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Dossier Ludwik Fleck

Tadeusz Bilikiewicz's Background in the debate with Ludwik Fleck

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Abstract:

One of the factors that adversely influenced the worldwide reception of Fleck was the rather narrow critical interest that his ideas had aroused in Poland. Apart from a few reviews of his book (1935), only two polemics were published before WWII, and these likewise fell into oblivion. The philosophical views of one of those polemicists, Tadeusz Bilikiewicz, shared the same fate. Since an acquaintance with Bilikiewicz's background would seem to be a necessary condition for a (full) understanding of his controversy with Fleck, the aim of this paper is to sketch his views on the history and sociology of science, and to clarify certain errors regarding the facts of his life.

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Tadeusz Bilikiewicz; history of medicine; sociology of science; realism; constructivism

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Introduction

Bilikiewicz is mainly remembered by his psychiatry students, and a fairly narrow group of medical historians and philosophers — predominantly Fleck scholars — for a dispute with Ludwik Fleck, which began in 1939, following Fleck's critical remarks on Bilikiewicz's approach to history. As his polemics with Fleck attracted attention, his contribution has been invariably used as a pretext to scrutinize and explain Fleck's views. Accordingly, Bilikiewicz's position, as formulated in his book on the history of embryology (1932), and his numerous papers from the 1930s, have been ignored and remain virtually unknown. The aim of this paper is therefore to sketch Bilikiewicz's life and his philosophical background in his exchange with Fleck. This

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should clarify some of the factual errors found in works where Bilikiewicz is mentioned and assist in better understanding his exchange with Fleck.

Life

Tadeusz Antoni Bilikiewicz was born in Lwów (now Lviv, Ukraine) on April 5, 1901 — at that time under Franz Josef occupation. When the Great War broke out, he was a scout and served as a courier for Piłsudski's Legions. Being of age in 1918, he joined the Legions as a volunteer and was soon severely wounded in an encounter with Ukrainian troops near Chorośnica (Khorosnytsia, now in Ukraine). When Bilikiewicz left the army as a corporal, he decided to study "exact philosophy", convinced by his father that "philosophy not based on natural science led to speculations" (Bilikiewicz, 1978, 8). Following this advice, he began studying medicine at the Jagiellonian University in Kraków (Cracow). Having graduated with a PhD in 1925 (a thesis was not then required to obtain a doctorate from the Medical Faculty), Bilikiewicz began working in an infirmary in Kraków and continued his philosophical education. His health soon deteriorated, and he left for Leysin in Switzerland, to recuperate in a sanatorium, where he stayed from 1926 to 1928. During this period, he wrote and published his first book, *The Problem of Life in the Light of Comparative Psychology* (1928) and worked as a volunteer (*Volontärarzt*) at the "Burghölzli" Psychiatrischen Universitätsklinik in Zürich. During his four-month internship (from April to August 1928), he made a very good impression, and the director, Hans W. Maier, offered him an assistantship. However, Bilikiewicz declined, and accepted an offer from his Kraków philosophy supervisor, Witold Rubczyński. Rubczyński advised him to do his habilitation in the Department of History and Philosophy of Medicine. This was the first academic department of its kind in Europe. It was established in 1920 and had since been chaired by Władysław Szumowski (cf. Szumowski, 1920, 278; Löwy, 2000, 295–296; Gajda, 2005, 10). Thus, Bilikiewicz returned to Poland in 1928 to obtain in a junior assistant position at the Jagiellonian University in September that year. At the outset of his career as a medical historian, Bilikiewicz owed a lot to Szumowski and even more to Henry E. Sigerist, whom he considered a teacher and a friend (cf. Bilikiewicz, 1969, 112).

As Sigerist had left Zürich in 1925, Bilikiewicz could not meet him during his stay there. However, he had a recommendation from Maier, so he was able to communicate with Sigerist. They made an appointment in Bern:

In the meantime, using my sojourn in Switzerland, I established communication with Prof. Henry E. Sigerist, the director of the Medical History Institute in Leipzig. I did not know him personally. But he proposed a meeting in a café. I would recognize him by an ostentatiously held copy of *Völkischer Beobachter*. It came off. I apparently made a good impression on him because we have since become friends. [...] I came to be greatly indebted to Sigerist afterwards. (Bilikiewicz, 1978, 11; cf. Bilikiewicz, 1957a, 558)²

While Sigerist's friendly attitude is well-known, it would appear that it was more their extensive agreement on professional matters that induced Sigerist to help Bilikiewicz.

Sigerist immediately invited Bilikiewicz to Leipzig, where he, Bilikiewicz, spent two or three weeks (sources conflict) at the Institute during the fall/winter semester of 1928. Sigerist offered Bilikiewicz his assistance in obtaining a Rockefeller Foundation stipend for his research into the history of medicine and considered taking Bilikiewicz with him to Baltimore in the future. Soon after their meeting, Sigerist explored the options of having a German translation of *The Problem of Life* published. Sigerist tried to interest the Felix Meiner Publishing House, but to no avail. Interestingly, he also wrote a letter to fellow townsman Hans Driesch, whose views are discussed and used extensively in Bilikiewicz's book:

² Curiously, in a 1957 paper, most probably due to censorship, Bilikiewicz did not mention the NSDAP organ as the identification sign, but rather a liberal German newspaper — the *Vossische Zeitung*. (The quotations from the sources unpublished in English are translated by the author)

A young Polish colleague, Dr. Bilikiewicz [...], has written a book entitled *The Problem of Life in the Light of Comparative Psychology*. The book has appeared in Polish, so no one can read it, and the colleague would like to have it published in German. [...] Please excuse me this unsolicited communication; this concerns a very amiable man, who has made quite an impression on me and to whom I would like to be of assistance in whatever way I can. (Sigerist to Driesch, Dec. 14, 1928)³

On Dec. 12, 1928, Sigerist wrote to Bilikiewicz that he had discussed the book with Driesch, and that Driesch had expressed an interest in meeting him. Whether the two did in fact meet is not known. In any case, their efforts to have the book published in German came to nothing.

