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Identity and Culture of Medical Schools in Poland

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"Historiam nescire, hoc est semper purerum esse"
Cicero [1]

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Abstract

A scientific school could be defined as a form of community that includes a group of scholars, researchers sharing similar ideas, and approaching specific scientific problems in the same way. The crucial characteristic of a scientific school is based on values, culture and identity of scholars represented by similar research orientation.

The objective of the paper is to describe the characteristics of the organizational identity of medical science schools. The research methodology is based on a review of the literature on the subject.

Key words: *organizational identity, organizational culture, medical schools*

Introduction

Organizational identity is an interdisciplinary issue undertaken by scientists working in many disciplines: management sciences, economics, organizational theory, and sociology. Scientific schools are examples of organizations that are characterized by a strong identification with the issues they undertake, a similar methodology, and the scientific authorities creating them. The participants of the science school identify with similar values, adhere to similar norms and create strong organizational cultures [74, 75, 76]. They have common ideas and carry out joint ventures. It is particularly noticeable in medical disciplines where, from the beginning of the educational and professional path, the master-student relationship is of great value and the basis of education.

It can be argued that scientific schools related to research, publication achievements and scientific authorities are established in various research centers. The aim of the work is to describe the characteristics of the organizational identity of medical science schools. The research methodology is based on a review of the literature on the subject.

Definitions of scientific schools

An attempt to define the concept of a scientific school is an interdisciplinary meeting of representatives of various fields of science: history, philosophy, sociology, and linguistics. It can be assumed that each field of knowledge needs to look back at the achievements of its predecessors. A scientific school is defined as a form of community that includes a group of scholars, researchers sharing similar ideas, and approaching specific scientific problems in the same way. Schools are associated with a given place or research center, and are often an attempt to continue the achievements of an outstanding scientist. Researchers who become elements of a given research unit also have a similar scientific approach. In the literature on the subject, you can find cases of scientific schools that are named and defined in terms of time, and their achievements

constitute a form of a collection of research activities of scientists included in them. They are scientists with recognized, often international achievements, authors of groundbreaking works, creators of epochal inventions, or originators of new theories. The followers are the continuators and successors of the thoughts of their predecessors. There is a characteristic sense of internal solidarity, as well as the need to defend against attacks by scientific opponents from other centers. The establishment of each science school has its own historical background. These are organizations that arise and operate in specific circumstances. Schools are subject to many transformations, they evolve, they collapse, they change. They are replaced by other individuals who draw on their legacy, broadening the spectrum of their achievements or even negating their achievements. Newly created entities may become modifications of previously existing schools [2]. In the figures of the masters and their achievements, one can see attempts to define the community they create. In the history of science, there are many examples of opinion-forming authorities who became the progenitors of scientific schools later named after them. Epicurus (341 BCE–270 BCE) one of the most important Greek philosophers who, after arriving in Athens, founded around 306 BCE the „Garden" philosophical school, thus giving rise to an elite community of scientists, to which belonged Amynomachos from Athens, Metrodoros from Lampsacus (approx. 330–277 BC), Polyainus from Lampsacus (approx. 340 BC – died approx. 278 BC), Hermarchos of Mytilene, Philodemus of Gadara (approx. 110 BC – approx. 39 BC), Zeno of Sidon (approx. 150 BC – approx. 70 BC) [3]. It gave rise to a philosophical trend that was continued in Roman times by Titus Lucretius Carus (c. 99 BCE–55 BCE) and in the modern era, e.g. by the French philosopher – Pierre Gassendi (1592–1655) [4].

