the organizers of the national conference and international workshop. I participated in 3 Polish research projects, in the International Program of Cooperation in Science and Technology, and in the consortium *Digital Repository of Scientific Institutes* as a part of the Operational Program Innovative Economy. In 2016, I started working on another research project.

A. *Dictionary of Medieval Latin in Poland* (edited by dr hab. Michał Rzepiela, prof. IJP PAN)

The main task of the Medieval Latin Section of the Institute of the Polish Language at the Polish Academy of Sciences, where I work since 2005, is the preparation of the *Dictionary of Medieval Latin in Poland*. The aim of this scientific dictionary, based on its own sources (excerpts from Latin texts, written in the Middle Ages in Poland), is to provide detailed material illustrating all the linguistic phenomena specific to medieval Latin used in the Middle Ages (from the 10th to the 16th century) on the territory of then Polish lands. Working on lemmas, preceded by scientific analysis of sources, verifying other European lexicons of

medieval Latin and studying the literature of the subject, broadens my skills in the field of the Latin lexicography and influenced the choice of the scientific path.

I am a co-author of 8 fascicles: from volume VIII, fascicle 3 (65), published in 2005, to fascicle 10 (72), in 2014 (fascicle 11 is preparing). Each fascicle, considered as a monograph, counts 12.5 publisher's sheets, my job was to prepare about 2 publisher's sheets.

Dictionary of Medieval Latin in Poland, as a one of over a dozen similar dictionaries being edited in Europe, is under the auspices of the L'Union Académique Internationale in Brussels. Frequent meetings, panel discussions and international conferences are naturally included in this project. Since the beginning of my work I have been attending conferences, gathering most lexicographers working on European dictionaries, in Prague, in the conference entitled: *Wörterbuch als Inspiration* (5-7.12.2006), in Munich: *Fachsprache(n) im mittelalterlichen Latein*, (12-15.09.2012), and in Cracow: *Dictionaries of Medieval Latin*, (6-7.10.2016).

I participated also in congresses of medievalists: in the 2nd Congress of Polish Medievalists (Lublin 19-21.09.2005), 3rd Congress of Polish Medievalists (Łódź 22-24.09.2008), with a paper: *Latin songs and love letters in Poland in the 15th century*, and in the 5th Congress of Polish Medievalists (Rzeszów 20-24.09.2015), with a poster: *eFontes. An Electronic Corpus of Medieval Latin in Poland*, prepared together with Krzysztof Nowak, Aleksandra Kulbicka, Anna Ledzińska and Michał Rzepiela.

In 2014, I also took part in the international congress held in Lyon *VII^e Congrès International de Latin Médiéval. Le sens du temps*, where I did a paper entitled: *The Beginning and the End - the Latin Vocabulary Related to These Opposing Concepts in Polish Medieval Texts*.

In 2014 I co-organized the conference: *Polish Lexicography of Latin. History and perspectives*. Cracow, 6.05.2014. I did a paper: *The Role of Polish Glosses in the Dictionary of Medieval Latin in Poland*.

In 2007, within a collaboration of the Polish Academy of Sciences with the Accademia Nazionale dei Lincei, I got a bursary for a two-week work placement in Rome, in the Dictionary of Medieval Latin in Italy (*Lexicon Latinitatis Italicae Medii Aevi*). Thanks to that I gained new experience and inspiration for further work.

From 2011 to 2014, I participated in the project: *Electronic Dictionary of Medieval Latin in Poland (A-Q)*, funded by the National Science Centre, directed by prof. Michał Rzepiela.

The aim of the project, now available at <http://scriptores.pl/elexicon/>, was preparing an electronic dictionary of medieval Latin based on its paper version. My work and experience related to this project, I described in the article *From "Thesaurus Latinitatis Polonorum" to "e-Lexicon. Dictionary of Medieval Latin in Poland" – Achievements and Challenges* (published in *Polonica*, 2014), I also did a paper *E-Lexicon Mediae Latinitatis Polonorum: Annotator's Perspective*, at the conference: *XML-TEI para obras lexicográficas de la Antigüedad y la Edad Media*, (Barcelona, 2013).