Bilikiewicz received his first Rockefeller stipend, with the assistance of Sigerist, in 1930. This supported 6 months' research at Sigerist's Institute (from April to October). He worked on German translations of Hippocrates with Sigerist and Owsei Temkin.

In May, 1931, with his 1928 book as his thesis, Bilikiewicz earned his second PhD in Kraków, this time in philosophy. In that same year, he also published a book on John Johnston (1931),⁴ which was accepted as his *Habilitationschrift* on the history and philosophy of medicine. Bilikiewicz was awarded his first *venia legendi* in June, 1931. The award was conferred by the Medical Faculty of the Jagiellonian University and approved by Janusz Jędrzejewicz, then head of the Ministry of Religious Creeds and Public Enlightenment on Aug. 22, 1931. According to Bilikiewicz's memoirs, the Council of the Medical Faculty of the Stefan Batory University in Wilno (now Vilnius, Lithuania) appointed him extraordinarius of history and philosophy of medicine on June 30, 1931. However, an impending transformation of the Polish education system (the "Jędrzejewicz reform") prevented the Council's plans from coming to fruition, and neither the chair for Bilikiewicz nor the department of history and philosophy of medicine were ever founded. Thus, he did not go to Wilno, staying instead in Kraków, where he taught as a *privatdozent* and junior assistant.⁵

Bilikiewicz was granted another 6-month Rockefeller stipend in 1932. He went to Paris, where he met Sigerist again. This time, he was not bound to any institution, so he simply worked with historical sources in Parisian libraries. That same year, he published a book that he had written in Leipzig entitled *The Embryology in the Age of Baroque and Rococo*. This work was commissioned by Sigerist and published as the second (and, as it turned out, the final) volume of *Arbeiten des Instituts für Geschichte der Medizin an der Universität Leipzig* series.⁶ In June 1932, Sigerist signed the introduction that he had written for this book, and in August, he left for the United States where obtained a position at John Hopkins University in Baltimore. Bilikiewicz, however, decided to stay in Poland. He gives patriotic reasons for this and for some other decisions concerning his professional activities in his memoirs.⁷

That Bilikiewicz was unable to obtain an appropriate academic position in Kraków was definitely not due to any academic shortcoming on his part. In April 1934, the ministry, under the direction of Jędrzejewicz, rejected an application from the Council of the Medical Faculty of the Jagiellonian University in Kraków to promote Bilikiewicz to an adjunct professorship and raise his salary. He continued to work there as the senior assistant (although with the payment of the junior assistant) till the end of April, 1935, and as a private

³ "Ein junger polnischer Kollege, Dr. Bilikiewicz [...], hat ein Buch geschrieben, das den Titel führt: 'Das Problem des Lebens im Lichte der Prinzipien der vergleichenden Psychologie'. Das Buch ist polnisch erschienen, sodass kein Mensch es lesen kann, und der Kollege möchte es gern in deutscher Übersetzung herausbringen. [...] Bitte Entschuldigung Sie die Störung. Es handelt sich um einen sehr liebenswürdigen Menschen, der mir einen vorzüglichen Eindruck gemacht hat und den ich gern behilflich sein möchte, wenn es sich irgendwie machen lässt" (Henry Sigerist's Collection at the Universitätsarchiv Leipzig, Med. Fak. D05/1e, item 758; italics added).

⁴ Bilikiewicz published a 25-page résumé of this book in German (1930).

⁵ While the Jędrzejewicz reform was officially introduced in March, 1932, and only applied to tertiary education a year later, some trenchant actions (e.g. layoffs) had already been undertaken in the fall of 1931. It has been noted (Nasierowski, 2009) that Bilikiewicz's failure to obtain permanent positions in Kraków and Wilno possibly saved his life in both cases. He avoided the *Sonderaktion Krakau* (Nov. 11, 1939) and the mass deportation of the Polish intelligentsia by the Soviet occupation authorities (June, 1940) on the Polish territory they acquired pursuant to the Ribbentrop–Molotov pact.

⁶ The first in the series was Stephen d'Irsay's book on Albrecht von Haller (1930).

⁷ Although they remained in touch after that (except for WWII), their last meeting took place at the *International Congress for the History of Medicine* in Madrid in Sept., 1935 (cf. Bilikiewicz, 1957a, 560; the paper incorrectly gives the year as 1936).

docent afterwards (he remained a docent of Jagiellonian University until Dec., 1946; cf. Archiwum Uniwersytetu Jagiellońskiego, S II 619, Tadeusz Bilikiewicz's personal files).