Among the definition of a scientific school, it is worth mentioning the one formulated by the sociologist Zbysław Muszyński, who describes it as an informal organization gathering a community of scientists that arises spontaneously and apart from the need to solve research problems, is also a sociological and psychological phenomenon of great importance

for the development of science. Muszyński considers the following criteria for describing such a community of scientists: "genealogy, time, place, self-awareness, community of views, writings, styles and the world view of researchers" [5]. The origin of the science school is the master-student relationship. A master is a person with significant scientific authority, outstanding personality and organizational skills, distinguished by the ability to cooperate and creatively influence others. It is a phenomenon located in time: it arises and functions at a specific moment. These two categories describing a science school allow the stages of its development to be traced: the constitution of the master; selection of students; the establishment of a school in terms of common ideas and methodology, development and scientific achievements, and the final stage of spreading the idea or terminating its activities.

The place is often traditionally associated with the school's seat as a research center. The members of a given community share the awareness of unity and a sense of separateness.

The concept of school may be identified in relation to the research issues it undertakes, e.g. a sociological school. By reviewing research centers, one can find their connections with the direction of research, e.g. a school of interpersonal relations, but also with their location, a university or a city where researchers gathered, giving them the opportunity to develop and act, e.g. the Harvard School, the Michigan School. Different scientific directions and approaches can be found in one research unit. Each of them has a specific epistemology and methodology of scientific conduct [6]. For the contemporary definition of scientific schools, the concept of paradigm is binding. It was formulated in the 18th century in Göttingen by Georg Christoph Lichtenberg (1742–1799), a professor of natural sciences. The term "paradigm" is derived from the Greek language parádeigma is a pattern, a model with a didactic value, allowing direct insight into the complexity of scientific research [7]. The foundations of the paradigm concept should be sought in the ancient Platonic idea, in which it was described as a model of variable things, from the Greek word [8].

In an attempt to search for the genesis of the definition of a scientific school, reference should also be made to Thomas Samuel Kuhn (1922––1996), the creator of the paradigm theory, who in his book: The Structure of Scientific Revolutions of 1962, presented the course of the revolution in science. Kuhn called the paradigm necessary to solve a specific research problem, which is accepted by a given scientific community [9]. It becomes a criterion identifying a specific field of science [10]. Kuhn believed that every scientific community at some point adopts a certain paradigm, taking as fundamental the foundations of a given scientific discipline [72, 73]. Therefore, it plays the role of a criterion describing a given field, enables an individual researcher to work within a given group of scientists and allows to define the framework of a scientific field [11].

History of medical science schools

The origins of the tradition of establishing scientific schools can be traced back to antiquity. In 387 B.C.E. Plato founded the Academy in Athens, where philosophy, mathematics, rhetoric and natural sciences were studied. The most eminent mathematicians of that time were active in it [12, 13]. Aristotle is considered to be the greatest continuator of the philosophical formation of Plato, the foundations of his philosophical reflections lie in the reflections of his teacher [14, 15]. The Platonic Academy had a great influence not only on the philosophy of this period, but also on the whole of ancient thinking. Its closure in 529 CE. by the Roman emperor Justinian, it is considered the moment separating the ancient epoch from the middle ages [16]. The successor of Plato's Academy was the Lyceum (Greek: Λύκειον) founded by Aristotle in the 4th century BC on the basis of existing from the 5th century BC at the temple of Apollo Likejos, gymnasium. It conducted research in many areas of knowledge, mainly in the humanities and natural sciences. The most eminent representatives of the school include: the father of botany, Theophrastus of Eresos (ca. 370–287 BC [17] and Aristoxenos of Taranto (ca. 354 BC–300 BC) [18]. Sotera, ruler of Egypt in 323–283 BC

[19], Mouseion, (Greek: Μουσεῖον) – a temple of muses, a scientific school of great importance to the ancient world, both in the humanities and the sciences [20]. The scientific schools include Demetrius of Phaleron (c. 350–283 BCE) [21] or Euclid (c. 365 BCE–270 BCE) [22].