B. Astronomy

The monograph I described as a scientific achievement is a result of personal interest and experiences in the dictionary work. I wrote a chapter on astronomy already in my dissertation on Ovid's *Fasti*. Working on lemmas of the *Dictionary of Medieval Latin in Poland* and analysing scientifically the sources I became acquainted with the pre-Copernican astronomy. Astronomical terms, such as *stella*, have aroused interest and motivated to broaden my knowledge of astronomy and medieval philosophy, and technical vocabulary. My

first observations on astronomical terminology are included in the article: *Stella fixa et stella crinita. Astronomical Vocabulary in Medieval Polish Authors* (published in *Archivum Latinitatis Medii Aevi*, 2013). Whereas in the article: *Definitions of the astronomical terms in the Dictionary of the Medieval Latin from Polish sources* (published in *Prace Filologiczne*, 2016), I discussed a problem of defining astronomical terms, on the basis of the selected terms contained in the *Dictionary of Medieval Latin in Poland*, and, for comparison purposes, in the Czech and German dictionaries: *Latinitatis Medii Aevi lexicon Bohemorum* and *Mittellateinisches Wörterbuch*.

I improved my skills working on the book: *Galileo Galilei, The Assayer* (Kraków - Tarnów 2009, prepared by Tadeusz Sierotowicz). I undertook the translation from Latin the polemic of Lotario Sarsi, (about 50 pages of typescript), to which Galileo responded with *The Assayer*. Unfortunately, we do not have the technical dictionary of medieval Latin, so I had to analyze astronomical terms to reflect precisely the ideas of the text.

In 2013, I translated from Latin the next treatise: *Considerations on sunspots and stars circling around Jupiter* (in T. Sierotowicz, *On the position of sunspots*, Tarnów 2013, pp. 343 - 392).

C. Electronic Projects

- *Fontes mediae et infimae Latinitatis Polonorum. Electronic corpus of Latin language in Polish lands (1000-1550)*, head: prof. Michał Rzepiela, years 2012-2016, funded by the National Program of Development of Human Studies, available at: <http://scriptores.pl/efontes/>
The aim of the project was to prepare an electronic, scientific corpus of Latin language used on the territory of Polish lands in the Middle Ages and early Renaissance. The corpus is representative and balanced. It consists of diversified texts: documents, chronicles, literary works, scientific and specialized texts, speeches and sermons, court records or private letters. My task was to annotate linguistically and edit selected texts, e.g. astronomical, like *Commentariolum super "Theoricis novas planetarum" Georgii Purbachii* Albert of Brudzewo, *Tractatus turketi* Franco of Poland).

As part of the project, I also participate in the discussion at the conference "Corpora of Old and Dialectical Texts", organized by the History of the Polish Language of the 17th and 18th Century Section, which took place in Warsaw in 2013.

- *Fifteenth-century translations of the New Testament - Electronic Old Polish Concordance. Internet database*, head: Dr. Mariusz Leńczuk, years 2012-2015, funded by the National Science Center, available at: <http://stnt.ijp.pan.pl/>

The project provides all recognized Old Polish translations from the 14th and 15th century. Transcripts for almost 4000 Latin verses (which is about 42% of the entire New Testament) have been prepared on the website. My task was to correct and verify the Latin text.

The result of my work is also an article: *"Spiritu ambulate", id est ratione ductu. Fifteenth-century Latin Glosses on the Apostolic Letters*, published in *Glossae - Scholia - Commentary. Studies on Commenting Texts in Antiquity and Middle Ages*, ed. by M. Mejor, K. Jażdżewska, A. Zajchowska, Frankfurt am Main, 2014, pp. 185-190. (Warsaw Studies in Classical Literature and Culture, Volume 2).