In 1935, Bilikiewicz accepted a post of ward head of a psychiatric hospital in Kocborowo (German: Konradstein; now a district of Starogard Gdański). He stayed there until 1946.⁸ A year later, he was awarded another habilitation (from Wrocław University), this time in psychiatry. He moved to Gdańsk and was made chair of the Department of History and Philosophy of Medicine at the Medical Academy, and director of the Clinic of Psychiatric Diseases. In 1953, he obtained a full professorship. Bilikiewicz was a member of numerous scientific societies, among others the *Deutsche Akademie der Naturforscher Leopoldina* (now the *Nationale Akademie der Wissenschaften*).

Besides the history of medicine, Bilikiewicz's later career was devoted to psychiatry and psychology — focusing on the etiopathogenesis of mental illnesses, psychoneurosis, psychosis and sexology. (He also made a remarkable attempt to solve the mind-body problem — see Bilikiewicz, 1971; Bilikiewicz, 1974). He retired in 1971 and died nine years later on Nov. 10, 1980, in Gdańsk.⁹

Fleck and Bilikiewicz belonged to the same generation, were born in the same place, studied the same professions, worked on closely related problems, and finally engaged in a polemical exchange, but there is no evidence that they ever met in person.

The aims of history of medicine

The early attempts made by scientists themselves to understand and describe the mutual dependency of science and the cultural milieu began in the late 1920s (cf. Fleck, 1986 [1929]; Dembowski, 1930; Schrödinger, 1935 [1932], 66–106).¹⁰ Bilikiewicz's book, *Die Embryologie...* (1932), also belonged to this trend.

It was one of the first works on the development of embryology in the 17th and 18th centuries, then a gap in the history of medicine, and to document the evolutionary conversion from the mechanist to the vitalist position in this field.¹¹ In terms of the sociology of medicine, it was to trace the impact of two consecutive general cultural trends on the content of embryological theories and their progress.

In his understanding of the aims of the history of medicine, Bilikiewicz followed the guidelines of the Sigerist's program quite closely (cf. Sigerist, 1922). On the one hand, the history of medicine fulfills its obvious historical aim, as it preserves cultural heritage. On the other, it serves methodological purposes. The history of medicine enables the current state of medicine to be understood as the result of a long, complicated, multithreaded, and ongoing process that often leads to error (cf. Bilikiewicz, 1928a, 829). By drawing attention to such errors, the history of medicine assists in the realization that contemporary medicine likewise swims in a sea of errors. In so doing, it fosters an anti-dogmatic attitude (cf. Bilikiewicz, 1933, 1 & 4). The development of medical ideas is highly conditioned and the history of medicine should study this topic in socio-cultural contexts (cf. Bilikiewicz, 1932a, 52). On the Sigerist-Bilikiewicz view, the understanding of the medicine of the past requires a close collaboration between the exact sciences and the humanities. In this way, the history of medicine constitutes a juncture between them (cf. Bilikiewicz, 1933, 4; Bilikiewicz, 1935, 63; Bilikiewicz, 1938a, 292). Finally, the history of medicine also has practical value for the present in that it provides knowledge about relatively rare medical situations e.g. the great

⁸ The German occupation authorities decided to maintain just one mental asylum in the *Reichsgau Danzig-Westpreussen*, and it happened to be the hospital in Kocborowo. Bilikiewicz witnessed the implementation of Nazi policy towards his patients for five years, and in 1948, he testified as an expert witness in the Supreme National Tribunal in the case against the war criminal Albert Forster, the *Gauleitner* of the *Reichsgau Danzig-Westpreussen* (cf. Bilikiewicz, 1948; see also his 1966 and 1978, 15–17).

⁹ Cf. Bilikiewicz, 1978; see also: Sieńkowski, 1981 (includes a comprehensive bibliography of Bilikiewicz's works); Konopka, 1981 (with a bibliography of Bilikiewicz's works in history of medicine); Suchodolski, 2002; Kujawski, 2012 (with a bibliography of selected reviews by Bilikiewicz); Gryglewski, 2013. This biography is also based on the sources from Universitätsarchiv Leipzig, Germany, and Archiwum Uniwersytetu Jagiellońskiego, Kraków, Poland.

¹⁰ It is worth noting that the existence of the “the same style of thinking and doing” in different cultural areas and that this orientation “makes us pay careful attention to detail and at the same time recognizes the great lines which run through the whole” was also indicated in the Vienna Circle. (cf. Carnap, 1968 [1928], xviii; see also Dahms, 2004)

¹¹ It was preceded by works of Cole (1930) and Sarton (1931).

epidemics (for Bilikiewicz, this was rather a byproduct of the history of medicine — cf. Bilikiewicz, 1933, 1; Bilikiewicz, 1938a, 292).

In his book, Bilikiewicz also acknowledged the influence of two contemporary Basel professors — the historian Heinrich Wölfflin (who was a student of Jacob Burckhardt, Sigerist's intellectual master), and the idealist philosopher Karl Joël, who had recently published a work on the cultural history of philosophy and the philosophy of history — and their ideas of synthesis, *Zeitgeist*, and style of thought, its development, and change (cf. Bilikiewicz, 1932, 10; see also Bilikiewicz, 1990a [1939], 259 & 264; Wölfflin, 1950 [1915]; Joël, 1928). Elsewhere, Bilikiewicz mentioned another idealist historian, Leopold von Ranke (Burckhardt's teacher in Berlin), who saw the task of history as finding the essences behind the facts (cf. Bilikiewicz, 1933, 4; Novick, 2005, 28). There is no doubt that in terms of methodology of science Bilikiewicz followed the principles expounded by Władysław Biegański.