In the Renaissance in Italy, schools began to appear, which later gave rise to scientific societies. One of the most outstanding is the Accademia Platonica in Florence, founded in 1462 under the patronage of Cosmas Medici in the Careggi villa [23]. The first scientific society, Academia Secretorum Naturae, was founded by Giambattista della Porta in Naples in 1560 [24]. In 1582, the Accademia della Crusca was founded in Florence, inspired by Anton Francesco Grazzini. The purpose of its creation was to keep the Italian language clean and in good condition [25]. In 1542, the Accademia Vitruviana was established in Rome by the Italian philologist Claudio Tolomei, and on August 17, 1603, the National Academy of Lynx in Rome. It was the first true modern scientific society. The main task of the school was to promote experimental natural science, and one of its outstanding members was an astronomer, mathematician, physicist and philosopher – Galileo Galilei (1564–1642), who supported the theory of Copernicus [26]. Also in Florence, the Accademia del Cimento – the Academy of Trials, dealing with physical sciences, was founded in 1657. Its model was used to create the Royal Society in London and the Academy of Sciences in Paris. Two years later, in 1677, the Accademia Fisico-Matematica [27] was established in Rome. Following the traditions of Italian science schools, similar institutions began to appear in other European countries, including Poland. The first was the Sodalitas Litteraria Vistulana-Nadwiślańskie Towarzystwo Literackie [28, 29], established in Cracow in 1489. The first Polish scientific school was the "Society of Writers in Poland for Publishing the Best and Most Beneficial Books of the Country" (Societas litteraria ad edendos optimos et Poloniae utilissimos libros, operating in 1765–1770 in Warsaw). On February 10, 1775, the Society for Books was also established in Warsaw. Its mission was to develop school curricula and publish school textbooks [31]. In 1800, the Society of Friends of Sciences (TPN) was established in Warsaw, which brought

together researchers from various fields of science. Its work contributed to the establishment of the Royal University of Warsaw, the precursor of the University of Warsaw [32]. On the other hand, in 1872, the Academy of Skills was established in Cracow, which was called the Polish Academy of Learning from 1919. Initially, it consisted of 3 faculties: philology, history and philosophy, and mathematics and natural sciences, and from 1930 also medicine [33].

The Lviv-Warsaw School can be considered the most famous Polish pre-war philosophical school. It was established by Kazimierz Jerzy Adolf Twardowski (1866–1937), the founder of the Polish Philosophical Society [34]. The school was established at the end of the 19th century in Lviv and was continued by his students in Warsaw in later years. The outbreak of World War II marked the end of its existence. However, the influence of the school and the methodology connected with it remained in the works of its continuators, continuing uninterruptedly until the 1950s [35].

The beginnings of the Polish school of philosophy of medicine are related to the publication in 1874 of the work of Tytus Chałubiński (1820––1889) "On the method of finding medical indications". The main field of interest of the researchers was the logic of diagnosis and the approach to the topic of prognosis in medicine. The most prominent representatives of the older Polish school of medical philosophy were: Tytus Chałubiński [36], Feliks Franciszek Nawrocki (1838–1902), Ignacy Baranowski (1833–1919), Henryk Nusbaum (1849–1937), Henryk Fryderyk Hoyer (1834–1907), Wiktor Feliks Szokalski (1811–1891) [38].

In 1805, the Vilnius Medical Society was established, the first president of which was the outstanding Polish scientist Jędrzej Śniadecki [39]. Its founders were the doctor August Becu (1771–1824), chemist Jędrzej Śniadecki (1766–1838), Józef Frank, Jan Braun, Eliasz Enholm, Herz Heiman, Jakób Liboszyc, Jana Lobenwein, Andrzej Matusewicz, Jana Szlegel, Ferdynand Spitznael and Jan Szymkiewicz. After the Vilnius University was closed in 1831, it existed thanks to cooperation with the Medical-Surgical Academy [40].