- COST European Cooperation in Science and Technology, COST Action IS1005, *Medieval Europe, Medieval Culture and Technological Resources*, Head: prof. Agostino Paravicini Bagliani, years 2011-2015, financed by EU funds.

The aim of the project, undertaken by a consortium of institutes coming from 25 countries, was to exchange scientific experiences between researchers focusing on European Middle Ages, and to discuss a creation of a common platform for communication and collaboration. I was a member of the Working Group 4, dedicated to works on the Virtual Center for the Medieval Studies.

As part of the project, I participated in workshops held in Heidelberg (3-5.11.2011) and in Kraków, *Connecting Textual Corpora and Dictionaries. Workshop* (25-26.04.2013).

- *Digital Repository of Scientific Institutes*, Operational Program Innovative Economy, years 2011-2013, financed by EU funds, available at: <http://rcin.org.pl/dlibra>

The aim of the project, realized by 16 institutes of the Polish Academy of Sciences, was to prepare a multidisciplinary, full-text repository of digitalized scientific publications, archival materials, research documentation and cultural heritage. My function was to organize and coordinate the tasks intended for the Medieval Latin Section, e.g. preparation of the list of materials that constitute the scientific base of the Section.

Within the project I took part in *Workshops on development, operation and management of IT infrastructure in the POIG project of the Digital Repository of Scientific Institutes*, held in Zakopane (27-29.07.2011).

D. Varia

I have dedicated my master's and PhD thesis to Ovid's works. After the doctorate I was studying the reception of his works in the Middle Ages. The result of this research was a paper entitled: *Metamorphosis of the "Metamorphosis" - an allegorical interpretation of Ovid's works in the Middle Ages*, which I did at the conference: *Metamorphoseon synagoge. Transformations and connections in literature, art and ethics*, held in Katowice in 2006. The subject of reception of ancient works, not only Ovid's, I discussed in detail in the article: *What is the benefit of reading? The Role of "utilitas" in medieval "accessus ad auctores"* (published in *Terminus*, 2011).

I also undertook a translation of theological and hagiographic texts. In 2007 I published the translation of *Letters and speeches on the canonization of St. Jacek from the middle of the 15th century* (in: *St. Jacek Odrowąż. Studied and sources. Dominican Treasures*, ed. by M. Zdanek). In the same year, the *Life of the holy Bishop Malachi of St. Bernard of Clairvaux* was published, (translations of his other treatises are also planned). Bernard's language and way of illustrating aroused my interest, I have made a couple of reflections on that issue in the article: *Ad milites Templi. De laude novae militiae. St. Bernard of Clairvaux Guidebook of the Holy Land*, published in *Cistercium Mater Nostra* (2012-2013).

E. Philological consultation

Philological consultations and help in editing medieval texts are an important point of my work. In 2015, I started to participate in the project: *Borough and manorial books from the Cracow and Sandomierz provinces. Critical edition of court records from 14th-15th century*, head: prof. Jan Wroniszewski, funded by the National Program of Development of Human Studies.

So far I have consulted philologically and corrected the Latin text of books: *Cracow Manorial Book 2, 1394-1397*, ed. by W. Bukowski, M. Zdanek, Warszawa 2012, Dagmara Wójcik-Zega, *Conclusiones Collegii Maioris, critical edition*; Marcin Baster, *Starnigiel*

Dormitory of Cracow University in the 17th and 18th century, (both books are prepared to be printed).

F. Teaching

In the years 2011-2014, I taught classical and medieval Latin at the College of Philosophy and Theology of the Polish Province of the Dominicans, in Crakow, (the College has a scientific cooperation agreement with the Faculty of Theology of the University of John Paul II in Cracow). It was a three-year Latin class with an exam at the end. The program I worked on included, among others, classical grammar, elements of medieval grammar, translation and analysis of classical works (e.g. Caesar, Cicero, Virgil, Ovid) and medieval (e.g. St. Thomas Aquinas, Albert the Great, Długosz chronicles, medieval documents).

Gomesche Joerg - Fiedler