Biegański holds that truth is “the final aim of every cognition” and he comprehends this claim within the framework of his previsionism (Biegański, 1990 [1908], 112; Biegański, 1910, p. II; see also Kijania-Placek, 2009, 192–196). According to this view — usually epitomized in the Comtean maxim *savoir pour prévoir* — scientific cognition consists in predicting properties, relationships, and causes and effects of things and phenomena (cf. Biegański, 1910, 80–85; Biegański, 1915, 24). As predictions include retrodictions and explanations in this theory, Bilikiewicz could apply it to the history of medicine. Accordingly, he maintains that:

the aim of historical research is not in the least to reproduce the past, or even to approach the truth [...]. Truth as such does not interest a historian. [...] The reproduction of historical truth is not possible due to the incompetence of a knowing mind. [...] This circumstance has undermined to a high degree the objective value of historical sources. (Bilikiewicz, 1938a, 292; see also Bilikiewicz, 1938, 120; Bilikiewicz, 1957, 352; Biegański, 1914, 1–2; Biegański, 1915, 259)

History does not provide faithful models but it serves “only to acquire a cognitive orientation as to reality” (Bilikiewicz, 1938a, 292; see also Bilikiewicz, 1938, 125). This aim is achieved when long developmental lines are identified. This is where Bilikiewicz complies again with Sigerist, who ascribes such a task to the history of medicine (cf. Sigerist, 1926, 19).

This quest invariably has a re-constructional nature. Whether from a lack of data or an inability to recognize all the material facts, the historian is forced to invoke fictitious constructions. This “necessary epistemological evil”, which is responsible for the falsity of a historical theory as a whole, is principally detectable in varying degrees in all scientific domains, including the hard sciences. This is also how Bilikiewicz reconstructed the rejection of epigenesis at the outset of modern embryology, the acceptance of preformationism, the debates between the “animalculists” and the “ovists”, the cessation of these ways of thinking, the final triumph of epigenetics, and the emergence of vitalism from mechanicism.

Bilikiewicz depicts the development of culture, which naturally encompasses science and philosophy, as a process guided by the spirit of the time, i.e. the *Zeitgeist*. This sets the ideals that are followed, mostly unconsciously, in any branch of cultural activity. In science, the epoch-specific *Zeitgeist* sets the aims and the scope of the problems to be solved, specifies the methods used to obtain the solutions, and influences both the choice of evidence, and the interpretations of the empirical data (or, in Lakatosian terminology, it marks off the logic of scientific discovery).

Since the ideals set by the *Zeitgeist* are the same for everyone, some parallelisms between apparently disparate domains can be observed. Bilikiewicz tries to demonstrate this with the history of embryology during the baroque and rococo periods. Thus, the objectives of his research are formulated as follows:

In addition to the important embryologic-analytic material, we will generally try to include all the significant historical events that form or appear to form the spirit of the time in this synthesis. [...] we will uncover the dependence of the dominant [embryological] view in a [given] period on trends, theories and world-views in [...] seemingly quite disparate branches of science and psychologically examine the mysterious parallelism of influences that a particular epoch exerts on authors from the most diverse areas. (Bilikiewicz, 1932, 10)

The concept of the *Zeitgeist* plays a crucial role in reconstructing and understanding the past, as it enables history to be rendered as more than a mere collection of facts. This is especially important for the history of

science and making sense of concept- and theory-formation, scientific change, and the cultural dependency of such processes. On that view, history requires a synthetic, i.e. constructivist, approach (cf. Bilikiewicz, 1931a, 250; Bilikiewicz, 1933, 4). This is far from obvious:

What we call the *Zeitgeist*, or character of an epoch, [...] what determines the choice of specified theories and the discardment of others, what is embodied in the style, fashion, current views, morals, and the life of an individual and a society — when considered from a distance — it all appears as something supraindividual, as an “objective spirit” that binds individuals and communities into a uniform, harmonized whole with invisible ties. (Bilikiewicz, 1932, 11)

However, a *Zeitgeist* is not discovered but rather constructed: “What we call the spirit of the time is not infrequently a creation of our subjective judgment with which we, as it were aprioristically, begin to process historical material” (Bilikiewicz, 1935a, 203; see also Bilikiewicz, 1990a [1939a], 259–260).

The *Zeitgeist* is a historian's construction that helps pin down some features of constantly changing phenomena, and a conceptualization of reality that sets some directions “in the chaos that surrounds us” (cf. Bilikiewicz, 1938, 120). The concept of the spirit of the time introduces a certain order and, therefore allows retrodictions to be made. When it is “identified”:

the gaps in the sources cease to be a nightmare that jolts the historian's conscience. The enormous field that is left for his individual historical construction, creativity, and intelligence makes it possible to fully use the sources, even if they are residuary and fragmentary, as the building blocks in the historical synthesis undertaken from this general standpoint. (Bilikiewicz, 1932a, 53)

Once the given spirit of the time is determined, it is considered and investigated as if it were a real object. It might be thought that Bilikiewicz's constructionism would have been appreciated by Fleck, but it was otherwise.