In December 1820, the Warsaw Medical Society was established. The Society was founded on the initiative of professors of the University of Warsaw: Andrzej Franciszek Ksawery Dybek (1783–1826), August Ferdynand Wolff (1768–1846), Józef Czekierski (1777–1827), Franciszek Brandt, Maurycy Woyd (1791–1877), Fryderyk Roemer, Jan Kuehne, Jan Theiner. In 1889, the Laryngological Section was established at the Warsaw Medical Society, constituting the foundations of the first scientific association of Polish otolaryngologists. Its chairman was Dr. Teodor Heryng (1847–1925) [41]. In 1908, the Laryngological Section was created at the Lviv Medical Society, and in 1909 it was transformed into the Lviv Otolaryngological Society, headed by prof. Antoni Jurasz senior. In 1912, the Warsaw Otolaryngological Society was established [42]. Ludwik Guranowski (1853–1926) and Zygmunt Silver (1860–1941) became its chairmen [43]. The following actors were active in it: Zdzisław Dmochowski, Teodor Heiman, Alfred M. Sokołowski, Leopold Lubliner, Jan Moczulski, Robert Sinołęcki [45]. In November 1924, on the initiative of Dr. Jan Pieniążek, the Łódź Section of the Otolaryngological Society was established [46]. The fire of war interrupted the work of the Society, but the tradition of meetings and exchange of experiences between specialists survived. The Łódź Branch of the Polish Otolaryngological Society was reactivated, on the initiative of the team members, in 1945, four months after the establishment of the Chair and Clinic of Ear, Nose, Throat and Larynx Diseases [47]. In 1961, at the request of associate professor Jan Danielewicz, the Pediatric Laryngology Section of PTORL was established, which is currently chaired by prof. Jarosław Szydłowski, and in 1963 in Wrocław the Audiological Section of PTORL was established, headed by prof. Wiesław J. Sułkowski. The structures of PTORL also include: Phoniatric Section chaired by prof. Jurek Olszewski, Historical Section working under the supervision of prof. Andrzej Kierzek, Oncology Section led by prof. Paweł Burduk, Section of Otology and Otoneurology operating under the direction of prof. Wioletta Pietruszewska, Section of Rhinology and Plastic Surgery of the Face – prof. Eliza Brożek-Mądry [48].

The identity and organizational culture of a medical scientific school

According to an encyclopedic definition, identity is a multi-meaning term referring to individuals or social groups which, despite being subject to numerous, inevitable changes, retain certain constant features that determine their identification, who or what they are. It is a feature that distinguishes an individual or a group from others, giving it its difference, describing it [49]. The word comes from the Latin word idem, which means identity, continuity. An attempt to define the concept has already been read among ancient philosophers. Aristotle in "Metaphysics" wrote that: "...identity is a certain unity of a multiplicity of things or a unity of one thing understood as a multiplicity...". Considerations on identity were then undertaken by: Leibniz, Kant, Hegel, and Heidegger [50]. In psychology, it is described in the context of perceiving oneself as separate and unique in relation to others. Since the emergence of the theory of the American psychoanalyst Erik Homburger Erikson (1901–1994), it has been defined in terms of two important human relationships: his relationship to himself and other people, and thus also to tradition and culture [51]. Social identity, on the other hand, is the identity of an individual or a community, thanks to which it locates itself in a specific area of social reality [52]. The contemporary concept of identity in relation to management science was developed by its creators: George Herbert Mead (1863–1931) and Herbert Blumer (1900–1987) [53]. In the review of the literature on the subject on identity, mention should be made of the American sociologist and writer Erving Goffman (1922–1982), the creator of the concept of a total institution, i.e. a social organization within which there is a closed group of people who are formally controlled by the staff of this institution [54].

In management sciences, a significant research emphasis is taken in the discourse on organizational identity. The history of transferring the concept of identity to the ground of the community, and thus organization, has a short tradition, because it appeared in the 1980s thanks to the works of Richard Jenkins, who proved that individual and collective

cannot be considered separately, they are inextricably linked [55]. On the other hand, Mary Jo Hatch and M. Schultz describe the differences between organizational identity and corporate identity, as they believe that the former is deeply rooted in the organizational culture with its local meanings and symbols, which are communicated to individual members of the organization by supervisors [54]. They refer to the concept of the American philosopher, sociologist and psychologist George Herbert Mead (1863–1931), proving that the organization has its own identity described as "objective self" and "subjective self" [55]. Researchers Blake E. Ashforth and F. Mael indicate that the process of acquiring social identity is the basic condition for undertaking group activities. The process of identifying with the group is the basis of participating in it. Social identity manifests itself in gaining a sense of the group's separateness, striving to maintain its prestige [56].