The debate with Fleck

Fleck's comments on Bilikiewicz's book (1932) are interesting for several reasons. Most importantly, the book sparked a discussion on Fleck's conception. This was an extremely rare occurrence at the time. In contradistinction to Lzydora Dąmbska's criticism (1937; see also Fleck, 1938), Bilikiewicz's reply is written from a standpoint close to that of Fleck, notwithstanding all the differences that both sides tried to point out. It is no accident that the disputants formulated objections against each other that were similar, if not identical. This section, however, focuses on whether Fleck's criticism finds a rationale in Bilikiewicz's views on the nature of scientific truth, the scientific character of history, the plausibility of its results, and the peculiarity of the objects investigated by historians.

1. *Truth*. Fleck deems Bilikiewicz guilty of an improper approach to styles and the environmental conditioning of scientific knowledge; one that eventually leads either to dogmatism or relativism. Bilikiewicz contributes to the danger that “a new generation of future scientific workers is growing up to believe that truth in the good, old professional sense of this word does not exist anymore” (Fleck, 1990a [1939a], 251; translation modified).

2. *Scientificity*. In the proper, i.e. scientific approach, research proceeds within the general sociology that investigates the rise and development of a directed, collective, cognitive mood that leads to a thought-style. Bilikiewicz's sociology, however, does not really go beyond rather vague, belles-lettres considerations.¹²

¹² We might note here that similar criticisms were voiced against other authors of a similar historical orientation. Thus, reviewing Joël's book (1928), Sydney Hook writes: “It is written with journalistic verve, reveals a bowing acquaintance with many fields of knowledge, and by the use of dramatic, stylistic antitheses conveys a quality of breathlessness which makes at least for interest if not altogether for accuracy” (Hook, 1937, 131).

3. *Plausibility*. Bilikiewicz tries to examine and compare two comprehensive wholes in embryology. According to Fleck, however, different thought-styles — even when they belong to the same period — often represent contrary tendencies that cannot be captured consistently without some flagrant oversimplifications. Furthermore, new discoveries are possible when an observer's cognitive alertness has been shaped and changed, and this kind of influence appears only within thought-collectives. Therefore, it is they who should be sociologically examined.

The intellectual development of the past is judged better, Fleck concludes, when separate thought-collectives and their interactions are compared and investigated (including interactions across eras).

4. *Incommensurability*. In general, the difference between thought-styles may involve their incommensurability.¹³ It is therefore advisable to confine their comparative analysis to individual sentences from particular texts, and not to work on “entire views and theories”, as was attempted by Bilikiewicz.

Further exchange between Fleck and Bilikiewicz reveals deep disagreement over *scientific realism* (cf. Fleck, 1990b [1939b]; Bilikiewicz, 1990b [1939b]). Therefore, Bilikiewicz's position on all five issues raised by Fleck, and not just the four he originally addressed, are investigated here.

Ad 1: *Bilikiewicz on truth, relativism, and dogmatism*. Bilikiewicz is rather laconic about truth and his concept of style may easily — but superficially — prompt a relativistic interpretation. Such a reading would be supported by the consideration that, as Bilikiewicz was under the noticeable influence of Biegański, he could also accept the latter's non-classical theory of truth, which dispenses with the absoluteness of truth and makes it relative to “the content of earlier acquisitions of our cognition” (Biegański, 1910, 139, see also 163). However, Bilikiewicz firmly rejects the charge of relativism, and in his works on Biegański, he is in principle silent about the latter's theory of truth.

In his reply to Fleck, Bilikiewicz mentions that when writing his 1932 book he assumed “that there exists an objective state of affairs which is cognizable to a high degree. The purpose of science is to study this objective state of affairs [...] and the transmission of the content of cognition, i.e. the truth (as it appears to us), to other researchers” (Bilikiewicz, 1990a [1939a], 261; translation modified). The tension between objectivity and stylishness can be resolved by his twofold understanding of truth.

Bilikiewicz, most probably following Husserl (cf. Husserl, 2008, 311–312), claims that truth can be understood in two ways.¹⁴ First, epistemologically, as an agreement of our judgment with a real state of affairs. In this sense, true judgments are fallible and relative to our state of knowledge. Second, truth, in its metaphysical meaning, is that very state of affairs. In this sense, it is objective and absolute (cf. Bilikiewicz, 1928, 17–18). Bilikiewicz holds, as do many other fallibilists later, that principally there is no absolute certainty as to whether scientific judgments correspond to absolute reality (cf. Bilikiewicz, 1928, 43), but we sometimes know that we are not wrong and “the state of affairs determined in our judgment coincides 100% with that state of affairs we call the truth” (Bilikiewicz, 1928, 140).

It should be noted that Bilikiewicz never equalized all belief systems in terms of cognitive value. For instance, he criticized the mystical and irrational tendencies in 1930s German medicine, which eventually turned into what he called “medical Hitlerism”, and manifestly ridiculed the dialectical materialism that haunted Soviet science and philosophy (cf. Bilikiewicz, 1931b, 240; Bilikiewicz, 1932b; Bilikiewicz, 1933a, 243–244; Bilikiewicz, 1934, 264 and Bilikiewicz, 1933b). He repeatedly stressed the reluctance of the Polish school of medicine towards speculative thinking (cf. *sine auctoris*, 1928, 834; Bilikiewicz, 1929, 141; Bilikiewicz, 1935, 63) and called for criticism and exactness. These appeals were made from a perspective far removed from scientific dogmatism (cf. Bilikiewicz, 1932b).

Bilikiewicz agrees with Fleck that the claim regarding the influence exerted on scientific results by the intellectual environment can induce the acceptance of a relativistic or skeptical position. However, he is convinced that the research on the stylishness of science “in fact sharpens the accuracy and firmness of our knowledge of reality through a criticism of the way we perceive reality” (Bilikiewicz, 1990a [1939a], 261).

¹³ In the relevant passage of the English translation the Polish word used by Fleck, “niewspółmierne” (i.e. “incommensurable”), is rendered as “incomparable” (Fleck, 1990a [1939a], 253).

¹⁴ The conjecture is that Bilikiewicz never relinquished this idea, as he was still talking about two kinds of truth in a 1976 conference paper entitled “The Influence of Criticism and Censorship on Determinations of Historical Truth” (1976, 1–3), which the communist censors did not allow to be printed (this was not the first time — see Suchodolski, 2002, 42 & 45), and in his autobiography (Bilikiewicz, 1978, 44).

Ad 2: *Bilikiewicz on the scientific nature of the history of medicine*. Undoubtedly, it would be easier to comment on Bilikiewicz had he followed his own recommendations on exactness more closely. However, Fleck's remarks may create a false impression as to the character of Bilikiewicz's book (NB: that of Fleck met with similar criticism). Bilikiewicz, who as a scientist impressed not only Sigerist but also Karl Sudhoff, wrote a historical book that adequately met the scientific standards that were commonly accepted at the time in this field. It does not therefore significantly differ in that respect from other acclaimed works on the history of medicine.

Bilikiewicz nevertheless agrees that historical research will never obtain the degree of exactness of the hard sciences — and from this perspective, his work may seem to be “artistic, literary, intuitive, and subjective rather than scientific”. However, as history also belongs to science, the charge regarding the non-scientific character of his work is unjustified (cf. Bilikiewicz, 1990a [1939a], 264–265).

Ad 3: *Bilikiewicz on the plausibility of Zeitgeist-based historical reconstructions*. In the Preface to his book, Bilikiewicz informs his readers that ambitious history requires fictional thought constructions. Constructing the *Zeitgeist* consists in finding the cultural quintessence of the given period. Without that, historians would be lost in a multitude of facts, so they are forced to proceed according to the law of economy. For aesthetic reasons, the creative historian strives to complete the picture of the epoch. Those elements not in harmony with the *Zeitgeist* are eventually seen as unimportant, detached from the *Zeitgeist*, and replaced by well-orchestrated ones.

This procedure certainly gives the historian a lot of freedom. However, Bilikiewicz imposed some significant limitations in order to preserve the division between nature and culture. These constructions are by no means arbitrary. They have to be internally and externally consistent. The requirement of consistency with the main theories accepted in other domains of science (if fulfilled) makes Bilikiewicz's account testable in principle and grants it scientific status. This is emphasized by Bilikiewicz in his rejoinder to Fleck: “I did not try to transcend the experience” (Bilikiewicz, 1990a [1939a], 261; translation modified).

Bilikiewicz suggests that Fleck's objection stems from a different vision of the sociological approach to science. For him, it is meant to explore the influence of the environment on the content of science, whereas for Fleck it aims to show the influence of the environment (or the thought collective) on scientific work — or the sociological influence on the cognitive conditions of the mind (cf. Bilikiewicz, 1990a [1939a], 257). Bilikiewicz admits that both these objectives deserve more attention from the scientific community, but at the same time, he is convinced that his historical findings would lose their importance if viewed through a Fleckian prism, because of the constructivist metaphysics that underlies Fleck's theory. However, he implies that these two approaches rather supplement each other.

Ad 4: *Bilikiewicz on the incommensurability of styles and scientific change*. The curious character of the relationships between the views formulated within disparate thought-styles, familiar from Fleck's work and underlined in their exchange, was not unknown to Bilikiewicz. In particular, he recognizes the possibility of semantic incommensurability:

Is there not a concern that historical sources [...] will not provide what is needed by the modern researcher? For who produced these sources? The physicians of yore, educated in a world of entirely different medical concepts, knew nothing about modern symptomatology, and had no comprehension of modern methods of examination and observation. Are those insights then [...] translatable into the language of modern medical concepts? There is no doubt that in many cases this is possible, *but not always*. The objection that uniform conclusions perhaps cannot be drawn from two sets of premises formulated differently in terms of methodology must therefore be considered. (Bilikiewicz, 1933, 3; italics added)

On this point, the difference between Fleck and Bilikiewicz seems to be one of degree. For the former, incommensurability holds in so many cases that a new type of comparative epistemology, which he outlined in his book, is required to overcome it (Fleck, 1979 [1935]). If Fleck is correct as to the commonness of incommensurability (in any sense he had in mind), then his advice to confine the studies of two thought-

styles to a comparative analysis of particular texts and sentences is generally correct. However, the antecedent in this conditional is rather disputable.