According to M. Trotsky, the identity of science can be defined as the awareness of community, encompassing a system of values, individual attitudes, methods of action and goals that determine the unity of the scientific community. In this way, it is possible to perceive the internal identity of a scientific organization, focused on a common research topic, implementing a coherent activity. Its role is to integrate scientists with its environment. In contrast, external identity realizes a sense of separateness in relation to other, foreign scientific environments. The basic concepts within which science functions are three aspects of its understanding: resultant, functional and institutional. When describing the outcome context, science can be defined as the finite result of cognitive activities obtained in the research process. It includes a system of justified hypotheses and theorems subject to scientific cognition, understood according to the best and most up-to-date knowledge. It covers the subject of research, their methodology, and the method of popularization – scientific publications (works, articles in scientific and professional journals). In the functional aspect, we perceive science as a specialized activity aimed at learning and understanding reality, the motto of which is the obligation to use and transfer knowledge to others. Such an under-

standing of the identity of science is diversified due to the scientific discipline, type of research, and even the mode of obtaining degrees and titles as well as the implementation of undergraduate and postgraduate education of students. In the institutional context, science is understood as the activity of all kinds of scientific institutions [57]. They operate on the basis of the classification of scientific fields and disciplines. This is how universities operate - universities, polytechnic universities, medical academies, academies of fine arts, music academies, physical education academies, but also research units, faculties, institutes, departments and departments [58].

Scientific disciplines are often interrelated, both within the same field and even within other fields of science. There may be three types of relationships between individual scientific disciplines: interdisciplinarity, multidisciplinarity and transdisciplinarity [59]. According to the dictionary definition, interdisciplinarity is an interaction between two or more disciplines. It may concern the exchange of ideas, mutual integration in terms of concept perception, methodology, procedures, terminology, and the organization of research and didactics. An interdisciplinary research group is a group of people educated in various disciplines who work on a common research problem through intercommunication [60]. Following J. Axer, it should be assumed that the determinant of interdisciplinarity is the possibility of functioning of groups composed of scientists of different ages, with various competences and views, but undertaking common research problems both in the field of research and didactics. Its success depends on the degree of internal differentiation and the intensity of team cooperation [61]. In the opinion of J. Kurczewska, the foundations of interdisciplinarity are used for specific purposes in order to meet the complexity of scientific research and describe issues on the border of several scientific fields or solve a specific problem that has not yet been explored by researchers of any discipline. We also notice the need to refer to it when we are looking for new conditions for the unity of knowledge [62]. Multidisciplinarity, on the other hand, in the way of defining by W. Gagatka assumes the mutual dependence of two or more

scientific disciplines, while transdisciplinarity means not only communication between researchers of several fields, but above all going beyond their characteristic domains in terms of research [63]. According to M. Goryń, interdisciplinarity can be understood in four ways. The first includes the possibility of supporting research conducted in a given discipline by researchers from disciplines of another field of science. An example of this is the ecology of an organization that brings together researchers in the field of management sciences and biologists. The research interests of organization ecologists focus on the dynamics of the mechanisms of population evolution in the context of relations between the organization and the environment. Population is defined here as a collection of entities with the same characteristics, and the dynamics of change is explained by evolutionary processes, including differentiation, selection and retention. The environment selects those organizations that are best adapted to external conditions, and the population is selected by the environment [64]. Similarly, there are attempts to implement joint activities in the field of pedagogy and medicine, for example in the wide area of health education. Its basic tasks include raising public awareness in the field of disease prevention, for example cancer, which translates directly into the improvement of the health condition of the society. The consequence of cooperation then becomes the emergence of new professions: health educator, health promoter [65]. The second area of interdisciplinarity may assume that research conducted in a given discipline refers to other areas of science. An example of this is researchers who focus on behavioral finance, which is the link between psychology and finance. The research topics include the analysis of individual investor behavior when making specific investment decisions. The apogee of interest in this subject came when the Nobel Prize for work in the field of economics was awarded in 2002 to two psychologists: Daniel Kahneman and Amos Tversky [66], or actually only the first of them, because the second researcher did not live to see the award, dying of cancer in 1996 year. The Kahneman and Tversky model allows for the explanation of the behavior of specialists, including physicians, at the time of their diagnosis [67]. The third do-