It is worth mentioning that, in addition to incommensurability, Bilikiewicz indicates some other features that may be problematic for the rational reconstructions of scientific change, and his view of the development of science does not sound unfamiliar to modern ears.

Each spirit of the time goes through two phases. During the first, the ideals set by the new *Zeitgeist* come to prominence, and are more and more successfully realized in different cultural domains. In this period, the spirit of the time influences the choice of scientific evidence, and the interpretations of experiments. This claim refers especially to false confirmations and to cases where falsifications are ignored. Thus, in “the century of the woman”, Buffon, who supported the idea of equality of the both sexes, reported the discovery of female spermatozoa (cf. Needham, 1963 [1931], 208; Needham, 1959 [1934], 216; Gasking, 1967, 89–90), while the discovery of the parthenogenesis of aphids did not make van Leeuwenhoek abandon animalculism (cf. Fry, 2000, 28–29; Schierbeek, 1957, 83–91, 96–97; see also Pinto-Correia, 1997, 103–104).

On the other hand, in its second, decadent period, the *Zeitgeist* is usually burdened with empirical problems which can no longer be simply ignored. If, however, they are partly absorbed by a theory, then this happens either with a significant departure from its initial tenets or with a violation of some of the ideals set by the *Zeitgeist*.

During the first period, metaphysical stipulations are commonly used to reconcile the empirical data with the current *Zeitgeist* if need be.¹⁵ However, changes introduced in this way are — to use Lakatos' terminology once more — heuristically progressive. This is usually not the case during a crisis. This kind of corruption of the old ideals catalyzes the process of acquiring the ideals of the new *Zeitgeist*.¹⁶ When the new *Zeitgeist* finally arrives, the old one seems unbearably outdated, although the theories formulated within the new framework may contain “Kuhnian losses”.

For instance, when Pierre Louis Maupertuis converts to epigenesis, he, in contradistinction to the preformationists, cannot explain continuity within species (i.e. that cats bear cats etc.) or exclude abiogenesis. The proponents of the epigenetic approach also had to abandon all the extra-embryological “benefits” of preformationism, due to which it was used as an argument against atheism, or a justification for otherwise morally questionable habits like arranged marriages (cf. Roe, 2010). On the other hand, the new theory allowed Maupertuis to address some of the questions that had mystified the preformationists, e.g. the resemblance of offspring to both parents (especially in the case of hybrids).

In principle, two spirits of the time cannot co-exist in the same society in the same period, although it is impossible to draw a clear boundary delineating when and where the old one was finally superseded. Therefore, after a noticeable *Zeitgeist*-shift, the old theories usually have their epigones and the old views are not completely abandoned (cf. Bilikiewicz, 1932, 90). The transition has an evolutionary nature.¹⁷

The partisans of a new competing theory, developed under the auspices of a new *Zeitgeist*, handle the same data collected by the adherents of the superseded one, but reinterpret them within the new framework as confirming evidence (cf. Bilikiewicz, 1932, 151). When the evidence is limited, as often happens in the case of new theories, scientists make use of untestable hypotheses as explanations. Metaphysics is in any case indispensable as “even the simplest research, the simplest inference from empirical facts, contains some metaphysical presuppositions” (Bilikiewicz, 1935, 63).

Science is a social enterprise, undertaken by entire generations. Considered in the long term, it changes in an evolutionary and cumulative manner (cf. Bilikiewicz, 1932, 169; Bilikiewicz, 1935, 63).

¹⁵ Years later Jay Gould made the same observation: “I finally read the major works of preformationism in its heyday [...] — and I greatly admired the major arguments and their rationales. I understood, first of all, that the most ‘absurd’ notions (from current perspective) made reasonable sense under the ‘factual lacks’ of eighteenth-century science” (Gould, 1997, xv).

¹⁶ A methodological application of the maxim *corruptio unius, generatio alteris* is exemplified by the dispute between Caspar Wolff and Albrecht von Haller, the epigone of preformationism (cf. Needham, 1963 [1931], 211–214; Needham, 1959 [1934], 220–222; Gasking, 1967, 101–104, 107–115; Roe, 1981).

¹⁷ In his book, Bilikiewicz applies the adjective “revolutionary” in a scientific context twice. In neither case does it have the Kuhnian or Popperian meaning (cf. Bilikiewicz, 1932, 41 & 104).

Ad. 5. *Bilikiewicz and scientific realism*. The Fleckian commentators usually agree that he is a constructivist (see, e.g., Löwy, 1990, 215–224; Herrnstein Smith, 2005, 46–83; Egloff, 2015, 54–62; see also Strobach, 2011; Seidel, 2011). A kind of constructivism is also present in Bilikiewicz's methodology. Therefore, the bone of contention between them would appear to be not whether the use of constructions is acceptable in a theory of science, but rather how constructionist the theory can be. It will be argued, however, that Bilikiewicz's theory is at least compatible with scientific realism.

Bilikiewicz never questions that the world exists independently of any knowing subject. In the debate with Fleck, he argues that his opponent's position involves unacceptable metaphysics, namely the rejection of objective reality (cf. Bilikiewicz, 1990a [1939a], 258; Bilikiewicz, 1990b [1939b], 275). It is concluded here that he is a metaphysical realist.

This is, of course, too little to ascribe scientific realism to him. This may seem a difficult task since Bilikiewicz's methodology deals almost exclusively with modern history of medicine on the one hand, and the rather outdated biology on the other, while the current debate between scientific realism and instrumentalism concerns mainly the matured disciplines. It is, however, possible to regard him as a proponent of scientific realism in its moderate version.

Strong scientific realism claims that the best theories (matured and successful) are nearly true (cf. Psillos, 1999, xv; Chakravarty, 2011, 157). Bilikiewicz, however, thinks that in history it is otherwise, i.e. that even the best theories are (most likely) false. Those fallibilists who adopt the scientific realism position often accept the truthlikeness thesis that successive theories, while literally false, approximate the truth better and better. Bilikiewicz does not endorse this claim in history, but that is not tantamount to saying that history does not find any truths at all. They can be achieved “with the methods of natural science that enable a historian to determine a historical truth, which is individual, one-time, and particular” (Bilikiewicz, 1938a, 292).¹⁸ When it comes to historical generalizations, however, the use of fictitious construction is inevitable.

Strong scientific realism claims that the central terms of the best current theories are genuinely referential (cf. Leplin, 1984, 1). According to Bilikiewicz, there are indispensable terms in historical nomenclature that do not have any real reference, for instance, *the spirit of the time* or *the style*. It is not clear what status he would assign to other important historical concepts, e.g. *state*, *crisis*, and *revolution*, but nowhere does he claim that no theoretical concept has any reference. In addition to historical constructs, Bilikiewicz points out the occurrences of non-referential terms in scientific hypotheses (e.g. Harvey's *aura seminalis*), and experimental results (e.g. Hartsoeker's *homunculus*). Bilikiewicz thinks — to stress it again — that terms without a genuine reference enter science under the influence of the current style and that this impact can be discovered, reduced or eliminated when the *Zeitgeist* is analyzed (cf. Bilikiewicz, 1939a, 261; Bilikiewicz, 1933, 4; see also Fleck, 1938, 195).

Bilikiewicz's views clearly echo the instrumentalism taught by Biegański. However, his position would seem to be more accurately classified as a weak version of scientific realism. Bilikiewicz maintains that historical theories have truth value and that their falseness depends on the structure of the world. This in principle makes him an ontological realist. Bilikiewicz agrees that justified historical beliefs are possible, and this makes him an epistemological realist.

This realism is very weak indeed. However, it should get stronger once the constraint to history is lifted and other domains of science, where the role of construction is not as important as it is in the humanities, are taken into account. This finds confirmation in Bilikiewicz's way of speaking, as he ordinarily uses plain realistic language when talking about the theoretical entities of modern physics. For instance, when considering very small, hypothetical primitive organisms, he says: “These creatures take a direct part in processes about which we people [...] can only [...] conjecture. They are able to look and see nearly directly [...] chemical reactions as such, touch the bounds of a molecule, and perhaps see the structure of an atom” (Bilikiewicz, 1928, 183).

Furthermore, Bilikiewicz not only endorses metaphysical realism but he also admits that the scientific world descriptions approach the truth:

Indeed, this reality does not perhaps appear as we depict it [...], howbeit [...] we acknowledge not only that the external world and its objects exist but, moreover, that the degree of probability with

¹⁸ It is a necessary condition that the historian's research is able to give “[...] the outcomes that *correspond to reality* only when it is conducted in a strict co-operation of humanist and naturalist minds (cf. Bilikiewicz, 1933, 4, italics added).

which we predicate about the objects of this world, and with which the relationships between these objects hold, *nearly* coincides with the degree of the objective truth. (Bilikiewicz, 1928, 148)

There are good reasons to say that Bilikiewicz is an epistemological optimist. This fact is overshadowed by the skepticism which he expressed in his book on embryology and smaller works in the 1930s; however, this skepticism was related and practically confined to the humanities, and more particularly, to history. It was his realism that lied at the bottom of his disagreement with Fleck — despite many striking similarities in their views.

Conclusion

At the end of the day Bilikiewicz concludes that his and Fleck’s viewpoints are too far apart to continue the debate (1990b [1939b], 274). The discrepancy would not be easily visible without their polemics. On the other hand, this real disagreement over realism was merely the upshot of a not quite accurately addressed criticism.

Fleck was definitely mistaken if he thought that Bilikiewicz was in any way sympathetic to the alethic relativists. And this was established. The answer to the question of whether Bilikiewicz’s style of writing unintentionally supports a relativistic interpretation of his own views is rather subjective. It may be noted that a non-relativist rendition of Fleck’s thought still represents a demanding challenge to Fleck’s commentators.

The complaint about the non-scientific slips in Bilikiewicz’s book from an author whose style of writing could not find the approval of scientific philosophers from the Lviv-Warsaw School also calls to mind the biblical dictum *medice, cura te ipsum*. The more serious remark that stood behind it, namely, that general sociology offers a better framework for investigating the environmental influence on cognition, should be seen as a proposal that was considered and met with a rejection from Bilikiewicz, who justified this decision by their different research goals. If Bilikiewicz is right, then two of the other objections raised by Fleck lose their importance. While from this perspective, their debate does indeed prove to be largely vacuous, it does have other merits. First, it definitely clarified Bilikiewicz’s position on the realism/constructivism controversy. Second, it gives the best but apparently still unrealized chance to interpret Fleck’s teaching in a way that would permanently detach it from postmodern eisegeses.

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