main of interdisciplinarity can be considered the area in which research conducted in a given discipline refers to other disciplines from the same field. An example of this is the common research topic undertaken within medical sciences between medicine and public health [68]. Public health is a science dealing with the synthesis of the impact of health systems, human resource management and social awareness in order to obtain a holistic approach to health and disease with a description of their risk factors. In Westerling's definition, it is described in the form of various forms of supervision over the health of the society, including planning and participation in preventive programs, their evaluation, health promotion and undertaking the issues of health care organization [69]. Research undertaken by scientists focused on public health is also of interest to social medicine, preventive medicine, occupational medicine, as well as many medical specialties, both basic and specific. In the fourth area of interdisciplinarity, research conducted in a given sub-discipline can be written, to which those from another sub-discipline refer, however, both remain specified in the scope of the same discipline. An example of cooperation can be research conducted together by a number of medical specialties. The reason for cooperation is then the same problem, for example the disease entity, its understanding, epiopathogenesis, diagnosis and treatment. Here, one has to take into account the necessity to co-solve the problem that is imposed on scientists and doctors with a holistic view of man, which is a challenge for modern medicine. Recently, we all learned the sense and mechanism of this cooperation during the Covid-19 pandemic caused by the SARS-CoV-2 virus infection. We owe the lives of millions of people to the close cooperation of doctors of various specialties: infectious agents, internists, pulmonologists, anesthesiologists, nephrologists, otorhinolaryngologists, cardiologists, etc. In this situation, the issue of interdisciplinarity also appeared at other levels of its examination. Since the outbreak began, efforts to develop a vaccine against the virus have continued throughout the world. Thanks to the multidisciplinary participation in the work of scientists from various research areas and the farthest corners of the world: virologists, doctors, genetic engineers,

pharmacists, economists and even politicians, today we have a chance to overcome the pandemic and return to normalcy.

Summary

The area of management places organizational identity in the group of interdisciplinary issues. Since the beginning of their existence, science schools have been characterized by a strong identification, both in terms of personalities, supported by ties with the scientific authorities creating them, and the issues they undertake. The participants of the science school share similar values that follow the norms and create organizational cultures. It is particularly noticeable in medical disciplines where, from the beginning of the educational and professional path, the master-student relationship is the value and basis for the education of future specialist doctors in their fields. Medical science schools associated with research, publications and scientific authorities with a uniform organizational identity are established in research centers. They become opinion-forming centers which, through their research and educational activities, influence other organizations by taking up the challenge of educating medical staff up to date. It is clearly visible in the system of educating the next generations of specialists, doctors and physiotherapists. Each of them, not only as part of their studies, but also in compulsory postgraduate education, becomes part of the scientific school in which they are educated, and then they transfer their ideas and way of thinking to the organization in which they work, and often even create it from scratch.

The thesis that scientific schools related to research, publication achievements and scientific authorities are established in various medical research centers is confirmed by the examples described in the article. The research thesis is exemplified by the establishment of several medical research centers in Poland with their own identity and organizational culture. It is difficult to say that they are based on various paradigms, but undoubtedly, they have created their own publishing output, specific research fields and scientific authorities.

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